



Review of the wholesale broadband access markets

Consultation on market definition, market power
determinations and remedies

Consultation

Publication date: 23 March 2010

Closing Date for Responses: 1 June 2010

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Section 1

Summary

Purpose of this document

- 1.1 This document is a consultation on our analysis of the state of competition in the Wholesale Broadband Access (“WBA”) market, and the measures that we are proposing to address concerns over the degree of competition in that market. These proposals are aimed at supporting effective competition in the provision of retail broadband services. It is important for consumers because effective competition - or effective regulation where sufficient competition does not exist - in the WBA market underpins the choice in retail broadband offers available to consumers.
- 1.2 Today, we are also publishing a review of the Wholesale Local Access (WLA) market. These two markets are closely linked and, taken together, our proposals in the two markets are intended to ensure consumers in the UK continue to have access to a wide choice of products from a range of suppliers.

The context for our proposals

- 1.3 Access to the Internet plays an increasingly important role for consumers and citizens in the UK. Almost three quarters of all households and nine in ten businesses have access to the Internet. The great majority of these consumers connect to the Internet using a broadband connection. There are now approximately 18 million broadband lines in the UK.
- 1.4 Consumers have benefited from competition in the provision of broadband services through choice of provider, lower prices and product innovation. As well as price, providers compete by differentiating their broadband products in terms of the features of the product (such as maximum speed and download limits) and by bundling broadband products with other services, notably fixed and mobile telephony and television services.
- 1.5 Competition in the provision of these retail services depends on effective competition at the wholesale level, or, where this is not occurring, effective regulation.
- 1.6 Competition at the deepest level at which it is likely to be effective and sustainable, based on investment by competitors in their own infrastructure, is likely to give the greatest benefits in terms of the mix of lower prices and faster innovation that residential and business consumers want. The WLA market concerns access to this fixed telecommunications infrastructure – the connection between the consumer and the telecommunications network. It is therefore critical for all fixed line services.
- 1.7 The WBA market sits between the WLA market and the retail broadband market. The WBA market relates to the wholesale broadband products communications providers (CPs) provide for themselves and sell to each other. It is important for consumers because these services are one of the building blocks of the retail broadband offers that consumers buy.
- 1.8 As effective and sustainable competition based on investment in infrastructure develops, further regulation of wholesale broadband services may become

unnecessary. However, the market is not yet effectively competitive everywhere and so additional regulation is required.

- 1.9 A characteristic of market analyses is that they are carried out on a forward-looking basis, with relevant markets defined prospectively. The market is evaluated based on existing market conditions, taking into account past performance and data. In light of such evaluation, we consider whether any lack of effective competition is durable, by taking into account expected or foreseeable market developments over the course of a reasonable period. The actual period used should reflect the specific characteristics of the market and the expected timing for the next review.
- 1.10 The next stage of the evolution of the UK broadband market will be based on new super-fast broadband services that support higher speeds than have been experienced so far by UK consumers. Super-fast broadband services are generally considered to be those that run at over 24Mb/s. BT has recently launched its Infinity product, based on the Next Generation Access (NGA) network it is in the process of rolling out. Virgin Media offers super-fast broadband services over its cable network.
- 1.11 The current market uncertainty about the extent and timing of NGA investment makes it difficult to foresee how the existing competitive conditions may be materially affected over the next few years. It is possible that the WBA market may change quickly in the future, for example as the NGA deployment develops. However, based on past data and the information before us, we are of the view that competitive and technological developments are not expected to materially affect our proposed market definitions within a four year period. Further, the specific characteristics of the UK markets and the need for regulatory certainty to incentivise investment justify a four year forward look.
- 1.12 However, given the fast pace of development in this market, it will be particularly important to keep it under close review going forward. We must also consider the new procedures and timeframes introduced by the amendments to the EU regulatory framework, which will apply from 26 May 2011.

The market review process

- 1.13 We periodically review various markets, according to both European and domestic legal requirements, including the Communications Act 2003 (“the Act”). The market review process is divided into three parts. First, we define the scope of the market that we are assessing (both the products in the market and its geographic scope). Then we assess whether any CPs have a position of significant market power (“SMP”), which essentially means power to influence markets to a significant degree in a way that could harm consumers. Then, if any CPs have SMP, we assess the regulatory remedies that need to be imposed to address the SMP that exists.
- 1.14 In this document, we review the WBA market and make proposals relating to market definition, SMP and the remedies we think are needed to address this market power. As discussed above, the WBA market is closely related the WLA market. Regulation in the WLA market aims to provide access to the network infrastructure that provides the connection to individual consumers. This encourages the effective and sustainable competition, based on investment by competitors in their own infrastructure, that we believe provides the greatest benefits to consumers to develop. As such, we need to take into account the competition, and any regulatory remedies, in the WLA market when we consider the WBA market.

- 1.15 We have therefore reviewed both markets at the same time. We have published a separate consultation on the WLA market today.

The 2008 market review

- 1.16 We last reviewed the WBA market in May 2008. In that review we concluded that in some parts of the country, competition had developed to a point where regulation in the WBA market was no longer required. In other parts of the country, some competition existed but this was not at a sufficient level. There were parts of the country where there was no competition at all.
- 1.17 We therefore defined four separate geographic markets:
- The Hull area (covering 0.7% of UK premises): those areas covered by exchanges where KCOM is the only operator.
 - Market 1 (covering 16.4% of UK premises): those areas covered by exchanges where BT is the only operator.
 - Market 2 (covering 13.7% of UK premises): those areas covered by exchanges where there are 2 or 3 operators.
 - Market 3 (covering 69.2% of UK premises): those areas covered by exchanges where there are 4 or more operators.
- 1.18 We found that KCOM held a position of SMP in the Hull Area. We also found that BT held a position of SMP in Market 1 and in Market 2, but that no operator held a position of SMP in Market 3.
- 1.19 To address these positions of SMP, we imposed general access and non-discrimination obligations on KCOM in the Hull Area and on BT in Market 1 and Market 2. These obligations required KCOM and BT to provide products to other providers that allowed them to compete effectively in the retail market. BT was also subject to voluntary pricing commitments on its wholesale prices in Market 1 and Market 2 which set a floor and a ceiling price. The floor commitment expired on 30 June 2009 and the ceiling commitment expires on 31 December 2010.
- 1.20 These measures have been effective in contributing to increased availability and choice at the retail level and this competition has led to declining retail prices.

Summary of our proposals in this review

- 1.21 In this document we are consulting on our proposals for market definition, market power assessments and proposed remedies in the WBA market, which are:

Market Definition

- 1.22 We propose a single broad product market for fixed asymmetric broadband services of all speeds at the wholesale level, including residential and business products in the same market. This market includes services provided using copper, fibre and cable access networks, including super-fast broadband services.
- 1.23 We propose four separate geographic markets:
- The Hull area (0.7% of UK premises);

- Market 1: exchanges where only BT is present (14.2% of premises);
- Market 2: exchanges with 2 or 3 Principal Operators are present (13.8% of premises); and
- Market 3: exchanges with 4 or more Principal Operators present or with 4 or more forecast (71.3% of premises).

Market power assessment

1.24 We propose the following market power determinations in each of the markets described above:

- KCOM holds a position of SMP in the Hull area;
- BT holds a position of SMP in Market 1;
- BT holds a position of SMP in Market 2; and
- No operator holds a position of SMP in Market 3.

Remedies

1.25 In order to address the competition problems identified above we propose to impose a series of remedies designed to make sure there is a choice of provider for retail consumers wherever possible and that consumers benefit from lower retail prices.

Market 1

1.26 In Market 1 there is limited prospect in the near term of any wholesale competition. Therefore we propose to impose general access and non-discrimination obligations on BT. In addition, we propose to impose a charge control, a requirement that prices are based on costs (cost orientation) and a cost accounting obligation to provide transparency of cost data. We are proposing these additional pricing remedies because without them, once BT's voluntary commitment to not price above a ceiling cap expires, we are concerned that BT could set excessive prices which would ultimately be passed on to consumers.

1.27 We will publish a separate consultation in relation to the details of the charge control we propose in Market 1. Our current plan is to publish this separate consultation in autumn 2010.

Market 2

1.28 In Market 2, whilst BT has SMP there is already some wholesale competition and the potential for this to develop further.

1.29 In Market 2, we consider it appropriate to impose general access and non-discrimination obligations on BT to address its SMP and the concern that BT could raise its prices to an excessive level. However, there is some wholesale competition in Market 2 and a potential for this to develop further, though the extent of any such further investment is uncertain.

1.30 We consider that an approach to regulation that promotes investment where it is economic in order to provide effective and sustainable competition is appropriate in

Market 2. However we also recognise that a safeguard to protect against the potential risk of prices rising to an excessive level is needed, in case this investment does not materialise. We think strict price regulation would not be appropriate to achieve this. Instead, we propose a degree of pricing freedom within a range based on a general cost orientation obligation. We also propose a cost accounting obligation to provide transparency.

- 1.31 The different approach we are taking in Market 2, compared to Market 1, is mainly due to our assessment of the likely level of constraint on BT's pricing of current and future investment by other operators. We have also taken account of the possible impact our regulation may have on prospects for future investment and on those providers that have already made investments in Market 2.

The Hull Area

- 1.32 In the Hull area we propose to impose general access and non-discrimination obligations on KCOM. We do not propose to impose any pricing regulation.
- 1.33 We are aware that consumers in the Hull area do not have a choice of provider because of the lack of entry into the market by providers other than KCOM. In assessing our approach to remedies, we have taken into account the absence of rollout plans of other providers. Our view is that imposing additional wholesale regulation (such as charge controls) will not encourage investment by these other providers.
- 1.34 This lack of competition could result in consumers in Hull paying higher prices and getting less attractive products than are available elsewhere in the UK. In that case, we would need to consider whether to impose additional regulation at the retail level (as additional wholesale regulation would not address our concerns). We have examined the retail offers available to consumers in the Hull area. This shows that whilst consumers in Hull may not have access to the best offers available in some other parts of the UK (where providers such as Sky and TalkTalk have deployed their own networks), they do have access to products that are comparable in terms of price and specification to those available to many consumers in the rest of the UK (for example, the majority of customers in the Market 1 area). We do not expect this position to change within the next four years.
- 1.35 Therefore, whilst we will continue to monitor the position in Hull, we do not propose to carry out a further review of the retail market at this time.

Consultation and next steps

- 1.36 We invite comments from interested parties on the proposals in this document. The consultation period runs for 10 weeks, to 1 June 2010. We then would expect to publish our conclusions in autumn 2010.
- 1.37 We will consult on our approach to the charge control we are proposing to impose on BT in Market 1. We currently also expect to publish this consultation in autumn 2010.

Section 2

Introduction

Background to this consultation

- 2.1 Access to the Internet plays an increasingly important role for consumers and citizens in the UK. Services provided over the Internet continue to evolve and now include access to government and social services, online shopping, social networking and viewing of high quality video. Broadcasters (such as the BBC and Sky) increasingly make content available online as well as through traditional broadcast methods.
- 2.2 The Internet also plays an increasingly important role for business consumers, both in providing new ways to interact with their customers and in providing more flexible working for employees.
- 2.3 Almost three quarters of all households have access to the Internet¹ whilst 90% of businesses have access². Most of these consumers – 96% of residential consumers and over 80% of business consumers³ - connect to the Internet using a broadband connection. There are now approximately 18 million broadband lines.
- 2.4 Consumers have benefited from competition in the provision of broadband services through choice of provider, lower prices and product innovation. Providers compete by differentiating their broadband products in terms of the features of the product (such as maximum speed and download limits) and by bundling broadband products with other services, notably fixed and mobile telephony and television services.
- 2.5 This competition in the provision of retail service is dependent on effective competition at the wholesale level, or, where this is not occurring, effective regulation.
- 2.6 In the 2005 Strategic Review of Telecoms⁴, we identified that competition at the deepest level at which it is likely to be effective and sustainable, based on investment by competitors in their own infrastructure, is likely to give the greatest benefits in terms of the mix of lower prices and faster innovation that residential and business consumers want. We consider that this benefit is maximised where competition between networks in the provision of broadband services is based on local loop unbundling (LLU). Where this competition develops, regulation of wholesale broadband is unnecessary.
- 2.7 However, LLU is unlikely to be successful in all parts of the UK. This means that in some geographic areas there is unlikely to be direct competition between broadband networks. In these areas regulation at the wholesale level is necessary to ensure that consumers can choose between differing retail offers. Regulation at the wholesale

¹ *The Consumer Experience 2009*, 9 December 2009

<http://www.ofcom.org.uk/research/tce/ce09/research09.pdf>

² *The Business Consumer Experience 2009*, 9 December 2009

<http://www.ofcom.org.uk/research/tce/bce/bce.pdf>

³ As reported in the Business Consumer Experience 2009 report, 51% of business report using ADSL based broadband and 32% report using cable broadband, although there may be some over-statement of the use of cable broadband with some of these users possibly using ADSL broadband.

⁴ http://www.ofcom.org.uk/static/telecoms_review/index.htm

level is also needed to ensure rival providers are able to compete at the national level.

The Impact of super-fast broadband

- 2.8 Super-fast broadband is important in continuing the evolution of the UK broadband market. It supports higher speeds than have been experienced so far by UK consumers. Whilst broadband based on LLU has a maximum download speed of up to 24Mb/s, super-fast broadband will be able to offer speeds faster than this. Super-fast broadband deployments are also less likely to suffer from limitations currently experienced by consumers based on the distance they live from the local exchange.
- 2.9 BT has begun rolling out the Next Generation Access (NGA) network required to provide super-fast broadband services. Virgin Media has upgraded its cable network to allow it to provide super-fast broadband.
- 2.10 Just as for current broadband products based on LLU, we believe consumers will be likely to see the most benefit from competition at the deepest level at which it is effective and sustainable based on investment by competitors in their own infrastructure. Therefore, regulation that provides appropriate access to the NGA network will be vital in allowing providers of retail products to compete in super-fast broadband services.
- 2.11 Again, as for current broadband, wholesale broadband regulation will be required only where upstream regulation designed to provide access to the NGA infrastructure proves to be ineffective.
- 2.12 Our consultation on the Wholesale Local Access (WLA) market discusses NGA in further detail.

Scope of this consultation

- 2.13 In this review we assess the state of competition in the wholesale broadband access (WBA) market. Where competition is not effective we assess how best we should regulate the behaviour of any company we find to have Significant Market Power (SMP), which is a position of economic strength affording it power to behave to an appreciable extent independently of competitors, customers and ultimately consumers.
- 2.14 The WBA market sits between the retail broadband market, which relates to the products that consumers buy, and the Wholesale Local Access (WLA) market, which relates to the physical connection between the consumer and the network. The WLA market considers what regulation we should put in place to allow access to infrastructure in the access network of any dominant providers. In reviewing the WBA market, we are concerned with assessing whether there is sufficient competition based on competing infrastructures, or whether we need to impose additional remedies at the WBA level in order that operators can provide competing retail offers.
- 2.15 Our approach to the market review follows the regulatory framework for electronic communications markets in the EU further described in Annex 6.

Previous market reviews

- 2.16 In our last review of the wholesale broadband access market in 2008, we identified asymmetric broadband access as being the relevant product, taking into account that products based on ADSL and cable technologies dominate the wholesale broadband access market⁵.
- 2.17 Our analysis of the wholesale broadband access market showed that competition is maturing at different rates across the UK such that we identified four separate geographic markets:
- The Hull area; those areas covered by exchanges where KCOM is the only operator.
 - Market 1: those areas covered by exchanges where BT is the only operator.
 - Market 2: those areas covered by exchanges where there are 2 or 3 operators.
 - Market 3: those areas covered by exchanges where there are 4 or more operators.
- 2.18 Having identified the product and geographic scope of the market(s), we assessed each market in turn to determine whether any operator or group of operators held a position of SMP, concluding that:
- KCOM held a position of SMP in the Hull area;
 - BT held a position of SMP in Market 1;
 - BT held a position of SMP in Market 2; and
 - No operator held a position of SMP in Market 3.
- 2.19 Given these findings of SMP we decided to impose the following regulatory obligations on KCOM in the Hull area and on BT in both Market 1 and Market 2:
- Requirement to provide Network Access on reasonable request;
 - Requirement not to discriminate unduly;
 - Requirement to publish a reference offer;
 - Requirement to notify charges, terms and conditions;
 - Transparency as to quality of service;
 - Requirement to publish technical information; and
 - Requirement to account separately.
- 2.20 Given the finding of no SMP in Market 3, no regulatory remedies were applied in that market. However, we required a 12 month notice period for customers who had

⁵ *Review of the wholesale broadband access markets*, 21 May 2008, <http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/>

existing contracts with BT so that they could continue to operate while they made any necessary alternative arrangements.

A forward look at market developments

- 2.21 Rather than just looking at the current position, market reviews look ahead to how competitive conditions may change in future⁶. Our evaluation of the current market takes into account past developments and evidence. Then we assess whether any lack of effective competition is durable, by considering expected or foreseeable market developments over a reasonable period in the future.
- 2.22 The actual period used for this forward look should reflect the specific characteristics of the market and the expected timing for the next review. In this market review, we have looked at potential developments over the next four years.
- 2.23 In this market, the key anticipated change over the next four years is that a significant amount of NGA infrastructure will be deployed. This will support ‘super-fast’ broadband services, offering higher speeds than have been experienced so far by UK consumers. However, there is uncertainty about the extent and timing of NGA investment. This makes it harder to foresee how the existing competitive conditions will change over the next few years. It is possible that the WBA market will change quickly in the future, for example as the speed of NGA deployment picks up.
- 2.24 However, based on past data and the information before us, we are of the view that competitive and technological developments in the UK are not expected to materially affect our proposed market definitions within a four year period. Although services that require higher speed access may evolve as next generation rollout develops, we anticipate that the majority of broadband users’ requirements will continue to be able to be met using current as well as next generation network access and speeds.
- 2.25 We also consider a four year forward look to be reasonable in this case as this period provides a reasonable degree of regulatory certainty to stakeholders in the UK. Such certainty is especially valuable at this point in time as it provides the right context for investment decisions during this important early phase of NGA deployment, in which the future market for NGA services is not yet clear. Whilst investment in NGA deployment may be considered to be more relevant to the WLA market, the WLA and WBA markets are closely aligned and our analysis of the WBA market takes account of the state of competition in the WLA market. We note that there is greater emphasis in the new framework on promoting investment objectives, including NGA investment.
- 2.26 The four year forward look that we have used allows for the possibility of our next WBA market review taking place on that timeframe. However, given the potential impact of NGA deployments in this market in the next few years, we will monitor closely the WBA market, and we will consider the timing of the next market review accordingly. In doing this, we will consider the new procedures and timeframes for conducting market reviews introduced by the amendments to the EU regulatory framework. Those requirements will apply in the UK from 26 May 2011.

Outline of the rest of this document

- 2.27 The rest of the main body of this Consultation is structured as follows:

⁶ See Annex 5 on the market review process

- In Section 3 we explain our proposals on the two dimensions of the wholesale market definition – product market definition and the geographic market definition.
- In Section 4 we assess whether any provider holds a position of Significant Market Power in each of the markets defined in Section 4.
- In Section 5 we discuss the regulatory remedies we propose to impose in markets where we propose a provider holds a position of SMP.

2.28 This Consultation also includes a number of annexes:

- Annex 1: provides details on how to respond to this Consultation.
- Annex 2: sets out our consultation principles.
- Annex 3: includes the consultation cover sheet to include in responses.
- Annex 4: lists the questions we ask in this Consultation.
- Annex 5: includes the draft of the legal notifications of the SMP conditions we propose to impose.
- Annex 6: summarises the market review process we have followed in this review.
- Annex 7: discusses some of the alternative broadband technologies we have considered in this review in more detail.
- Annex 8: provides information on retail broadband pricing used to inform our analysis.
- Annex 9: provides further evidence used to support our product market definition set out in Section 3 of this Consultation.
- Annex 10: discusses our analysis of the coverage of different operators by geographic area.
- Annex 11: shows the share of service provision of BT where it competes with different numbers of other operators, and the trend in this since the last market review.
- Annex 12: summarises our analysis of the economics of LLU rollout.
- Annex 13: provide a glossary of terms used in this Consultation.

Section 3

Market Definition

Summary

- 3.1 We propose a single broad product market for fixed asymmetric broadband services at the wholesale level (the wholesale broadband access (WBA) market), including residential and business products in the same market, as follows:

Asymmetric broadband access and any backhaul as necessary to allow interconnection with other communications providers which 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.

- 3.2 We refer to this market as the WBA market in this Consultation.

- 3.3 We propose four separate geographic markets, defined as:

- Market 1: exchanges where only BT is present (14.2% of all UK premises);
- Market 2: exchanges with 2 or 3 POs are present (13.8% of all UK premises);
- Market 3: exchanges with 4 or more POs present or with 4 or more forecast (71.3 % of all UK premises); and
- The Hull area (0.7% of all UK premises).

- 3.4 The purpose of this Section is to define the relevant wholesale markets in which the assessment of market power will be undertaken. This Section is structured as follows:

- First, we set out the conclusion on market definition from our previous WBA market review in 2008;
- Second, we discuss the basic characteristics of WBA products, including developments that may impact these products during the forward look period of four years;
- Third, we discuss our approach to market definition including a brief summary of the relationship with the proposals we are making in our review of the Wholesale Local Access market consultation, which we have published today;
- Fourth, we consider the relevant retail product and geographic markets, as the definition of retail markets is logically prior to and affects the definition of wholesale markets;
- Fifth, we analyse the wholesale product market; and,
- Finally, we analyse the geographic nature of this wholesale market.

Market definition in the last review

3.5 Ofcom last concluded a review of the WBA market in May 2008⁷. In that review we concluded that the product market was:

Asymmetric broadband access and any backhaul as necessary to allow interconnection with other communications providers which provides an always on capability, allows both voice and data services to be used simultaneously and provides data speeds greater than a dial up connection. This market includes both business and residential customers.

3.6 Further, we considered the extent to which different competitive conditions existed in different geographic locations. We concluded that the key determining factors in this assessment was the number of Principal Operators (POs) – operators that provide broadband services over their own access networks (BT or Virgin Media⁸) or have deployed LLU in more than 10% of the UK. This amounted to eight operators prior to the acquisition of Tiscali by TalkTalk. We also took into account the size of the local exchange. Based on these criteria, we concluded that there were four distinct geographic markets:

- The Hull Area;
- Market 1: those geographic areas covered by exchanges where BT is the only operator;
- Market 2: those geographic areas covered by exchanges where there are 2 or 3 POs present (actual or forecast) AND exchanges where there are forecast to be four or more POs but where the exchange serves less than 10,000 premises; and
- Market 3: those geographic areas covered by exchanges where there are currently four or more POs present AND exchanges where there are forecast to be four or more POs but where the exchange serves 10,000 or more premises.

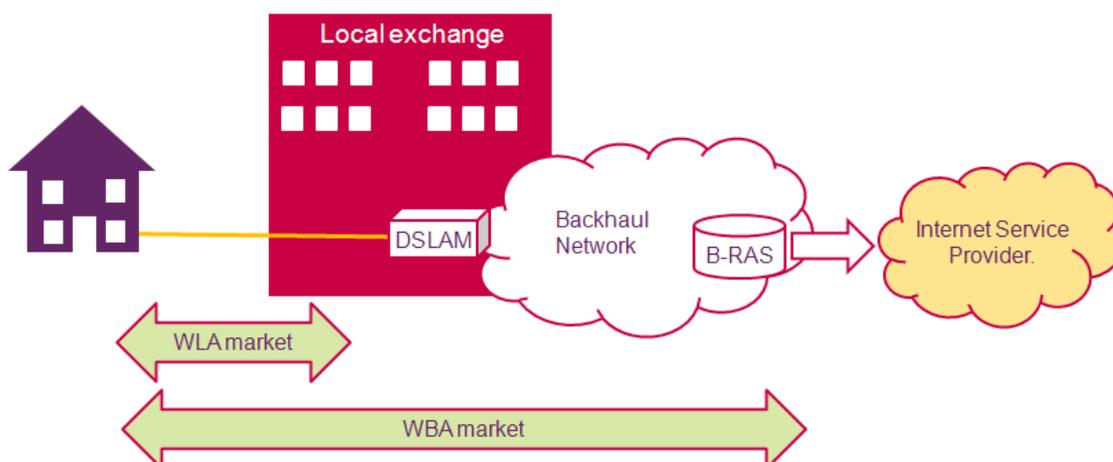
WBA product description

3.7 WBA products offer the opportunity to enter the broadband market without the need to deploy an access network (or, alternatively, to use an upstream remedy such as LLU). WBA products require only a limited number of interconnection points to provide nationwide coverage. As such, WBA products can be used by new providers entering the market, or by providers wishing to offer services in exchange areas where they have not deployed their own access network. Given the economics of providing full national coverage by deploying alternate access networks or via LLU, all providers except BT are likely to be dependent on WBA products to provide service on a national basis.

3.8 Figure 3.1 below illustrates WBA products using the current copper access network (based on the LLU remedy from the WLA market).

⁷ *Review of the wholesale broadband access markets*, 21 May 2008, <http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/>

⁸ Since the Virgin Media network footprint does not exactly align with the coverage area of BT's local exchanges (which we used as the basic unit for our geographic analysis), we included Virgin Media in our analysis where its footprint covered at least 65% of each exchange's footprint.

Figure 3.1: WBA products using current generation copper access network

3.9 The WBA product shown above is built using a number of elements:

- the access network considered in the WLA market review, which includes the connection from the customer's premise to the local exchange⁹;
- the broadband equipment at the local exchange (the Digital Subscriber Loop Access Multiplexor (DSLAM));
- backhaul connectivity across the WBA provider's network; and
- the functionality of the Broadband Remote Access Server (B-RAS) which provides management of the end-user's internet sessions.

3.10 The characteristics of the WBA products support the main features of retail broadband offers:

- The maximum downstream speed is set by the specific equipment deployed by the WBA product provider at the local exchange. For products that use the copper access network, the distance between the customer premise and the local exchange is an additional factor.
- As well as the maximum downstream speed, retail products are differentiated by maximum download limits and, potentially, lower speed during peak hours or traffic shaping¹⁰. The communications provider (CP) will pay for use of the WBA provider's backhaul network and, as such, may set download and/or usage limits to reduce the amount of bandwidth used across the backhaul network.

3.11 Products in the WBA market offer CPs the ability to connect to the WBA provider's core network in order to provide broadband services to consumers. The handover of traffic from customers to the CP is aggregated at a limited number of points. The customer access is controlled by the WBA product provider, allowing much less innovation opportunity to the interconnected CP than it could achieve by deploying its own network. Differentiation can be offered only at the services level.

⁹ As discussed in the WLA market review, Sub-Loop Unbundling is a remedy also offered in the WLA market. This provides access at the cabinet instead of the local exchange. However the general characteristics of WBA products built using SLU would be the same.

¹⁰ When the network is busy, an ISP may choose to limit the speed at which some bandwidth hungry traffic (such as peer-to-peer networking or video on demand services) may operate.

- 3.12 BT provides a number of WBA products. DataStream is a legacy product based on Asynchronous Transfer Mode (ATM) technology. Whilst this is still supported, the majority of customers are now purchasing other products – IPStream or Wholesale Broadband Connect (WBC). These products provide aggregated access for CPs as shown above in Figure 3.1. IPStream offers customer access at up to 8Mb/s. WBC is based on ADSL2+ technology (deployed as part of BT's 21st Century Network (21CN) deployment) and offers access speeds up to 24Mb/s.
- 3.13 Broadband that uses the copper access network (as in Figure 3.1 above) typically ranges in speed from under 1Mb/s up to 24Mb/s. The speed is limited both by the equipment at the local exchange (e.g. whether ADSL2+ has been deployed) and the distance the customer is from the local exchange. These speed limitations can be overcome by using different access network deployments. Two such approaches are summarised below.

Next Generation Access (NGA)

- 3.14 Next Generation Access (NGA) networks focus on upgrading the access connection between the customer and the network. BT is implementing two different NGA architectures:
- Fibre To The Premise (FTTP) – fibre is used all the way to the customer.
 - Fibre To The Cabinet (FTTC) – the connection to the cabinet is replaced by fibre. The current copper access network connection from the cabinet to the customer remains in place.
- 3.15 Both these approaches provide higher speed broadband connections than is possible over the current copper network. As explained above, current DSL technology (ADSL2+) offers a maximum downstream rate of up to 24Mb/s. FTTC deployments use VDSL technology over the copper connection that remains between the cabinet and the customer. This approach allows speed of up to around 50Mb/s to be achieved. In FTTP deployments, the use of fibre all the way allows much higher speeds to be achieved.
- 3.16 BT plans to deploy FTTP using a Gigabit Passive Optical Network (GPON) network. A GPON network is shared between a number of end premises. Speeds in the region of 100Mb/s will be available.
- 3.17 Whilst these deployments fundamentally change the access network and result in retail customers being able to receive much faster speeds, the characteristics of WBA products that run over current generation (e.g. copper) and NGA (e.g. FTTC and FTTP) networks are the same, in that the WBA products provide aggregated access to many customers, and will offer less scope for innovation than direct access to the more upstream infrastructure.
- 3.18 BT has indicated its rollout of FTTC and FTTP networks will cover approximately 40% of the UK by 2012.¹¹
- 3.19 Annex 7 includes further discussion on FTTC and FTTP networks.

11

<http://www.btplc.com/Thegroup/Industryanalysts/Industryanalystspresentations/SuperfastBroadbandprogramme.ppt>

Cable networks

- 3.20 Virgin Media's access network is different to that shown above. In respect of the broadband service, the connection between the customer and the network is not provided over copper and DSL technology is not used in the access network. The customer connects via a hybrid coaxial/fibre network utilising Data Over Cable Service Interface Specification (DOCSIS) technology to the head end equipment in the Virgin Media serving exchange.
- 3.21 Because of this, the cable network is not subject to the same speed limitations that are evident in the current copper access network. Having upgraded the DOCSIS technology in its network, Virgin Media is able to run services at higher speeds than those currently offered by LLU based providers. For example, it currently offers a 50Mb/s retail broadband offer. As such, the cable network may also be considered to be an NGA network.
- 3.22 Virgin Media's cable network currently covers just under half of the UK.

Retail services delivered using internet access

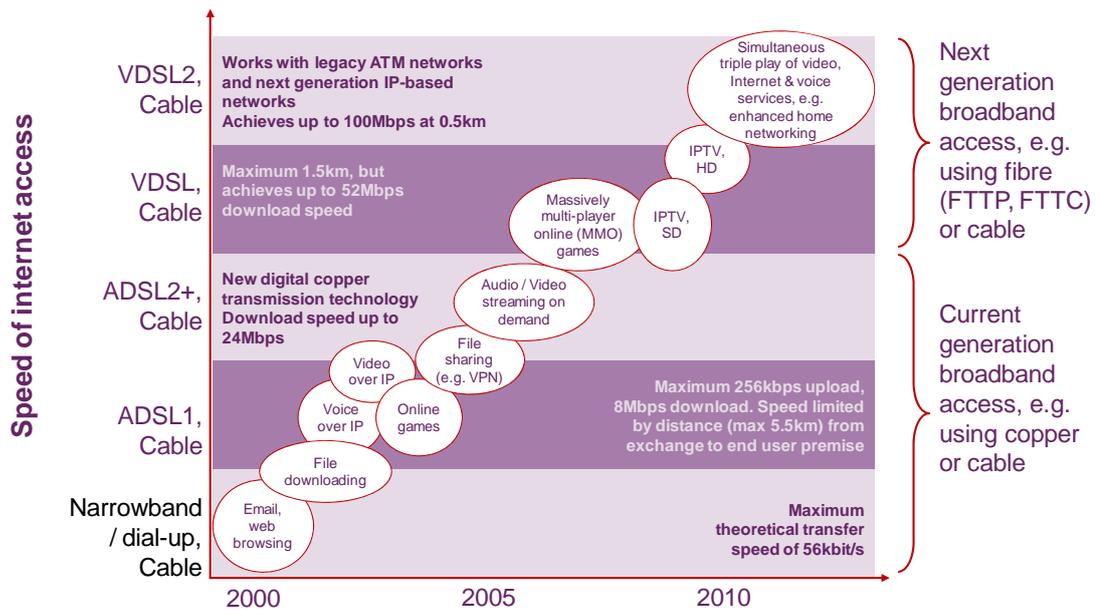
- 3.23 The development of broadband has facilitated significant changes in the bandwidth requirements of services available online, from the low-bandwidth activities such as email and web browsing to applications that require higher bandwidths such as video streaming and interactive gaming.
- 3.24 Ofcom's consumer research¹² carried out for this market review showed that consumers use a wide range of online applications. Customers with broadband internet access at home tend to go online daily (78% of respondents), with 14% going online weekly and 2% monthly. Amongst those that are online everyday many carry out high bandwidth activities such as voice and video communication (e.g. via Skype), downloading and uploading content and watching live or catch-up TV.
- 3.25 TV services delivered over the internet such as BBC's iPlayer have been enabled by internet access and broadband technologies. This was most commonly accessed using computers, but online content has been available since early 2008 for viewing on TV using game consoles. By early 2009 TV manufacturers such as Sony, Samsung and Panasonic have also started introducing built-in Ethernet ports to bring the internet directly to TV sets.
- 3.26 The download speeds achieved by current generation access networks are able to cope with the bandwidth requirements of these services although consumer experiences vary. Going forwards, higher residential bandwidth requirements may be driven by:
- home networking which connects multiple TVs, computers, game consoles and other multimedia devices (such as personal video recorders (PVRs)) together;
 - increasing ownership of multiple devices in the home; and
 - increasing availability of built-in WiFi and Ethernet chipsets in devices.

¹² *Consumer research into use of fixed and mobile internet*, 23 March 2010, <http://www.ofcom.org.uk/consult/wba/>

- 3.27 For example, streaming high definition content in the living room on a TV at the same time as on a computer in the bedroom during the evening peak times would require at least a 30Mbit/s to 40Mbit/s connection, most likely higher to take into account contention with other users and distance from the exchange. The delivery of such services necessarily depends on the availability of next generation broadband access.
- 3.28 Similarly, businesses are also likely to demand increasing bandwidths in the future, for example as a result of increasing usage of centralised file hosting and file sharing, accessed via virtual private networks (VPNs). VPNs have become increasingly popular amongst many companies to accommodate the needs of remote employees and distant offices using a public network (usually the internet). Instead of using a dedicated connection such as a leased line, a VPN uses "virtual" connections routed through the Internet from the company's private network to the remote site or employee. The widespread take up of broadband at home has meant that employees are able to work together without being restricted by their physical locations. Similarly, businesses are able to extend their geographic connectivity, provide additional networking opportunities and reduce operational costs compared to traditional wide area networks ("WANs") using leased lines or ISDN technologies.
- 3.29 Other factors that increase business bandwidth requirements are:
- video conferencing between offices;
 - remote monitoring and surveillance; and
 - improved online presence and supply-side management.
- 3.30 The bandwidth requirements for these types of services are likely to be a subset of those identified for residential customers.
- 3.31 "Current generation" access networks using existing copper loop or cable network support today's voice and data services simultaneously. In our November 2006 discussion document¹³, next generation access ("NGA") is defined as:
- "broadband access services that are capable of delivering sustained bandwidths significantly in excess of those currently widely available using existing local access infrastructure or technologies".
- 3.32 This general definition encompasses the delivery of broadband by different technologies and architectures, such as fibre deployments (e.g. FTTC and FTTP), upgrades to cable, terrestrial fixed or mobile wireless services, as well as improvements to current broadband services (e.g. VDSL).
- 3.33 Figure 3.2 illustrates the types of services that could be delivered by current and next generation broadband access. Consequently the definition of the relevant economic market would need to take these services into account.

¹³ Ofcom, Regulatory challenges posed by next generation access networks, November 2006. <http://www.ofcom.org.uk/research/telecoms/reports/nga/>

Figure 3.2: Services enabled by current and next generation broadband access



General approach to market definition

- 3.34 As noted in Annex 6 the market definition exercise of the market analysis *“is not an end in itself, but a means to an end”*. Market definition aids the assessment of whether end-users of a product are protected by effective competition or whether there is a requirement for the imposition of ex-ante regulation. It is in this light that we have conducted the market definition in this review.
- 3.35 There are two dimensions to the definition of a relevant market: products to be included in the same market and the geographic extent of the market, with the definition of the relevant product market being logically prior to the definition of the geographic scope of the market. Ofcom’s approach to market definition follows the methodology taken in previous WLA¹⁴ and WBA¹⁵ market reviews and is consistent with those used by UK¹⁶ as well as European competition authorities.

Defining market boundaries

- 3.36 Market boundaries are determined by identifying constraints on the price-setting behaviour of firms. There are a number of competitive constraints to consider:
- Demand-side and supply-side substitution;
 - Common pricing constraints; and
 - Homogeneous competitive conditions.

¹⁴ Ofcom, *Review of the wholesale local access market*, December 2004.

<http://www.ofcom.org.uk/consult/condocs/rwlam/statement/>

¹⁵ Ofcom, *Review of the wholesale broadband access markets*, May 2008.

<http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/>

¹⁶ Office of Fair Trading, *Market Definition – Understanding Competition Law*, OFT 403, December 2004.

http://www.offt.gov.uk/shared_offt/business_leaflets/ca98_guidelines/oft403.pdf

Demand-side and supply-side substitution

- 3.37 Market boundaries are determined by identifying constraints on the price-setting behaviour of firms. There are two main competitive constraints to consider:
- how far it is possible for customers to substitute to other products or services for those in question (demand-side substitution); and
 - how far suppliers could switch, or increase, production to supply the relevant products or services (supply-side substitution) following a price increase.
- 3.38 Demand-side substitution analysis considers whether other products of similar functions but of a different price/quality should be included in the same market as one under investigation. For example, if one is of a higher quality and therefore more expensive, the question is whether its price is constrained by the lower quality product/service. That is, customers might switch to the higher quality product if the price of the lower quality product increased to a point where consumers feel that the price differential justifies opting for the higher quality product.
- 3.39 Extending this reasoning, it follows that the product market definition may extend to a wide range of price/quality offerings based on the “chain of substitution” between intermediate products/services within this range.
- 3.40 Supply-side substitution possibilities are examined to assess whether other potential market players provide any additional constraints on the pricing behaviour of the hypothetical monopolist which have not been captured by the demand-side analysis. For this to be relevant, suppliers must not be currently providing the product/service in question but are able to enter the market quickly and at low cost by virtue of their existing position in the supply of other products or areas such that they place additional competitive constraint on the supply of the service in question. This means that the supplier would already own all the assets (e.g. production, distribution and marketing) needed to produce the product/service in question.
- 3.41 Suppliers who are already present in the provision of demand-side substitutes, by definition, are already in the market and the threat of entry does not provide additional competitive constraint on the hypothetical monopolist. Nonetheless, the impact of expansion by such suppliers can be taken into account in the assessment of market power.
- 3.42 The ‘hypothetical monopolist test’ (“HMT”) is a useful tool to identify close demand-side and supply-side substitutes. A product is considered to constitute a separate market if a hypothetical monopoly supplier could impose a small but significant, non-transitory price increase (“SSNIP”) above the competitive level without losing sales to such a degree as to make this unprofitable. If such a price rise would be unprofitable the market definition should be expanded to include the substitute products. The OFT Guidelines on Market Definition¹⁷ normally considers a price 5 to 10 per cent above competitive levels to be “small but significant”.
- 3.43 The demand-side and supply-side substitution must take place within a relatively short time period in order to be able to impose some effective competitive constraint on the hypothetical monopolist. The OFT Guidelines suggest a time period of up to 12 months as a rule of thumb, although this may be shorter for example, in industries where transactions are made very frequently.

¹⁷ OFT, *ibid*

- 3.44 In applying the hypothetical monopolist test, it is standard to begin with a fairly narrow view of the relevant market and then expand that market to include effective substitutes.

Common pricing constraints

- 3.45 Another factor that is sometimes an additional consideration in setting market boundaries is whether there exist common pricing constraints across customers, services or geographic areas (i.e. areas in which a firm offers¹⁸ its services at a geographically uniform price). Where common pricing constraints exist the products over which, or geographic areas in which, they apply could be included within the same relevant market even if demand-side and supply-side substitutes are not present. Failure to consider the existence of a common pricing constraint could lead to unduly narrow markets being defined.

Homogeneous competitive conditions

- 3.46 Our approach also takes into account the SMP Guidelines. In particular paragraph 56 which states that:

“According to established case-law, the relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which area the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different...”

- 3.47 Hence, subject to the relevant caveats above, where there are products or geographic areas where competitive conditions are sufficiently homogeneous the definition of the relevant market will include all of those products/areas within one market, even if they are not linked by demand- or supply-side substitution.

Modified Greenfield approach

- 3.48 The Commission's framework for market reviews requires the adoption of a 'modified Greenfield approach'. This means that that when we conduct our analysis to define the relevant retail and wholesale markets we assume that there is no SMP regulation (or remedies) in place in the market under consideration. That is, the analysis should be conducted under a hypothetical scenario where WLA regulation and remedies are in place, but not WBA remedies. This is the same approach adopted for the 2008 WBA market review.
- 3.49 Without WBA remedies, each operator would essentially self supply a “notional” WBA-type product for their downstream operations. Such a market would entail BT, Virgin Media and the LLU operators competing at the retail level which would provide indirect constraints on the pricing of these notional wholesale WBA products. Absent a requirement to provide wholesale services, it may well be the case this situation continues. On the other hand, voluntary provision may be in these operators' interests if there are firms which can add value at the retail level, for example from the strength of their brand or a greater ability to provide bundled services.

¹⁸ This may be voluntary or result from a regulatory requirement. If the latter, it can only be taken into account if it does not depend on a finding of SMP in the relevant market. Constraints resulting from the USO are therefore relevant.

Geographic market

- 3.50 The geographic market is the area within which demand-side and/or supply-side substitution can take place and is defined using a similar approach to that used to define the product market. In carrying out this market review, we have taken account the guidance on geographic markets produced by the European Regulators Group's ("ERG")¹⁹.
- 3.51 On the demand-side, the objective is to identify producers located close enough so that they would constrain the behaviour of a hypothetical monopolist. If a substantial number of consumers would switch to producers in neighbouring areas then the geographic market should encompass those areas.
- 3.52 Chains of substitution can also be an important factor in defining geographic markets. Consumers in any one area might not be willing to travel any great distance to purchase a product. However, if there are a number of suppliers located between two more distant areas, consumers' willingness to substitute to those suppliers can create a competitive constraint between suppliers of similar products in the more distant locations, creating a wider geographic market.
- 3.53 On the supply-side, consideration is given to whether producers can switch to supplying different areas within a relatively short period of time. As with product market definition such substitution should be able to occur within a relatively short period of time to present a sufficient competitive constraint

Benchmark price

- 3.54 For the purposes of the SSNIP analysis and market definition, the appropriate benchmark price is the competitive price to which the hypothetical price increment is applied. If the benchmark price is above the competitive price level, then this may result in an over-estimation of the scope for substitution, resulting in an excessively broad market definition and vice versa.²⁰

Relationship between wholesale and retail markets

- 3.55 The analysis of retail market definitions is logically prior to the definition of wholesale markets. This is because demand for wholesale access is derived from demand for access at the retail level, i.e. the level of demand for the upstream input depends on the demand for the retail services which it supports. The principle that market power in one market may be constrained by competition in a related market is well-established. Failure to consider retail level constraints could lead to incorrect conclusions regarding market power and inappropriate remedies at the wholesale level.
- 3.56 If the upstream input accounts for a sufficiently large proportion of the downstream price, the range of available substitutes at the downstream (retail) level will inform the

¹⁹ *European Regulators Group, ERG Common position on Geographic Aspects of Market Analysis (definition and remedies)*, October 2008.

http://erg.ec.europa.eu/doc/publications/erg_08_20_final_cp_geog_aspects_081016.pdf

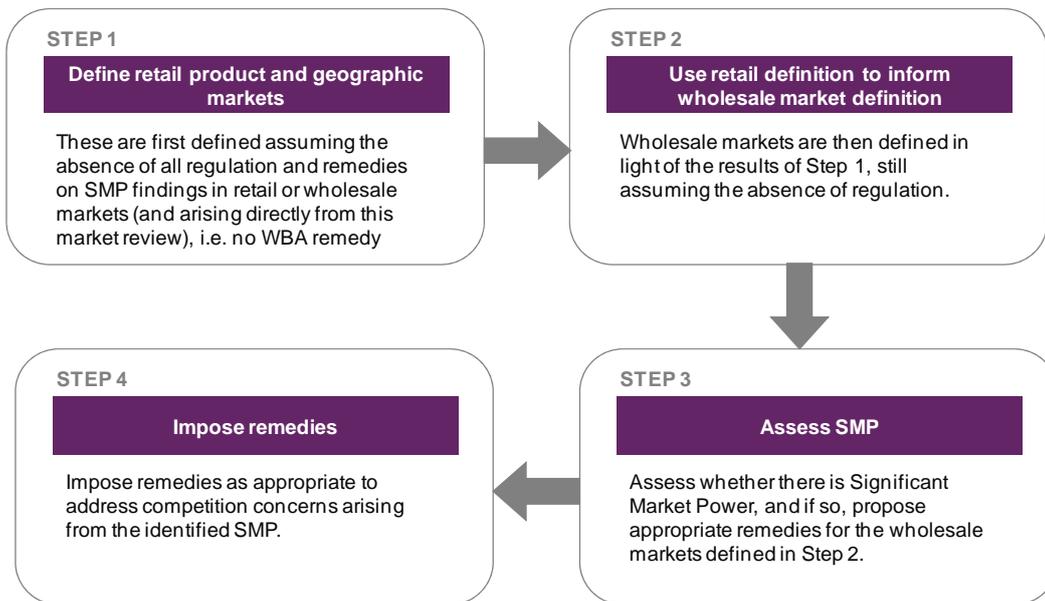
²⁰ The "cellophane fallacy", named after the US case *US v El Du Pont Nemours & Co*, 1956, is used to describe the fallacy of identifying competitive constraints where prevailing prices are already above the competitive level. Even a monopolist reaches a point where further price increases become unprofitable and where competitive constraints come into action that would not have applied at competitive price levels. If this is not taken into account, the erroneous conclusion could be reached that a monopolist who has successfully exercised market power by raising price is subject to competitive constraints since, starting from monopoly price levels, it would be constrained from implementing further price increases.

likely range of substitutes for the upstream (wholesale) service. This is because a rise in the price of a wholesale service which is passed through to the retail service will cause retail customers to switch retail products, thus reducing demand for the wholesale input.

Relevance of existing regulation

3.57 When defining downstream markets for the purposes of assessing SMP upstream, it is necessary to assume that upstream regulation is absent in the market under consideration as illustrated in Step 1 of Figure 3.3. Any finding of SMP in the WBA market may not be eliminated by regulation, but the ability to exploit an upstream-market SMP in the downstream market is controlled by it.

Figure 3.3: Diagrammatic representation of the market definition approach



3.58 We have taken account of competition and regulation in the upstream market, i.e. the Wholesale Local Access (WLA) market. We are consulting on a review of the WLA market at the same time as this consultation²¹. As such, in analysing the WBA market we have taken into account the effect of remedies proposed in the WLA market in our market definition and SMP analysis (steps 2 and 3 of Figure 3.3). We have also considered demand-side and supply-side substitution possibilities at the retail level only if they are economically viable in the absence of SMP regulation in the WBA market.

3.59 In the WLA Market Review (WLAMR) Consultation we discuss the potential for deployment of Next Generation Access (NGA) during the forward look of these market reviews. Because of this, we propose remedies should be imposed to address BT's SMP for both current and next generation access networks. These remedies are:

- Local Loop Unbundling (LLU);
- Sub-Loop Unbundling (SLU);

²¹ *Review of the wholesale local access market*, 23 March 2010, <http://www.ofcom.org.uk/consult/wla/>

- Non-physical access to NGA networks (Virtual Unbundled Local Access (VULA)); and
- Access to BT's ducts and poles.

3.60 In Sections 7 and 8 of the WLAMR Consultation we explain why we consider it appropriate to include a non-physical access remedy in the WLA market.

Retail product market definitions

3.61 There are different ways in which broadband services can be delivered. These can vary by technology e.g. over fixed copper, cable, fibre, wireless or satellite networks or over mobile networks and they can vary by configuration e.g. symmetric or asymmetric service or dedicated or shared capacity etc. In defining the scope of the relevant economic market over which to conduct a market analysis we start with a narrow view of broadband access to which we can then apply the hypothetical monopolist test to examine whether the market definition should be broadened to include other products or services. Based on the evidence available, we propose that at the retail level:

- Cable- and fibre-based access services are in the same market as ADSL-based access services;
- No speed boundary within the asymmetric broadband access market;
- Narrowband internet access is in a separate market to broadband access;
- Symmetric broadband internet access services (including leased lines) are in a separate market;
- Mobile, fixed wireless and satellite internet access services are in a separate market to fixed broadband access services; and
- Residential and business customers are in the same market.

3.62 In relation to the bundling of communications services, we also propose that:

- The asymmetric broadband access product definition does not include all other services in the bundle; and
- Broadband access services included in a bundle are in the same market as broadband access services that are provided as a stand-alone service.

3.63 As stated above, we need to identify an appropriate starting point for our definition of retail services to be included in the broadband access market. At the retail level broadband services may be based on a variety of technologies and technical configurations. We consider the appropriate starting point for the definition of retail broadband service to be based upon asymmetric broadband internet access. Asymmetric broadband internet access is the predominant means by which broadband internet access services are sold at the retail level and as such this should be starting point for the definition of the product market at the retail level. This

is consistent with the approach we adopted in the 2008 wholesale broadband market review.²² Set out below are the different dimensions to these services.

Asymmetric service

3.64 The asymmetric nature of these services means that the maximum download capacity, i.e. end user receiving information, is higher than the upload capacity, i.e. end user sending information. Traditionally, the asymmetric nature of ADSL has been marketed as a basic component of the service for consumers to access the internet: using the higher speed direction for downloads from the internet with fewer requirements for sending information in the opposite direction. With increasing popularity of online gaming and user generated content, some providers offer services targeted at these consumers, e.g. providing higher upload speeds, prioritise gaming traffic, and no download limits. Both download and upload speeds have increased significantly in the last decade, but the asymmetric nature of broadband speeds remain.²³

Broadband service

3.65 Asymmetric broadband internet access has three distinguishing features which cannot be met in practice using narrowband internet access. These features distinguish broadband access as a higher quality service than narrowband internet access. These are:

- The service is always on, i.e. no dial up is required. This feature allows the user to maintain a permanent connection to the network, and allows real time delivery of services such as email and video;
- It is possible to use both voice and data services simultaneously, whether they are provided together, for example over the same access route, or separately, perhaps using more than one access route; and
- It has a faster download speed than a dial up connection.²⁴

3.66 As part of our 2008 market review we carried out a consumer survey which showed that these were consistent with the characteristics most cited as being important to both residential and business broadband customers. Given the increasing prominence of broadband access as a method for accessing online content, as well as the wealth of services now available, it is likely that end users continue to view these features as being important, particularly when compared to the narrowband alternative.

3.67 In addition, we believe that it is necessary for all three characteristics to be present simultaneously for an internet access to be defined as broadband. Dial up internet access using technologies such as PSTN and ISDN2 do not meet all of the above features. PSTN fails on all three characteristics, whereas ISDN2 fails on the basis that it is not always on and because it cannot achieve speeds greater than 64kbit/s when providing voice and data services simultaneously.

²² Ofcom, *Review of the wholesale broadband access market*, 21 May 2008.

<http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/>

²³ See Annex 8 for a range of packages currently offered by a selection of ISPs.

²⁴ Ofcom considers that internet access speeds that are currently attainable over a dial up connection are 56kbit/s over an analogue line; 64kbit/s over an ISDN2 digital channel and 128kbit/s over two bonded digital channels of an ISDN2 line.

3.68 Having identified the relevant starting point from which to conduct our retail market definition as being asymmetric broadband internet access we now assess whether this starting point should be broadened to include other products within the definition of the relevant economic market. In particular we assess whether the market should be broadened to include:

- Narrowband internet access products;
- Broadband internet access based on cable;
- Broadband internet access based on fibre and whether there is a distinct speed boundary;
- Symmetric broadband services;
- Mobile broadband services;
- Fixed wireless broadband internet access; and
- Broadband internet access based on satellite;

3.69 We also consider whether:

- a single market should be defined for broadband services for residential and business consumers or whether separate retail markets exist; and
- the market definition is impacted by the practice of bundling retail broadband internet services with other communications services.

Narrowband internet access

3.70 Developments in the internet access market over the last few years have meant that narrowband dial up internet access now only account for 4% of total internet access connections amongst UK households²⁵, and has declined significantly since 2005 even though it has continued to be available as a backup solution. It is likely this trend will continue over the period covered by this review.

3.71 There has been a growing divergence between the technical specifications of a dial up service and types of online content accessed by end users. Modern dial up modems typically have a maximum theoretical transfer speed of 56kbit/s. On the other hand, an increasing amount of internet activity is related to interactive voice and video communication, downloading and uploading content and streaming live or catch-up TV. The low transfer speed of dial up means it is unable to support these high-bandwidth and/or low latency services.

3.72 Together with the inability for dial up internet access to mimic the three characteristics of broadband services identified previously, it is unlikely to be a demand-side substitute for broadband internet access. Specifically,

- Dial up access, by definition, cannot provide an equivalent always-on service as it requires end users to establish the connection as and when required. In addition, there were features such as automatic connection cut-off and connection time allowances which would restrict unmetered service customers trying to emulate

²⁵ Figure 35, *Ofcom, Consumer Experience 2009*, 9 December 2009. <http://www.ofcom.org.uk/research/tce/ce09/>

an “always-on” service. Although some broadband packages have usage limits, such as a cap on the amount of data downloaded, the service is still always on.

- Narrowband access prevents the end user from using the telephone service when in use. To have simultaneous use, the end user would need to purchase two exchange line connections.
- Narrowband has very limited speed capability.

3.73 The evidence above suggests that it is likely that narrowband and broadband internet access markets will continue to be considered as separate economic product markets.

Symmetric broadband services

3.74 Symmetric services are provided using leased lines or SDSL, whereas asymmetric internet access is provided predominantly through ADSL and cable. These services are able to be configured in different ways including such that they can deliver ‘higher’ quality broadband services such as a bandwidth guarantee, lower latency and dedicated connectivity between business sites and of course equal maximum upload and download speeds.

3.75 Our 2008 Business Connectivity Market Review (BCMR)²⁶ concluded that the retail market for leased lines includes SDSL but not ADSL services. With SDSL services, Ofcom’s assessment was that its functionality was generally more akin to that of leased lines and the pricing analysis suggested that switching might be expected to occur between SDSL and leased lines in response to a SSNIP.

3.76 Compared to ADSL and cable, the technologies used to support leased lines generally have a higher cost. The combination of a higher cost technology and the functional differences (such as dedicated capacity) results in the cost, and thus price, of leased lines being appreciably higher than ADSL-based and cable-based broadband internet access. The available evidence suggested that where businesses demand a symmetric service, the asymmetrical service would not be considered as a suitable substitute for a sufficient proportion of end-users to conclude that these services be included in the same relevant market.

3.77 In addition, the cost of an SDSL-based technology is also likely to be higher than the cost of an alternative ADSL-based service because:

- SDSL modems are considerably more expensive than ADSL modems, and Ofcom can find no evidence that suggests that ADSL and SDSL modem prices are likely to converge within the period covered by this review; and
- ADSL is able to share the telephone line with a PSTN voice service, whilst SDSL requires its own dedicated line.

3.78 Given these differences in cost, which would be reflected in the retail price, a 10% rise in the price of asymmetric services is unlikely to result in a sufficient number of customers switching to symmetric services to make that price rise unprofitable.

²⁶ Ofcom, Business connectivity market review, February 2009.
<http://www.ofcom.org.uk/consult/condocs/bcmr08/>

- 3.79 Our consumer research conducted for this market review also shows the extent to which local access is currently used to provide symmetric broadband internet access via SDSL technology is currently around 4% (and zero for residential customers). The majority of those who are currently on broadband services using ADSL technology showed no interest in paying extra for either SDSL (53%) or leased lines (69%).
- 3.80 It could be expected that current internet access usage patterns will change over time, with more end-users demanding increasing symmetric internet access, e.g. putting user-generated content online and therefore needing a more “symmetric” type service compared to those currently available. Current developments in ADSL and cable technology have meant that higher download and upload speeds are being achieved. For example, in July 2009 Virgin Media announced that it was to trial upload speeds of up to 10Mbit/s. Compared to typical symmetric services offering 2Mbit/s in both directions it is conceivable that future ADSL or cable services may undermine the need for some low bandwidth symmetric services.
- 3.81 Evidence gathered for the BCMR also suggested that there had been some migration of leased line customers to services supplied using other technologies, particularly for those who used the lowest bandwidth retail leased line products where their needs could be met at lower cost using an asymmetric broadband access service based on ADSL technology.
- 3.82 We also considered the evidence on relative prices and trends in purchases of these services and concluded that users do not switch rapidly between the two even in response to significant price differentials. Furthermore, there continues to be sufficient retail demand for low bandwidth retail leased lines, despite widespread availability of other products at often significantly lower prices. Therefore business customers whose connectivity requirements are satisfied by symmetric broadband internet access are unlikely to view asymmetric broadband access as a suitable demand-side substitute.
- 3.83 On the supply-side, suppliers of SDSL and leased lines services could move into the ADSL market in response to a SSNIP by a hypothetical monopolist. However, they would be using their capacity inefficiently and exacerbate the cost disadvantage compared to ADSL providers, which would translate into higher retail prices. Such supply is therefore unlikely to be profitable.
- 3.84 The assessment of the demand-side and supply-side substitution possibilities suggest that symmetric broadband services, such as SDSL and leased lines, are more appropriately considered as separate markets to asymmetric broadband internet access.

Cable

- 3.85 In our 2008 WBA market review we examined detailed consumer research and marketing information to analyse potential constraints at the retail level from end-users switching from ADSL- to cable-based broadband internet access in response to a price rise by a hypothetical monopolist . We concluded that the retail asymmetric broadband internet access definition should include both loop- and cable-based access.
- 3.86 While marketing material from individual ISPs may differentiate between cable and ADSL services by referring to actual speeds that could be achieved by consumers,

particularly after Ofcom published its report on broadband speeds²⁷, ADSL- and cable-based broadband internet access services continue to have the same intended use, have similar characteristics, and continue to be priced at similar levels for comparable speeds. Moreover, our consumer survey evidence carried out for this review did not find sufficient evidence to support separate markets for high speed and low speed broadband services. In addition, ISPs providing ADSL-based broadband services and Virgin Media still market their products against one another. Additional advice and information available to consumers, such as price comparison websites do not draw distinction between cable-based and ADSL-based broadband insofar as the underlying service is concerned.

- 3.87 These factors strongly suggest that where cable-based broadband access is available consumers continue to consider cable-based and ADSL-based services to be substitutes.²⁸ This means we have not found it necessary to repeat the consumer research on switching behaviour between cable and ADSL broadband technologies that we carried out last time, as it is clear that cable- and ADSL-based broadband access are part of the same relevant market. We note that many other European NRAs where substantial cable networks have been deployed (e.g. Austria, Netherlands, and Portugal) have reached a similar conclusion.

Fibre and speed

- 3.88 In 2008 we concluded that the WBA definition did not have an upper speed limit, i.e. there is a “chain of substitution” through the available broadband internet access speeds. This means that for an asymmetric broadband internet access product of any given speed, there are lower or higher speed products (the next links in the chain) which are sufficiently close substitutes that products of all speeds are subject to a common pricing constraint.
- 3.89 Current broadband packages available in the market tend to be at specific clusters of speed, such as 2Mbit/s, 8Mbit/s, and 20Mbit/s. One of the key characteristics of broadband packages is the download (and to some extent upload) speeds, with higher speed services commanding higher prices. Therefore for a given speed service, a 5-10% SSNIP would decrease the price differential between the speed of the service in question and the next service up. If there are sufficient consumers who switch up, it would render the SSNIP unprofitable and suggest a single product market between the two speeds.
- 3.90 Our consumer survey shows that given a 10% increase in the price of the package consumers are currently paying, 14% of residential customers and 22% of business customers are willing to switch their broadband service to a different speed package. Given the critical loss factors it would suggest that the original price rise is not likely to be profitable.²⁹ This result would hold even in the absence of wholesale regulation because both BT’s and Virgin Media’s offerings would still cover a range of speed/price options.
- 3.91 In addition, end users are almost as likely to switch up to a higher quality service as they would switch down to a lower quality service (around 6-7%). This further

²⁷ The study showed that Virgin Media’s cable broadband services achieved an average of 8.1 to 8.7Mbit/s whereas ADSL providers achieved speeds between 3.2 and 5.1Mbit/s. Ofcom, *UK broadband speeds 2009*, 28 July 2009. <http://www.ofcom.org.uk/media/features/broadbandspeedsjy>

²⁸ According to Ofcom’s Communications Market Report 2009, 99.98% of UK households are connected to DSL-enabled exchanges and 46% are passed by Virgin Media broadband.

<http://www.ofcom.org.uk/research/cm/cmrnr09/charts/>

²⁹ See Annex 9 for further details of our consumer research and critical loss calculations.

suggests that consumers see the range of price/speed options as potential substitutes should the price of their package increase. As a result there is unlikely to be an identifiable break across the range of speeds available to warrant separate markets for low and high speed services within the current generation broadband access services available in the market.

- 3.92 On the supply side, those operators who are already in the market provide a selection of price/speed options to customers covering the range of speeds available, so that competition takes place across all the speed options available (although operators using current generation access could not provide super-fast services) to take advantage of economies of scale and scope.
- 3.93 The speed of broadband internet services deliverable to end-users is increasing due to the upgrading of access networks being undertaken by both BT and Virgin Media, with a 50Mbit/s service available to Virgin Media customers since December 2008³⁰ and BT having announced its 40Mbit/s Infinity packages in January 2010.³¹ Both companies advertise these high speed services as being based on fibre (primarily to the cabinet). In both cases, lower speed packages continue to be available for purchase in areas where these higher speed services are available. In addition, Eclipse Internet announced in February 2010 that its fibre-based products aimed at business users will be available from April 2010 onwards.³² Eclipse will use BT's fibre to the cabinet (FTTC) technology to give users a maximum speed of 40Mbit/s, with a guaranteed throughput of 12Mbit/s.
- 3.94 From an end user perspective, whether current generation services are provided over fibre or copper is likely to be an immaterial factor in their decision-making process. Looking at evidence available on the differentiation between ADSL and ADSL2+ packages, our broadband speed report found that it was not straightforward to attribute all the respondents to a specific broadband technology based on information on broadband providers. Similarly, there is little consumer information on underlying technologies and any differentiation in technology is translated as a differentiation in the highest speed package provided. As a result a 10% SSNIP on price of ADSL1-based broadband service is likely to encourage consumers to migrate to the ADSL2+-based service that gives the same speed service. This would be likely to result in the original SSNIP being unprofitable, and suggest that the market should be expanded to include ADSL2+-based services. This report, however, did find that for the 8Mbit/s package, ADSL2+ customers experienced, on average, higher actual speeds than those on ADSL1 technology. Based on this information consumers may now prefer ADSL2+-based products. Given the 10% SSNIP, this would increase the proportion of customers switching away from ADSL1-based services.
- 3.95 As with the ADSL2+ case, one can expect that once the fibre networks are rolled out the same technology would also be used to deliver the lower speed services. Similar arguments can be made such that, for a given speed, end users are likely to view the copper and fibre as substitutes and that the market definition should include both technologies.
- 3.96 The next step is to consider whether there is a speed boundary that would differentiate the higher speed service offered by next generation versus current generation access.

³⁰ <http://pressoffice.virginmedia.com/phoenix.zhtml?c=205406&p=irol-newsArticle&ID=1235740&highlight=>

³¹ <http://www.btplc.com/news/Articles/ShowArticle.cfm?ArticleID=F9F6F1AD-C4F6-442D-BF7E-FFCC7847631C>

³² <http://www.eclipse.net.uk/business/broadband-and-internet/fibre-broadband/>

- 3.97 Current service price differences between the super-fast fibre-based broadband access and the “next best” is in the region of £8 a month, with higher upload and download speeds and unlimited download limit. Information obtained from Virgin Media indicated that early adopters of their 50Mbit/s services tend to do more of the same thing as other customers, e.g. accessing more online games, streaming and downloading more online content. Moreover, the reduction of £7 per month in the price of the 50Mbit/s service in September 2009 suggests that its customers may be satisfied with the 20Mbit/s service and are price sensitive towards the potential benefits of the higher speed service. Similarly BT’s unlimited download Infinity service is priced at the same level as the Unlimited Option 3 service³³. It is therefore likely that a SSNIP would encourage a sufficient proportion of consumers to switch to the higher speed service to make the SSNIP unprofitable.
- 3.98 It may be that there is an increasing demand for bandwidth over the next few years. For example, more TV manufacturers are incorporating Ethernet sockets into their TV sets to enable direct online access to content such as iPlayer. It is plausible that viewing of HDTV gradually becomes the norm, and with multiple TV ownership consumers could be encouraged to switch to fibre-based broadband access as a means to access this content. Such developments are likely to increase demand for higher speed services, perhaps to the point where they become a separate market, but it is too soon to say with any certainty if, or when, this might happen
- 3.99 On the supply side, the potential for other ISPs to provide additional constraint is limited. Providers with fibre-based networks would offer a selection of price/speed options for customers to meet demand. These would include speeds that compete directly with similar services provided by other operators, whether it is delivered over copper or cable. On the other hand, it would only be economic for an operator with an existing copper network to install a fibre network for the purposes of providing high speed services.
- 3.100 As further investment is made in next generation access, in the absence of regulation there are two potential scenarios:
- Operators do not offer a wholesale fibre-based broadband access product downstream of the active WLA remedy. At the retail level, demand-side substitution possibilities would result in prices for fibre-based products that are constrained by current generation broadband products through a chain of substitution. Supply-side substitution effects would be limited unless ISPs deployed their own fibre networks. Given the scale and timing involved this is unlikely purely as a response to a 10% SSNIP.
 - Similar arguments apply if operators offered wholesale fibre- and copper-based broadband access. For service speeds that can be delivered by both fibre and copper, ISPs would be able to substitute between the wholesale products in response to a SSNIP. For higher service speeds, a chain of substitution between the highest current generation speed and the speed of next generation access would constrain prices.
- 3.101 Ofcom recognises that in the future as download speeds continue to increase and applications are developed which require these higher speeds to work effectively, a break in the chain of substitution between different speeds may materialise. It would then be more appropriate to define separate product markets based on speed.

³³ See Annex 8 for further details of retail broadband pricing information.

However, at this time, there is no evidence to suggest that such developments will occur within the period covered by this review.

- 3.102 The analysis above suggests that fibre-based broadband access should be included in the same retail market as copper- and cable-based broadband access.

Mobile

- 3.103 At the end of 2007 mobile broadband (which enables users to connect to the internet with their laptop, using a cellular network via a USB modem or 'dongle') emerged as a viable consumer proposition, as the roll-out of HSPA networks enabled mobile operators to offer internet access at headline speeds comparable to those available through basic fixed-line broadband services.
- 3.104 Since then, 3UK has introduced a mobile broadband router which, once connected, can act as a wireless network allowing up to 32 devices to simultaneously share the internet connection.
- 3.105 Mobile network operators now offer a wide range of mobile broadband packages with pre/post pay options, bundled/standalone tariffs, up to 15GB per month download limit and up to 7.2Mbit/s speed. According to Ofcom's 2009 Communications Market Report, by the end of Q1 2009 around 3 million households had a mobile broadband connection (approximately 12% of all households). However, actual speeds achieved by customers have been reported to be below 1Mbit/s.³⁴
- 3.106 Despite the high rate of take up, mobile broadband is largely seen as complementary to existing fixed broadband access, in the sense that most mobile customers also purchase fixed access, rather than as a substitute: 75% of those with a mobile broadband connection also have a fixed-line connection. This is likely to be a result of constraints associated with the speed and capacity of mobile broadband, making it less appropriate for in-home use where users may be more inclined to use data-hungry services such as the BBC's iPlayer.
- 3.107 There is evidence of some mobile broadband substitution amongst some groups of consumers, such as single person households, transient groups (e.g. students) and lower income households where they have opted for a full substitution of mobile voice access and calls as well as for internet access. Compared to the rest of Europe, at the end of 2008 the UK had one of the lowest proportions of mobile-only households at around 13%, compared to Austria with around 36%.³⁵
- 3.108 On the supply-side, future developments could mean that mobile broadband plays an increasingly prominent role in the household for voice and data access if more people substitute their fixed telecommunications for mobile. The European Commission (EC) recently proposed the use of the 790 – 862MHz sub-band from the 'digital dividend' for mobile and wireless broadband services after 2012. It is anticipated that mobile operators would be able to bid for the spectrum and allow them to deploy both enhanced forms of existing mobile broadband services and future Long Term Evolution (LTE / 4G) technology.

³⁴ <http://mobile.broadbandgenie.co.uk/broadband-news/mobile-broadband-still-crawling-at-below-1mb-despite-up-to-7mb-claims>

³⁵ *Analysys Mason, Mobile broadband for fixed players*, 29 October 2009.

http://www.andicom.org.co/memorias2009/jueves/2_00_Pierre_Fortier_cual%20es%20el%20futuro_de_la_banda_ancha_fija_movil.pdf

- 3.109 In October 2009, O2 announced trials of LTE in six different countries, including the UK, to evaluate equipment in the field and to determine its strategy for deploying its next generation network. This follows its demonstration in April 2009 that its trial LTE download speeds reached 140Mbit/s.
- 3.110 In December 2009, TeliaSonera launched what it claims to be the world's first commercial 4G mobile broadband service in Stockholm and Oslo³⁶. Until 1 July 2010, TeliaSonera is applying no data cap, but after that date it will put a 30GB-per-month cap in place. Services will cost 599 Swedish crowns (£52) per month from July, while a nominal fee of four crowns per month will be charged beforehand. In comparison, TeliaSonera's fixed broadband service starts at 229 crowns for the 200-250kbit/s service rising up to 359 crowns for 12-24Mbit/s service.
- 3.111 Whilst these developments look promising for mobile broadband access, if and when LTE does become commercially available, the specification of fixed broadband access may have also evolved.
- 3.112 In addition, it is unlikely that in the short term these operations would be able to deliver the capacity that mirrors the characteristics of fixed broadband services. There are three aspects to the supply-side substitution analysis:
- Ability for mobile network capacity to support larger take up of mobile broadband;
 - Ability for future mobile broadband access to compete with fixed broadband access; and
 - Ability for mobile operators to substitute into fixed broadband access provision.
- 3.113 Throughput experienced by existing mobile broadband subscribers varies significantly depending on their location and the amount of traffic in their vicinity. For example, YouGov conducts a quarterly survey of mobile broadband customers.³⁷ The July 2009 DongleTrack survey was the fifth in this series, and reported a considerable decline in customers' ratings for quality, value for money and satisfaction. As a result, renewal rates for such services suffered, with the key reasons for cancelling being reliability and connectivity.
- 3.114 In the short term, there are questions as to whether capacity of existing mobile networks would be able to support larger take up of mobile broadband to compete with existing fixed broadband demand. In the long term, mobile operators could address these capacity limitations by:
- upgrading existing access technology, such as from HSPA to HSPA+.
 - reducing cell size through deployment of additional base stations, or selective use of picocells and repeaters, or femtocells.
 - accessing additional spectrum through acquisition of spectrum in frequency bands suitable for mobile broadband (e.g., UHF spectrum, GSM 900 refarming, 2 GHz spectrum (UMTS)).
- 3.115 In the time needed for mobile operators to address the current capacity limitations, the fixed broadband market is also likely to have moved on. The download and

³⁶ <http://www.teliaSonera.com/press/pressreleases/item.page?prs.itemId=463244>

³⁷ <http://www.yougov.co.uk/services/services-synd-DongleTrack.asp?submenuheader=4>

upload speeds observed in the market will increase as a result of prospective developments in fixed broadband internet access using copper, cable and fibre. By then it is possible that consumers' service expectations and the bandwidth requirements of service applications together mean that mobile broadband service is considered to insufficient as a substitute for fixed. Moreover, most of the spectrum allocated to mobile broadband is unlikely to be available until 2013 at the earliest because it will have to be cleared of its current usages.

- 3.116 This means that within the timescale of the current review, we do not expect mobile broadband access to act as a sufficient constraint on fixed broadband pricing and therefore we exclude it from the definition of the relevant market.

Fixed wireless access

- 3.117 Fixed wireless access is the use of wireless technology enabling the delivery of last mile wireless access to connect subscribers to the telephone network. The use of Worldwide Interoperability for Microwave Access ("WiMAX") for broadband deployments has become increasingly common. It is a technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable and fully mobile internet access. WiMAX's advanced technology can cover distances of up to 50 kilometers under line of sight (LOS) conditions and typical cell radii of up to 5 miles under non line of sight (NLOS) conditions. It provides up to 10 Mbit/s broadband speed without the need for cables and therefore can be considered as an alternative to cable and DSL.
- 3.118 This technology has been available for several years, and whilst it has continued to be developed it has not yet become a mainstream alternative to cable or xDSL. Instead it is more generally considered to be an 'in-fill' technology that could be used to provide service to areas which cable and xDSL technologies cannot address due to technical and/or economic reasons, or as an alternative to SDSL aimed at businesses.
- 3.119 For example in February 2010 VFast³⁸ was awarded funding from Kent County Council to roll-out its WiMax-based fixed wireless solution to serve a small village. Similarly, commercial propositions of fixed wireless access are primarily located in urban areas and aimed at businesses, e.g. Freedom4³⁹ in Manchester, Warwick and Milton Keynes, Urban WiMax⁴⁰ in London and Metranet⁴¹ in Brighton & Hove.
- 3.120 The services available in urban areas are currently priced and positioned as a cheaper alternative to SDSL and therefore targeted primarily at SMEs. For example SDSL services offered by BT are on an exchange-by-exchange basis and at 10:1 contention ratios. There are three service speeds: 512kbit/s at £170 per month (excluding VAT), 1Mbit/s at £230 per month and 2Mbit/s at £345 per month. Other ISPs such as Plus.net offer the 2Mbit/s service for as low as £215 per month. Metranet's 2Mbit/s service is also offered at 10:1 contention ratio and is priced at £275 a month. In comparison, BT and Plus.net both offer business ADSL from £10 to £30 a month with other ISPs offering up to £80 a month for additional features such as installation, data back-up and domain names.
- 3.121 On the basis of this evidence, it does not appear that fixed wireless can currently be regarded as effective demand-side substitutes for asymmetric broadband access by

³⁸ <http://www.vfast.co.uk/barham/>.

³⁹ <http://www.freedom4.com/pg.asp?p=coverage>

⁴⁰ http://www.urbanwimax.co.uk/wireless_technology_explained

⁴¹ <http://www.metranet.co.uk/>

residential customers or even SMEs. Alternatively, if fixed wireless broadband access were to be included in the product market definition, it is unlikely to make any material difference to the SMP findings given the current size of the market.

- 3.122 On a forward-looking basis, the costs of providing fixed wireless technology are expected to continue to fall with knock-on implications on service pricing. However, we do not believe that such developments will materialise on a sufficient scale and with sufficient rapidity to affect retail market definition for the purposes of the current review. Nevertheless, over the longer term, fixed wireless may develop into a credible and effective alternative to asymmetric broadband internet access, and we will continue to monitor such developments.
- 3.123 Our preliminary conclusion is therefore that broadband using fixed wireless access is not part of the relevant market under consideration in this review.

Broadband access using satellite⁴²

- 3.124 There are a number of broadband satellite access providers in the UK and it is typically marketed as a solution where there is no ADSL or cable broadband service available. Coverage is available anywhere in the UK including the Channel Isles and the Scottish Islands. It is now possible to get small business systems that closely emulate ADSL, along with more dynamic low latency systems that support advanced broadband applications like VPN, VoIP and video conferencing.
- 3.125 Typical satellite broadband access is available at up to 3.6Mbit/s download and 384kbit/s upload speeds, with prices varying depending on data usage. For example, Broadband Wherever⁴³ offers 4 residential packages, the cheapest at £30 a month with 2.4GB a month data usage and the most expensive at £100 a month with a cap of 12GB. This compares with BT's cheapest package of £15.99 a month providing up to 20Mbit/s download speed and a 10GB monthly usage cap. For businesses satellite broadband prices start at £55 a month for 512kbit/s download and 128kbit/s upload speeds, up to £299 a month for 3Mbit/s download and 768kbit/s upload speeds. This compares against BT's Option 1 package for businesses at £12.50 excluding VAT for a up to 20Mbit/s service with a 10GB data cap.
- 3.126 Since satellite broadband requires users to have a satellite dish, the installation costs are typically higher than for fixed line broadband access. They would include a satellite antenna, the satellite indoor unit and the wiring in between. For most users this would either require planning permission or consent from the freeholder of the land. In addition, whereas cable and ADSL operators tend to provide users with free wireless routers, satellite broadband installation costs £599 for the Broadband Wherever residential packages and £999 for business packages.
- 3.127 Irrespective of the similarities in the service characteristics between fixed and satellite broadband services, because of these prices differentials, it is unlikely that a 10% increase in the price of fixed broadband would result in a sufficient number of customers switching to satellite broadband, particularly where ADSL and/or cable broadband is available.
- 3.128 For businesses, some may find that the quality of the two-way satellite service and robustness of the hardware make them a realistic option. It may also be used as a temporary solution, for example in building sites, construction sites, ad-hoc events,

⁴² See Annex 7 for a full description of alternative broadband technologies, including satellite.

⁴³ <http://www.broadbandwherever.net/products.htm>

temporary hire, disaster recovery and facilities for data transmission such as (Chip and PIN, or data feedback for unmanned sites), However, as in the residential case, it is unlikely that a 10% SSNIP is likely to induce sufficient substitution by businesses.

- 3.129 On the supply-side it is possible that with greater take up, the costs of satellite broadband installation and hardware could decrease to some extent. However, within the time frame of this review, Ofcom considers it appropriate to define the asymmetric broadband market excluding satellite broadband, but will continue to monitor the situation for future reviews.

Business versus residential

- 3.130 For this wholesale broadband access market review we have considered the evidence available on business and residential broadband access and believe that they are likely to be in the same relevant market at the retail level for the reasoning set out below.
- 3.131 We consider the residential versus business market question in two steps. First, whether there exists a chain of substitution between residential and 'standard' business broadband products, and secondly whether such a chain also exists between 'standard' business products and higher specification business products.

Residential and 'standard' business broadband products

- 3.132 At the retail level, many providers of asymmetric broadband internet access products offer separate residential and business services. Compared to residential broadband offerings, there is a wider range of service and technical characteristics available for business broadband services. For example, these may include lower tolerance of delays compared to residential customers, lower contention ratios, higher download limits, greater upstream capacity, tailored business support helpdesk and service level guarantees, web hosting, more email accounts, PC security, and static IP addresses⁴⁴. The elements included in business products will vary depending on the provider and the 'level' or 'quality' of the service.
- 3.133 Where business customers purchase more expensive and higher quality products, this does not in itself suggest that residential and business customers should be in separate markets. A basic home package (for example, 2Mbit/s download speed, 10GB a month limit) and a high-grade business package may not be viewed as close substitutes, at least not according to a SSNIP test. They may nonetheless be in the same relevant product market due to the intermediate offerings available in between the ends of the quality spectrum. Therefore, a rise in the price of the basic home package might affect the demand and supply of packages adjacent to it in service characteristics and price, leading to the conclusion that the two should be considered in the same product market. Looking at the next package up, the same conclusion might be reached. A succession of SSNIP tests could be applied to different groups of products until all the packages in the entire retail asymmetric broadband market are covered. Such a "chain of substitution (similar to the described earlier when considering broadband speeds) would mean that all packages were subject to a common pricing constraint.

⁴⁴ Home broadband users typically have dynamic IP addresses, where a new set of numbers are assigned to the user's computer at regular intervals to identify the user's computer. Businesses may find a fixed IP address beneficial in order to allow its employees to use remote access or allow the business to run their own website.

Demand-side substitution

- 3.134 Substitution on the demand side would suggest that a hypothetical monopolist in the supply of residential broadband internet access would not find it profitable to sustain prices above competitive levels because sufficient numbers of residential customers would switch to the competitively priced “lower-end” business products. Similarly, a hypothetical monopolist of the supply of business broadband would find its customers switching to the competitively priced higher-end residential products.
- 3.135 Whilst business services are generally priced higher than residential services, there is an increasing overlap between the price range of business and residential services. This is due to the features associated with business services being made available to residential customers either as part of a higher level service or as a pay-for option. In addition, residential users are also moving towards better quality broadband internet access product, i.e. high upload and download speeds, to access increasing online content (such as catch-up TV, user-generated content, real-time voice and video communications) using computers as well as game consoles and radios with built-in WiFi chipsets.
- 3.136 Based on our residential consumer survey, of the 67% of the people who knew how much their broadband package cost per month, the average was around £19 a month, with a cluster of consumers at the 8Mbit/s to 10Mbit/s service speeds. Around 9% of people surveyed stated that they spent over £30 a month on their broadband service.
- 3.137 At the lower end, basic broadband-only business packages start from as little as £10 a month excluding VAT. If a hypothetical monopolist increased its residential packages significantly, there are few barriers such as switching costs or contractual obligations which would introduce a break in the substitutability between residential and basic business broadband packages.
- 3.138 Given that both services are based on ADSL technology, the routers and software requirement remains the same regardless of whether a residential customer is viewing catch-up TV or a business using the internet to conduct its activities. In addition, our regulations relating to the Migration Authorisation Code (MAC) are aimed at ensuring that customers are able to switch their service providers smoothly and with minimal disruption. In response to a 10% increase in the price of broadband packages, 13% of residential customers stated that they would switch to an alternative quality broadband product.
- 3.139 Our consumer survey shows that the majority (46%) of SMEs spend less than £50 a month on broadband internet access. Of these 12% are on a residential ADSL package. Large businesses with more than 250 employees, on the other hand, tend to spend more with 52% reporting that they spent more than £200 a month on their fixed internet access services.
- 3.140 Over the last two years in the residential broadband market we have observed a move by providers to focus on increasingly higher bandwidth products, e.g. reduction of “up to 2Mbit/s” products and an increase in “up to 20Mbit/s” offers. At the top end Virgin Media has its 50Mbit/s service, whilst BT has a 40Mbit/s service.
- 3.141 With improvements to residential products some business customers such as small-office home-office (SOHO) and small and medium enterprises (SMEs) users may increasingly find that services targeted primarily at residential customers are sufficient for their needs at lower cost. Our survey found that in response to a SSNIP

12% of business customers stated that they would switch to a higher quality broadband product in response to a 10% price increase and 10% opting for a lower quality product. This suggests that a 10% SSNIP on the low end business package is not likely to be profitable, with some business customers switching down to the residential package.

- 3.142 Similarly residential customers are free to choose a business broadband for their home and opt for the additional business services such as engineer installation, assured bandwidth, static IP address, service level agreement etc. As with residential customers, the requirements for switching to business ADSL services are typically a BT phone line and a Migration Authorisation Code (MAC) from current ISP.
- 3.143 Since the market definition is required to be forward-looking, it is necessary to consider how the distinction between residential and business services will develop within the period covered by this review. As the asymmetric broadband internet access market develops further, it may be increasingly challenging for suppliers to be able to differentiate and segment the market profitably between business and residential customers. Furthermore, differences between the demand profiles of these types of customers may diminish.
- 3.144 The impact of switching to and from basic business ADSL broadband services may feed through to the higher specification business services. The switching behaviour of both business and residential customers in response to a SSNIP therefore shows that it is not clear that there is a clear break between residential broadband access products compared to the typical 'standard package' business offers available.

Supply-side substitution

- 3.145 In the absence of a regulated wholesale broadband access product, supply-side substitution between retail business and residential broadband internet access could occur where an LLU operator, or an operator with its own access networks, which provide services solely to residential customers begin to supply business customers in response to a SSNIP by a hypothetical monopolist in the provision of services to business consumers (and vice versa).
- 3.146 It may be the case that LLU operators currently focus primarily on the residential market and do not offer business services. However, product market definition does not necessarily hinge on what providers are currently doing, but rather on whether they provide a constraint (i.e. are they able to readily enter the market in response to a SSNIP). In fact, most of the Principal LLU Operators already offer some business services, and others have separate divisions dedicated to this activity. For example, TalkTalk offers communications solutions to businesses through its Opal brand, Cable & Wireless provide business services, Orange has a dedicated business division, and Sky offers communications solutions to businesses through its Easynet brand.
- 3.147 Our view at the last review was that wholesale inputs used to support residential and business users are basically the same because of the way in which these wholesale services are provided. That is, the ADSL line cards, the DSLAM that the ADSL line card is plugged into and the backhaul connection from the DSLAM can all be used by an ADSL service provider to support a range of residential and business asymmetric broadband services (including business services of the highest available quality). Therefore it is reasonable to assume that a wholesale provider who is only supplying (say) residential services could readily (i.e. within 12 months) start offering business services in response to a SSNIP, and vice versa.

- 3.148 At the wholesale level we believe that suppliers have control of the service characteristics and are able to configure services to suit different customers' needs. At the last review we requested information from the Principal LLU Operators⁴⁵ about the type of services they provide over their LLU-based network and whether they currently deploy different networks (e.g. DSLAM, backhaul connection) to guarantee distinctive quality of service levels.
- 3.149 We requested the same information from the Principal LLU Operators for this review. This continues to support the view that these suppliers tend to have a single platform which is capable of supporting a wide range of services to meet the requirements of residential and business customers (e.g. high contention to very low or no contention).
- 3.150 In moving from offering residential grade wholesale services to business grade services there may be a need to develop new processes and systems to support higher quality services. However, a provider who already has a network that can be configured to offer higher quality services should be able to obtain the necessary processes and systems within 12 months, either by developing them in-house, buying them in or contracting support out to a third party. In any case, most of the POs already have, at least some, of the necessary processes and systems.⁴⁶
- 3.151 Based on the evidence available, it looks as if a wholesale provider who is only supplying (say) residential services could readily (i.e. within 12 months) start offering business services in response to a SSNIP, and vice versa. Therefore a hypothetical monopolist would be prevented from imposing price increases above the competitive level by the threat of supply-side substitution. In practice most operators already appear to supply both.

'Higher quality' business broadband products

- 3.152 To assess whether there is particular quality level of business broadband products for which demand-side substitution does not take place we have first considered whether there is a particular service feature, for example, contention that is critical to business customers. Suppose a "high" quality broadband access product requires a contention ratio of 5:1 or less (compared with typical ratios of 50:1 for residential services and 20:1 for business products), and that this is a separate market from "standard" business broadband products. If a hypothetical monopolist of higher quality broadband were to impose a SSNIP, the first question would be whether this SSNIP is rendered unprofitable by some large business users switching to products with a slightly higher contention ratio (say 6:1) to avoid the SSNIP. If this is the case, then a contention ratio of 6:1 should also be included in the "high" quality business broadband access market. This argument can then be extended to include the range of contention ratios covered by existing business broadband products.
- 3.153 Furthermore, information provided by respondents from the previous WBA market review suggested that large business users require broadband access services with a range of contention ratios, perhaps with different sites being provided with different services. Survey evidence collected for the BCMR also suggested that business

⁴⁵ Defined below in our discussion of geographic market definition.

⁴⁶ We generally take supply-side substitution into account in market definition to the extent that it provides additional constraints above those identified on the demand side. This restricts it to operators who are not already materially present in the market. However, whether suppliers are treated as supply-side substitutes or as already having entered the market, there do not appear to be any significant barriers to entry or expansion (the ability of such operators to expand could be taken into account in the market power assessment).

users were prepared to compromise on contention to some extent, in response to a SSNIP in the price of their existing service.

- 3.154 On the basis of the above, it appears unlikely that a hypothetical monopolist of broadband access with a pre-specified service level would be able to impose a SSNIP. There would be sufficient demand-side substitution to render the price rise unprofitable. It should be noted that as the contention ratio threshold is increased the number of users will also increase, i.e. less demanding users will become part of the group of users who are exposed to the SSNIP. With this in mind, it is unlikely one would find a specific value of contention ratio (or other service feature) for which there is a break in the demand-side substitutability.
- 3.155 This suggests that there is likely to be a chain of substitution linking services with different contention ratios. The presence of such chains can have the effect of broadening markets such that a market can include products which might not be direct substitutes for other products in the market. For example, a 50:1 contention ratio product may not be seen by customers as a direct substitute for, say, a 5:1 contention ratio product. However, through a chain of substitution (with customers being willing to accept a substitute from a contention ratio product of 5:1 to 6:1 to 7:1 etc) these are found to be in the same relevant market.
- 3.156 Other service characteristics associated with business broadband products include minimum throughput and service care levels. Again, exact specifications required by businesses will vary and depend on individual circumstances. Further, publicly available marketing information targeted at large business users do not tend to suggest a particular level of contention ratio, minimum throughput or any other characteristics.
- 3.157 On the supply-side, we have considered the possibility of substitution by operators who are not already materially present in the market. The feasibility of suppliers of 'higher' contention ratio products to start offering a 'lower' contention ratio product in response to a SSNIP depends on the availability of the wholesale inputs required to support such services. As discussed earlier, such products already exist to allow operators to configure service features according to end user needs. Therefore, the market would be broadened on the supply-side even if the demand-side analysis were to conclude that the market was narrow. Supply-side substitution by operators not currently supplying higher grade broadband could then provide a sufficient additional constraint on a hypothetical monopolist of high grade broadband to render a SSNIP unprofitable.
- 3.158 We considered the case for separate retail markets for residential and business services (including higher grade business services), and noted that:
- Residential and 'standard' grade business packages are typically offered as a menu of prices and quality options with service and technical characteristics of higher grade business packages available as add-ons. There is therefore an increasing overlap between the two types of packages, and Ofcom's business survey suggests that some SMEs already purchase residential ADSL packages.
 - Differences between the demand profiles of these types of customers may diminish in future particularly due to increasing residential demand for bandwidth. It may become more challenging for suppliers to differentiate and segment the markets profitably.

- Through the chain of substitution it is not clear that there is an unambiguous break between residential broadband access products compared to business offers available.
- On the supply-side, wholesale inputs into residential and business services are the same, so it would be technically feasible for a residential-only provider to switch production to supply business customers, and vice versa. Additional processes and systems may be required, but they could be obtained within 12 months.

3.159 Accordingly, we consider that there is a single market including all grades of residential and broadband services.

Bundling of services

3.160 In the Explanatory Memorandum (“the EM”)⁴⁷ the Commission concluded that service elements constitute markets in their own right if a sufficient number of customers would ‘unpick’ the bundle if a SSNIP is introduced, i.e. if they are able to switch away any one element of the bundle.

3.161 The current telecommunications and media markets are characterised by triple- and quadruple-play suppliers. That is, broadband access can be found bundled with different combinations of fixed telephone, mobile phone contract and pay TV services.

3.162 There are in principle two questions related to bundling:

- Should all services in a bundle be treated as a single market? This would be the case if all consumers always bought the (same) services as a bundle from a single supplier.
- Are broadband access services included in a bundle with other services in a separate market from broadband access services purchased as a stand-alone service? This would be the case if consumers did not regard bundled and unbundled services as substitutes.

3.163 The answer to both these questions is negative.

3.164 The description in Annex 8 of the broadband package pricing currently available shows that such offerings have become common place but are by no means universal. Our consumer survey shows that 70 per cent of the respondents say that their current fixed broadband service is bought as part of a package, the most popular constituents being landline phone (88 per cent), followed by TV service (49 per cent) and mobile phone (9 per cent). Amongst these customers, 61 per cent chose a bundled package because the provider offered a good deal at the time, whilst 18 per cent preferred a single bill for all their services. Other popular reasons were: provider’s service quality (13 per cent) and believe it is better value for money (10 per cent).

3.165 Amongst those who had a standalone broadband package, the main reasons were: always used same ISP and happy with service (32 per cent), never thought about

⁴⁷ Explanatory Memorandum to the Commission Recommendation of 17 December 2007 on relevant Product and Service Markets,
http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/sec2007_1483_final.pdf

switching to bundled product (17 per cent); existing ISP offered best value (11 per cent); and not interested in switching / too much hassle (10 per cent).

- 3.166 Marketing information indicate that bundled services are based on discounts offered to customers if they take out the primary service. For example, Sky offers its customers free 2Mbit/s broadband service if it is taken out with Sky Talk, otherwise it is charged at £5 a month. This is consistent with ISPs' responses to our request for information carried out for this market review. By offering other services as a bundle, operators are hoping to reduce switching as well as increasing the average revenue per user (ARPU).
- 3.167 The consumer survey results indicate that consumers are seeking greater value through bundling of services, rather than having an intrinsic preference for bundled packages. In the face of a SSNIP, consumers have the option of switching away as long as they have satisfied the terms of the contract (e.g. minimum contract length). They are thus likely to respond to price differentials by switching between bundled and unbundled options. We therefore do not think there is sufficient evidence to consider that broadband services plus other service elements of the bundle all constitute a single market or that broadband services taken as part of a bundle are in a separate market from unbundled services.
- 3.168 For business customers, buying internet service bundles is less prevalent. Our consumer survey shows that six per cent of businesses purchase from a systems integrator as part of a package or a bundle of services. The majority of businesses (80 per cent) purchase their internet services directly from the provider (i.e. as a standalone service), whilst others (10 per cent) buy from resellers.

Retail geographic market definition

- 3.169 As this market review is concerned with reviewing competition at the wholesale level, the main area of interest in terms of geographic market definition is not at the retail level, but at the wholesale level. Whilst, for the sake of completeness, Ofcom has considered the scope of the relevant geographic market at the retail level in order to inform its assessment at the wholesale level, it is not necessary for Ofcom to conclude on its precise scope.
- 3.170 In general, when assessing the geographic scope of communications markets the application of demand-side and supply-side substitution through the hypothetical monopolist test will lead to very narrow geographic market definitions due to the limited ability for such substitution to take place. This is because end-users are unlikely to move home to benefit from lower broadband prices and supply-side substitution requires significant sunk costs.
- 3.171 Instead of assessing substitution through an analysis of demand- and supply-side substitution using the HMT, it may therefore be more instructive to consider the presence of any common pricing constraints to indicate where the boundary of the geographic scope of the market may be. This is because to the extent that competitive pressure in one geographic area leads to a competitive response through a price change, the effect of that competitive pressure will be felt in all areas in which that price change applies. Thus, if there are two areas (A and B) and there is an increase in competitive pressure in the retail market in area A but this leads to prices falling in both area A and area B, (i.e. there is a common price constraint across area A and area B) then the geographic scope of the market could be defined as area A plus area B.

- 3.172 The 2008 WBA Review concluded that in the retail broadband internet access market in the UK, there were two distinct areas where a common pricing constraint existed. One was the Hull area where KCOM is the incumbent operator and sets a uniform price across the Hull area. The other was the rest of the UK (i.e. the UK excluding the Hull area). As such, that market review defined two separate retail geographic markets, one for the Hull area and one for the UK (excluding the Hull area).
- 3.173 In the UK (excluding the Hull area), a number of LLU operators offer differential prices in different geographic areas reflecting their geographic footprint. For example:⁴⁸
- O2 (which bought Be Unlimited in 2006) offers three types of broadband packages differentiated by speed for customers within its LLU network. For other customers, it has an “Access” product which is £10 a month higher for a similar speed product within its own network.
 - Orange also has its own LLU network as a result of its purchase of Wanadoo. It also charges £10 a month extra for customers outside its LLU network.
 - TalkTalk offers an “Essentials” package to all customers. Within their LLU footprint, it is charged at £6.99 a month compared to £21.49 a month otherwise.
- 3.174 There is also evidence of geographic variations in prices based on the WBA geographic market definitions as a result of the 2008 WBA market review. For example: Plus.net defines its “low cost areas” as those exchanges in the Market 3 areas, and offers up to £6 a month reduction in monthly prices compared to those in Market 1 and Market 2 exchanges.
- 3.175 Conversely, BT still maintains a national price for all its packages, apart from its new Infinity products which depend on availability at specific exchanges.
- 3.176 It is worth noting that in all the examples given above the ‘selected areas’ are primarily those areas where the ISP is using LLU as an upstream input. Thus, to determine whether or not the service is available, the end-user is required to supply their postcode and telephone number. These are then used to identify which local exchange they are served from and whether the ISP in question is using LLU at their exchange. The offers are therefore made available on a local exchange footprint basis. It is thus the case that if there is an isolated exchange in the middle of a town or city where LLU is not being used, then any LLU specific services will not be available to consumers who are served from that exchange.
- 3.177 These developments may suggest that separate geographic markets are emerging at the retail level. However, it is not clear at this time whether there are indeed separate retail geographic markets in the UK (excluding the Hull area) on a forward-looking basis as a sizable majority of retail broadband customers are provided service by ISPs that are currently maintaining a national pricing policy⁴⁹. In any case, as noted above, for the purpose of this review it is not necessary for Ofcom to conclude on the precise scope of the retail geographic market. As such we propose there are two geographic markets: the UK excluding the Hull area and the Hull area, noting that there may be some localized variation within these two markets.

⁴⁸ See Annex 8 for a detailed list of retail prices offered by the main retail ISPs.

⁴⁹ Other ISPs which rely entirely on regulated broadband access products are also likely to maintain national retail prices.

Summary of proposals

3.178 Ofcom has concluded that the following two retail broadband markets are relevant downstream markets to wholesale broadband access:

- asymmetric 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
- asymmetric 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 Hull area.

Wholesale product market definitions

3.179 Having defined the relevant retail product market we now go on to define the relevant market at the wholesale level. At this point it is worth recalling that market definition is a means to an end and not an end in itself. The purpose is to identify the products and geographic area over which to assess whether ex ante remedies are required or not.

3.180 As noted above demand for wholesale broadband access is derived from demand for retail broadband services which require access (and it is therefore useful to define the scope of the relevant retail market before defining the scope of the wholesale market). We have also previously noted that we need to define the scope of the relevant market absent the imposition of SMP remedies at the level of the market being reviewed (consistent with the modified Greenfield approach). This means that we cannot assume the presence of regulated wholesale broadband access products from BT, such as DataStream and IPStream which are remedies imposed as a result of previous SMP findings. However, we can assume the presence of LLU and or SLU as these are remedies imposed as a result of a finding of SMP in an upstream market. As a result, it is likely that competition will only take place at the retail level between vertically integrated operators with either their own access network (BT and Virgin Media) or those that utilise available upstream remedies (LLU operators).

3.181 In conducting our market definition, consistent with the Commission's Guidance and case law, as in the case of the retail market definition, it is appropriate to begin by hypothesising a relatively narrow wholesale broadband access product market and then considering whether this should be broadened. We therefore begin our analysis by considering whether a distinct wholesale market exists for loop-based wholesale broadband access and then considering the candidate substitutes for this product and the extent to which these impose a sufficient constraint to be included within the scope of the relevant market.

Wholesale broadband access product

3.182 In the 2008 WBA market review we defined the wholesale broadband access product as:

Asymmetric broadband access and any backhaul as necessary to allow interconnection with other communications providers which 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.

3.183 We consider it appropriate to retain this definition for the 2010 WBA market review for the reasons explained below.

Wholesale broadband access substitutes

3.184 Having identified a narrow set of products from which to conduct the market definition of loop-based wholesale broadband access, we identify a number of candidate substitutes. We consider each of these in turn and propose that:

- Cable-based and LLU-based broadband access is in the same product market as loop-based broadband access;
- Fibre-based broadband access is included in the product market definition;
- Mobile is not included in the product market;
- Fixed wireless is not included in the product market; and
- Satellite is not included in the product market

3.185 In addition, we consider that it is appropriate to define a single market for wholesale broadband access for residential and business and that the presence of bundling at the retail level does not impact the definition of the wholesale market.

Cable and LLU

3.186 As noted above, in the UK there is a cable access network which provides alternative means of fixed telecommunications services. In addition, LLU operators utilise the LLU products required to be offered by BT to provide alternative services. We concluded in our retail market definition that cable services impose a sufficient constraint to be included within the same market. We now need to consider whether the constraints from cable and LLU at the wholesale broadband access level are sufficient for them to be considered to be included within the scope of the relevant wholesale market.

3.187 As noted elsewhere, it is unclear whether the wholesale broadband access market would exist in practice in the absence of regulatory obligations on a broadband access operator to provide wholesale access to its network. Therefore, when considering the constraints that alternative cable and LLU-based infrastructure exerts on loop-based broadband access we need to consider the strengths of indirect constraints that emanate from the retail level (on the presumption that absent regulation competition between loop-based, cable-based and LLU-based services would only take place at the retail level).

3.188 Using the HMT framework, an analysis of indirect constraints involves assessing the extent of demand-side and supply-side substitution between loop-based and alternative services. Under the assumptions of the HMT framework, an increase in the price of the wholesale broadband access would be passed through to the corresponding retail access prices faced by customers. The extent of the resulting reduction in derived demand for, or increase in supply of loop-based broadband access at the wholesale level would then determine whether the original wholesale

price increase would be unprofitable. This approach is consistent with the approach we took in our 2004 and 2008 wholesale broadband access reviews our 2009 narrowband wholesale exchange line market review.

3.189 In the previous wholesale broadband access market review in 2008 we found that the indirect constraints from cable-based services would be sufficient to render a price rise at the wholesale level unprofitable such that the market should be broadened to include cable services. Since the strength of retail substitution has not materially changed since 2008, we have determined that it is not necessary for us to yet again revisit this issue in detail and we propose to include cable-based and LLU-based services within the scope of the relevant market on the basis of indirect constraints, relying on the evidence available for previous reviews.

Fibre

3.190 Increasingly fibre is being deployed in the access network to support the provision of residential and business broadband access. For example, Virgin Media has already upgraded its network and BT's current NGA plan is to roll out fibre to the cabinet (FTTC) to 30 percent and fibre to the premise (FTTP) to 10 percent of the UK population.

3.191 It is difficult to assess, on a forward look using the HMT framework, whether fibre-based broadband access is in the same market as cable-based and DSL-based access services. This is because, as discussed in our retail market definition discussion it is difficult to assess how retail demand would respond to a retail price change stemming from a 5% to 10% increase in the wholesale price of loop-based and cable-based broadband access as it is not clear what a cost-based price of a fibre-based broadband connection would be and consumers do not yet have experience of consuming the services that could be delivered over the upgraded networks.

3.192 Even while the copper- and cable-based networks continue to be used to provide current generation broadband services, it is likely that their prices would constrain the price of fibre-based products through the chain of substitution discussed in our retail market definition section above. This can be seen by Virgin Media's offering where its 50Mbit/s service is only £8 a month more expensive than its 20Mbit/s service and where BT's 40Mbit/s Infinity service is priced at the same level as its 20Mbit/s service.

3.193 Going forwards, indirect constraints derived from the retail markets defined above are likely to suggest that there would be a single market for wholesale copper-, cable- and fibre-based broadband products:

- For a given speed, if all three are provided on a voluntary basis to third parties in the absence of wholesale regulation, then a price increase in one is likely to encourage significant substitution by ISPs since they are all used to provide similar services in downstream markets.
- If only the copper-based wholesale product was available, then its price would be constrained by the retail products. Based on our analysis, 65% to 75% of retail prices are made up of the price of the wholesale input. So, a 10% increase at the wholesale level would translate into a 6.5 to 7.5% increase in current generation retail broadband prices. An end user is likely to be indifferent between copper/cable and fibre broadband service for a given speed of access. Therefore a 6.5 to 7.5% increase in the price of current generation broadband product is

likely to lead to sufficient number of customers switching to the fibre-based product. Similarly, this would reduce the price differential between current generation products and higher speed products provided over next generation access networks. This would be likely to encourage more take up of higher speed services⁵⁰.

- If no wholesale products were made available, as the case is now, network operators compete at the retail level where the prices of fibre-based broadband is constrained by prices of current generation broadband access.

3.194 On the supply-side we do not consider that an increase in the wholesale charge of loop-based and cable-based broadband access would justify the high costs involved with fibre deployment which would be required for supply-side substitution to be an effective constraint.

3.195 Nonetheless, we consider that the services to be deployed using FTTC and FTTP technology would be similar to and extensions of existing broadband services, e.g. higher speed broadband service of up to 50Mbps download and 20Mbps upload speeds offered by Verizon's FiOS⁵¹ services in the U.S. Increasingly fibre-based broadband access is becoming synonymous with super fast speed broadband access. Apart from speed, the similarities of the other characteristics of the broadband access service delivered over cable/DSL and fibre networks suggest that a single market exists.

3.196 We consider that fibre operators will seek to encourage their existing (and new) customers to switch to the fibre-based access networks, to provide similar services to those they are currently receiving but across a broader range of speeds. On this basis we consider that fibre-based broadband access should be included within the scope of the relevant wholesale market.

Mobile

3.197 The preceding discussion of the retail broadband market suggested that over the duration of this market review, we proposed that the market definition of asymmetric broadband services did not include mobile broadband services.

3.198 At the wholesale level, BT would continue to offer its wholesale products as a result of continued regulation in the wholesale local access market. The question of whether at the wholesale level, mobile broadband services is part of the WBA market depends on way in which CPs would respond to a SSNIP in the WBA product. There are two possible scenarios:

- CPs substitute to a wholesale mobile broadband product and use it to offer a fixed broadband service if mobile operators voluntarily offered a wholesale mobile broadband product. Based on our retail analysis of the service characteristics and consumers' experience, it is unlikely that such a change would be profitable for the CP. This is because fixed broadband services tend to be able to offer both higher download speeds as well as higher download limits at a more consistent throughput.

⁵⁰ As shown in Annex 8, the pricing of BT's higher speed products delivered via NGA is the same as prices for its current generation products.

⁵¹ Verizon's broadband service operating over a fibre-optic network to deliver fibre to the home (FTTH).

- If CPs continue to buy the higher priced WBA product, they would have to pass on the increase to their retail prices. Based on our analysis, 65% to 75% of retail prices are made up of the price of the wholesale input. So, a 10% increase at the wholesale level would drive retail prices up by 6.5% to 7.5%. Based on our consumer survey, a 10% price increase would only induce 2% of respondents to switch to mobile broadband services. Even at this level, it is unlikely that loss in revenue from customers who switch would more than offset the increase in the revenue of those who stay.

3.199 On the supply-side in the short term, we believe that the scale of the investment required for mobile networks to respond to a SSNIP by a hypothetical monopolist of fixed broadband services would overshadow the potential increase in revenue from customers who substitute fixed for mobile broadband. Although capacity limitations could be addressed by future technological developments, within the timescale of the current review, mobile broadband access is unlikely to be able to act as a sufficient constraint on fixed broadband pricing at the wholesale level. We therefore propose that mobile broadband to be in a separate product market from fixed broadband products at the wholesale level.

Fixed wireless access

3.200 Deployment of broadband services using fixed wireless access so far has been limited to selected urban areas where they are targeted primarily at small and medium enterprises (SMEs) as a cheaper alternative to SDSL. They are also deployments in rural areas with the help of public funding. In the short term, given the costs involved it is unlikely that a SSNIP of 10% on the wholesale fixed broadband product will tip the balance to support a mass-market expansion by fixed wireless operators.

3.201 Similar to the case of wholesale mobile broadband, if CPs passed on the price increase to their retail services, it is unlikely that sufficient number of end users would switch to fixed wireless access. This is because of the existing price differentials are not eliminated by any significant degree even if retail prices increased by £2 per month (i.e. 10% of current average retail price of around £19 per month).

3.202 On the basis of this evidence, it does not appear to Ofcom that fixed wireless can currently be regarded as effective demand-side substitutes for asymmetric broadband access by residential customers or even SMEs. Ofcom's preliminary conclusion is therefore that broadband using fixed wireless access is not part of the relevant market under consideration in this review.

3.203 On a forward-looking basis, the costs of providing fixed wireless technology are expected to continue to fall with knock-on implications on service pricing. However, it does not appear to Ofcom that within the timescale of this review such developments will materialize on a sufficient scale and with sufficient rapidity to affect the wholesale market definition. As noted earlier, given the current size of the retail market, even if it was included it would not make any material difference to the SMP findings. Therefore Ofcom proposes that fixed wireless access is not included in the wholesale WBA market definition.

Broadband access using satellite

3.204 As with fixed wireless access, broadband access via satellite at the retail level is considered as a niche service and accounts for a small proportion of the total broadband access market. Our retail analysis suggested that a 10% increase in the

price of fixed broadband would result in sufficient customers switching to satellite broadband, particularly where ADSL and/or cable broadband is available. Therefore, even if the 10% increase in wholesale price increase is fully passed on to retail prices, this indirect constraint is unlikely to be sufficient enough to render the original SSNIP unprofitable.

- 3.205 On the supply-side, satellite broadband providers may be able to respond to a 10% SSNIP quickly. However, it still relies on large take up numbers to drive down the costs of satellite broadband installation and hardware, particularly if it is going to have an impact in the short term. Given the current scale of the market and the observed take up rates, Ofcom proposes that the market definition does not include satellite broadband but will continue to monitor the situation for future reviews.

Business versus residential

- 3.206 As set out above, we consider business and residential asymmetric broadband internet access services to be in the same relevant market at the retail level. The wholesale product is defined in non-technology specific terms, and we focus on the functionality of the service provided. Therefore the wholesale market includes services for both residential and business customers. This is because the boundaries of wholesale product markets (where the wholesale product accounts for a sufficient part of the value of the retail product) are at least as broad as the boundary of the corresponding retail market and can be broader if direct substitution at the wholesale level is possible. As such, even if there is evidence to support separate markets for residential and business asymmetric broadband internet access at the retail level, or separate high quality retail business broadband market, it would not follow automatically that this should be mirrored in the wholesale market definition.

- 3.207 In the case of broadband internet access, we consider that there is unlikely to be a distinction between business and residential services at the wholesale level compared with the retail level. This is largely due to supply-side considerations at the wholesale level.

- The wholesale input to support the provision of asymmetric broadband internet access services to business customers is, for all intents and purposes, the same as that used to support the provision of such services to residential customers;
- The underlying costs of providing a wholesale broadband access product for business end-use are the same as the costs for a product with the same features intended for residential end-use;
- At the wholesale level there is less differentiation between services targeted at business and residential customers. As a result, there is extremely limited scope for a provider of wholesale broadband access services to price discriminate between the provision of such services for business and residential end use. An ISP would be able to use the lower priced wholesale input to provide services to both residential and business customers; and
- While there may be a distinction in the “service wrap” around the business service, this additional service wrap is generally downstream to the wholesale broadband access level. This includes the situation where wholesale broadband access is used as part of a virtual private network (VPN).

- 3.208 On the basis of the above, we believe we should retain our position that there is a broad market definition that includes both business and residential markets. This is

consistent with the approach we adopted in the previous market reviews, as well as with the Commission's Recommendation which does not define separate markets for business and residential broadband markets.

Bundling

- 3.209 We concluded in our retail market definition discussion that the presence of retail bundles did not affect the definition of the retail market. Further, we consider that although there has been an increase in bundled products at the retail level, there is less opportunity for operators to bundle wholesale broadband access with other offerings at the wholesale level.
- 3.210 Where there is bundling of different services at the retail level, this would create complementarities at the wholesale level rather than substitution. For example, a wholesale broadband access service would not be a substitute for a wholesale television service where broadband internet access and television are provided as a bundle at the retail level. The retail provider would need access to both. It is also likely to be the case, over the period of this market review, that in order to provide such retail bundles, the wholesale elements would need to be obtained from different wholesale suppliers. However, this may change in the future and as such may be more relevant for future market reviews.

Wholesale geographic market definition

Introduction

- 3.211 Having defined the relevant wholesale product market, we now turn to define the geographic scope of the relevant economic markets for this review. In doing this we set out the geographic analysis that we have conducted. Our proposed approach follows closely that adopted in the 2008 review, and subsequently the Business Connectivity Market Review, and that set out in the ERG common position published in October 2008.⁵² While the essential elements of the approach remain unchanged, we have updated the analysis to reflect market developments, in particular the fact that exchange level service shares are more settled than they were at the time of the last review and as such are now more suitable for use in assessing competitive conditions.
- 3.212 In broad qualitative terms, competitive conditions in the majority of individual exchanges remain unchanged since the last review. Exchanges that cover most of the UK population in the UK have sufficient competition from LLU or cable operators that they can be labelled competitive, whilst another still sizable proportion of exchanges still have only one operator (BT) present.

Previous market review

General approach

- 3.213 As we have discussed above in relation to the product market definition, market definition can be informed using a hypothetical monopolist test, which asks what products (or geographic areas) a hypothetical monopolist would need to dominate in order to be able to profitably raise prices by 5% to 10% above the competitive level.

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http://erg.ec.europa.eu/doc/publications/erg_08_20b_final_cp_geog_aspects_cons_report_081016.pdf

The test works by identifying whether customers would substitute to other products (or buy from other geographic areas) in the face of such a price rise, and also which firms not currently supplying the product would begin to do so as a result of the price increase.

3.214 In the case of geographic market definition this approach can lead to excessively narrow market definitions for fixed communications services since there is little or no scope for a household or business to purchase from other regions in response to a price rise. Similarly, supply-side switching is limited by the need to invest in new infrastructure.

3.215 One alternate approach is to identify common pricing constraints; if firms are judged not to, or choose not to, differentiate their pricing between two regions then these are taken to be part of a single market.⁵³ In the past, this has been the standard basis for arguing that communications markets are national in scope.

3.216 Another approach to geographic market definition, which we employed in our 2008 review (and our 2008 BCMR), is to identify those geographic areas where competitive conditions are sufficiently homogeneous to be included in the same geographic market. This approach is consistent with the Commission's framework where, at paragraph 56 of its SMP Guidelines it states:

“According to established case-law, the relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which area the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different...”.

3.217 Therefore, areas are judged to be part of the same market if the intensity of competition, defined for example by the number of firms, prices and other relevant indicators of competitiveness, is sufficiently similar.

3.218 Building on our approach in the 2008 review and the BCMR, as well as the Austrian regulator's WBA notification, the ERG developed a Common Position (the ERG geographic analysis CP) which it published in October 2008.⁵⁴ This identifies three main steps in conducting a geographically differentiated approach to market analysis, once it has been established that a national market cannot be defined on the basis of common pricing constraints:

- first, the basic geographic unit needs to be selected, for example post codes or exchange areas;
- second, the homogeneity of competition needs to be judged according to factors such as barriers to entry, the number of significant suppliers in the market, distribution of market shares and price-cost margins and as such necessarily conflates the market definition and SMP analysis to some extent; and

⁵³ This is arguably just a facet of the hypothetical monopolist test, since a common pricing constraint would limit the profitability of a price rise when a monopolist is dominant in only one of the regions.

⁵⁴

http://erg.ec.europa.eu/doc/publications/erg_08_20b_final_cp_geog_aspects_cons_report_081016.pdf

- third, areas with similar competitive characteristics need to be aggregated in order to define the geographic areas over which to conduct the SMP analysis.

3.219 Following these steps, we defined wholesale geographic markets on the following basis.

Geographic Unit

3.220 In our 2008 review we considered a number of alternative options for geographic unit:

- premises;
- postal sector;
- BT local exchanges;
- groups of exchanges;
- metropolitan districts; or
- nations and regions.

3.221 Recognising the trade-off between granularity and practicality, we concluded that using BT local exchanges as the geographic unit was the optimum approach, noting that this was the basis on which LLU operators entered a market and on which local discounts at the wholesale level were being offered by BT.

Criteria for assessing competition

3.222 We identified a number of structural factors that we considered to be relevant to the assessment of competitive conditions. These were:

- Current availability of cable-based services;
- Current availability of LLU-based services;
- Planned availability of LLU-based services;
- LLU-based likely entry according to operators' business plans and our own modelling;
- Presence of a common pricing constraint; and
- Presence of alternative network infrastructure.

3.223 In identifying these we recognised that there was significant overlap between some of the factors and that they could all be relevant to a greater or lesser degree. After careful consideration of these factors we concluded that there could be a number of different approaches that could be adopted to inform our assessment of competitive conditions and that it was important that our analytical framework captured a broad range of these.

3.224 The criteria we adopted for assessing competition was based on the numbers of Principal Operators (PO) present, or forecast to be present, in a BT local exchange.

A PO was defined as BT, an LLU operator with a nationwide coverage of more than 10% (this amounted to six LLU operators prior to TalkTalk's acquisition of Tiscali) or Virgin Media where cable coverage in an exchange area was more than 65% of end user premises. This approach captured many of the relevant factors listed above.

- 3.225 This approach also captured the fact that the number of competing operators is a significant determinant of competition in a market. Differences in economies of scale or other barriers to entry are likely to be reflected in the number of rival operators. As such differences in competitive conditions derived from economies of scale and other barriers to entry are captured by our criteria.
- 3.226 Another reason for adopting this approach at the time was that LLU investment was in the process of being rolled-out and the market had not settled to reveal its full impact. In this environment it was relatively easy to take a forward look on the numbers of operators present using their investment plans. This criterion also allowed us to capture the fact that many of the LLU operators offered lower retail prices in those exchange areas where they had rolled out their own network, as well as the fact that BT had decided to offer discounted wholesale prices in many exchanges where there had been entry by LLU operators. We considered it was not appropriate at that time to use local exchange service shares as an indicator of competitive conditions as it was our view that it was too early to determine the longer term impact of LLU on these.
- 3.227 In aggregating the local exchanges into markets for the purposes of assessing SMP, we recognised that competitive conditions in exchanges where BT was the only PO present could be regarded as homogeneous, since all featured the absence of any effective rivals. Similarly, in local exchanges where the number of POs present exceeded a particular threshold we considered that the market could be regarded as competitive and these exchanges could be aggregated. We considered that the appropriate threshold for the purposes of the market review was either four firms currently present at the time of the review or four forecasted to be present if the exchange was larger than 10,000 premises. The assumption about the size of the local exchange reflected our concern that operators' investment plans might not materialise for smaller exchanges, where economies of scale and density are more of a barrier.
- 3.228 We also defined a further market between these two, which represented cases where some competition existed but with too few firms for the nature of the competition in these exchange areas to be regarded as sufficiently similar to the more competitive market. While we ultimately determined that BT had SMP in both Market 1 and Market 2, in terms of aggregating according to competitive homogeneity, these were deemed qualitatively different.
- 3.229 As a result of our aggregation of exchange areas along these lines we defined three separate markets in the UK excluding Hull. We also defined a separate geographic market in the Hull area on the basis of the local access network footprint of KCOM. The respective markets can be summarised thus:
- The Hull area (0.7% of UK premises, 14 exchanges);
 - Market 1: exchanges where only BT is present (16.4% of UK premises, 3,720 exchanges);

- Market 2: exchanges with 2 or 3 POs present, or where 4 are forecast but the exchange serves fewer than 10,000 homes (13.7% of UK premises, 670 exchanges); and
- Market 3: exchanges with 4 or more POs present or with 4 or more forecast in an exchange larger than 10,000 homes (69.2% of UK premises, 1,197 exchanges).

Current market review

Demand and supply for wholesale broadband access in the UK

- 3.230 As noted above in the discussion of the wholesale product market definition, wholesale broadband access products are used as an input into the provision of retail asymmetric internet access services by ISPs. These wholesale elements can either be self-provided by the retailer or provided by another party in a merchant market.
- 3.231 As we discussed in the 2008 review, where an ISP has no infrastructure of its own capable of supporting these wholesale broadband products and where it seeks to offer a nation-wide service, such an ISP will have a national demand for wholesale products from a third-party. However, where an ISP does have its own infrastructure which is capable of providing the necessary wholesale broadband access inputs, where this infrastructure only covers part of the country and where it seeks to offer a nation-wide service, such an ISP will have sub-national demand for wholesale products from a third-party. Into this latter group fall Virgin Media and the LLU operators, which currently account for about 56% of retail broadband internet connections in the UK. In addition, BT self-supplies its wholesale broadband access products on a national basis.
- 3.232 This indicates that in the UK the presence of cable and LLU operators, each of which has its own infrastructure on a sub-national basis, means that there is significant sub-national demand for wholesale broadband access products.
- 3.233 On the supply-side, whilst at the current time BT is the largest provider of wholesale broadband services on the merchant market, other operators have entered this market. Indeed, most of the large LLU operators have informed us that they are either already selling wholesale services to third parties (albeit in low volumes) or that they are planning to do so in the near future. If ISPs or managed service providers have a particularly powerful brand identity, niche consumer proposition or add value in other ways (such as more efficient retail operations), it is possible that LLU operators would prefer to retail services via such providers in whole or in part, in the same way that the mobile retail market has developed without regulatory intervention.
- 3.234 As in the 2008 review, we have identified a separate market in the Hull area, as the competitive conditions differ from the rest of the UK and KCOM is a monopolist at the retail level.
- 3.235 In the rest of the UK however, as was the case at the time of the 2008 review, it continues to be inappropriate to define a single market in the rest of the UK on the basis of a common pricing constraint. Prior to the 2008 review BT voluntarily stopped offering a national uniform wholesale broadband access tariff instead offering a geographically targeted discount in its 'dense cell' areas. Since the 2008 review where we found BT not to have SMP in Market 3, which represents nearly 70% of delivery points in the UK, BT has continued to offer wholesale broadband access products in this market, but at bespoke prices. This provides further support to a

conclusion that a national market based on a common pricing constraint is not appropriate.

- 3.236 We therefore, continue to consider that we should define the geographic scope of the wholesale broadband access market on the basis of homogeneity of competitive conditions. In doing this we have revisited the analytical framework we developed for the previous review, taking account of the ERG geographic analysis common position, to determine what changes, if any might be warranted to our approach.

Geographic Unit

- 3.237 We believe BT exchanges continue to be the most suitable unit on which to base geographic analysis. Our reasons for this in the last review were:

- BT exchange footprints align exactly with the upstream regulatory remedy;
- LLU is a significant driver of changes in competitive conditions; and
- BT geographically de-averaged its wholesale pricing on an exchange basis.

- 3.238 Our view is that the first two of these remain valid for current generation deployments. Further, local exchanges will continue to be the handover point of the upstream remedy where BT deploys NGA. In addition, the level of competition will continue to be influenced to a very significant extent by the number of operators with access to the upstream remedy at each exchange in both the current and next generation environments.

- 3.239 In relation to the third point, as noted above under the discussion of the common pricing constraint, BT now offers bespoke wholesale prices in the Market 3 areas in which we found BT not to have SMP. While the precise pricing practices of BT at the wholesale level will likely be impacted by the regulatory obligations that we imposed through the 2008 review, to the extent that BT continues to offer wholesale broadband access services to third parties we consider that the prices will reflect local competitive conditions which are largely determined by the number of operators present in an exchange area, and so depend on the extent of the cable network footprint and the extent of LLU deployment. Therefore we consider that the third point above continues to be valid.

- 3.240 As such, we do not consider there is evidence to suggest changing the geographic unit would be beneficial in our assessment of geographic market boundaries.

Criteria for assessing competitive conditions

- 3.241 It is necessary to analyse the conditions of competition in each local exchange so that areas which are sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different can be grouped together for the purpose of the geographic market assessment. There are a number of different factors that will be relevant in assessing geographic variations in competitive conditions in the provision of wholesale broadband access services. The indicators of competition we consider here are:

- Number of POs per exchange;
- Current and future LLU deployment; and

- Market share of each PO.

- 3.242 As with the previous market review, we use the numbers of POs present in a BT local exchange as an indicator of competitive conditions across exchanges. The number of POs present will be a significant determinant of competition in a market. Differences in competitive conditions derived from economies of scale and other barriers to entry are likely to be reflected in the number of rival operators and are therefore captured by our criteria. Given that the geographic market definition is required to be forward looking, the forecast number of operators within each exchange footprint – using, for example LLU operators' rollout plans – will also be a relevant factor when seeking to identify areas with sufficiently homogeneous competitive conditions.
- 3.243 We also take into account data on coverage and market shares when considering geographic variations in competitive conditions. However, considering local exchange service shares to inform the precise market boundaries would not be a useful exercise. It is inevitable that, within a large number of relatively small areas, two exchanges of similar size, with the same competitors present and hence with similar competitive conditions will have different shares for each of these competitors. To use local exchange service shares to define the precise geographic boundary of the market could ultimately result in differing regulation on a per-exchange basis, even where competitive conditions, based on exchange size and availability of competing offers from different POs, are identical (or very similar).
- 3.244 Despite this range in local exchange service shares across exchanges with the same number of POs, there is a broad correlation between the number of POs present in an exchange and BT's service shares with those exchanges that appear competitive on a PO measure being generally more competitive according to local service share data. Consequently, we consider that the most practical way of defining geographic boundaries continues to be according to the number of POs. Nevertheless, it is informative to consider average local exchange service shares and coverage across exchanges when determining how best to aggregate exchanges into a single market with homogeneous competitive conditions. Annex 10 and 11 set out our detailed analysis of local service shares and the number of POs in local exchanges.

Operators that are expected to provide a material competitive constraint in the market

- 3.245 With regard to the identification of operators, we consider it likely that some operators generate more competitive pressure within an exchange area than others as different operators have different commercial practices and different assets.
- 3.246 This was taken into account in the 2008 review in the definition of a PO. The POs were BT, Virgin Media, and any LLU operator with a LLU footprint that covered at least 10% of the country (this amounted to six operators prior to TalkTalk's acquisition of Tiscali).

LLU operator coverage

- 3.247 Ofcom's approach is to include only Principal LLU Operators for the purpose of the geographic market assessment. These are operators that will provide a material competitive constraint in the market.
- 3.248 In the last review we said that there were 20 (non-BT) operators providing services based on LLU. Some of these had business plans based on serving the mass market for broadband services, whilst others focused on narrowly-defined customer groups.

Our view was that only the former of these two types of operator would provide a sufficient constraint on BT's behaviour. In this review, we propose to use the same approach by only including LLU operators that will provide a material constraint.

- 3.249 Based on data provided to Ofcom at the time, we said that the planned coverage of each operator provided a proxy of the break between these two types of operators. Mass market operators had planned coverage of over 40%, whilst operators with a narrow focus tended to have planned coverage below 10%. We noted that setting the criterion at any level between 5% and 40% would have the same result and so we chose a break point of 10%.
- 3.250 Based on our analysis for this review, if we use a threshold of 10% again, Udata Infrastructure would become a PO, having a coverage of 10.6%. Other than Udata Infrastructure, all the operators previously defined as POs have at least 50% coverage⁵⁵ and the operators not defined as POs continue to have coverage of less than 10%. Whilst including Udata Infrastructure as a PO would be consistent with the basic threshold test based on planned coverage we previously applied, it would not be consistent with the underlying approach in the last review, which we consider to be the correct approach to take in this review as well. The threshold of 10% was selected merely as a proxy for the breakpoint between those operators that could provide a national constraint and those that would not. Udata Infrastructure focuses on supplying public sector organisations only. We do not believe Udata Infrastructure will provide a material constraint nationally because even in the exchanges where it has deployed LLU, the vast majority of customers cannot receive service from Udata Infrastructure. In contrast, all the POs defined in the last review provide products that could serve a significant portion of the market (either residential customers, business customers, or both).
- 3.251 It may be appropriate to vary the threshold (say, to 15% coverage) to take account of Udata Infrastructure because the threshold aims to separate the niche market suppliers and the mass market suppliers. Alternatively, we could introduce additional criteria such as market share because the result of Udata Infrastructure's approach is that it has a very low share (0.03%).
- 3.252 When we review the market again we will consider the criteria on the merits of evidence gathered at the time and so any threshold set this time will not necessarily be relevant. In this review, our view is that the POs defined last time remain POs and, even though Udata Infrastructure's coverage is marginally above the threshold set last time, it should not be a PO because its business plan means it is unlikely to provide a sufficiently material constraint.
- 3.253 Therefore, our view is that we do not need to set an explicit threshold to distinguish the principal LLU operators in this review. We consider that, for the purposes of this review, the principal LLU operators are: TalkTalk, Sky, Orange, O2 and Cable & Wireless Access.

Inclusion of Virgin Media

- 3.254 Virgin Media has its own access network which does not match BT's local exchange footprints. It is therefore possible that Virgin Media is able to supply only a proportion of the customers within a given BT local exchange footprint. Therefore, it is necessary to develop a proxy for Virgin Media coverage by exchange.

⁵⁵ In the last review, Tiscali was included as a separate PO. Since then, Tiscali was purchased by TalkTalk and as such is no longer considered a separate operator.

- 3.255 As we set out in the 2008 market review, in order for Virgin Media to provide a competitive constraint in a given exchange footprint, it must be able to supply a significant part of that area. At that time we considered that this would need to be above 50% though not necessarily as high as 90%. In the end in the 2008 market review we considered cable as being present within an exchange footprint if it is able to supply at least 65% of the homes and business within the footprint.
- 3.256 Since the previous review, the cable footprint has substantially remained the same. Given that there is no evidence to suggest this threshold was not appropriate, we propose to continue identifying the cable operator as a Principal Operator where it is able to supply at least 65% of the homes and businesses within an exchange.
- 3.257 The sensitivity analysis in Annex 10 shows that for variation of the cable overlap between 55% and 85% (i.e. considering VM as PO in an exchange area when it covers respectively 55% and 85% of all the delivery points within an exchange coverage area) the number of delivery points moving across markets is at most 2.3% of all the delivery points in the UK (including the Hull area).
- 3.258 If BT and Virgin are added to the five Principal LLU operators that we have identified, then there is a total of seven POs upon which the assessment of geographic variations in competitive conditions can be based.

Exchange size

- 3.259 In the previous market review, Ofcom concluded that an exchange size of at least 10,000 end users is a size from which sustainable entry was more easily achievable. This was used as a threshold for those exchanges where the number of POs present was forecast to increase to four or more, but at the time was three or less. Of these exchanges, those larger than 10,000 lines were moved into Market 3, whilst those with less than 10,000 lines remained in Market 2.
- 3.260 Deployment of LLU has matured since the last review. Forecasts of future rollout are much more limited and short term. The chance of a PO changing its forecasted plans because other POs deploy into those exchanges before it is much reduced.
- 3.261 Therefore, we no longer consider it necessary to differentiate based on exchange size.

Grouping exchanges by the number of operators within each exchange footprint

- 3.262 The number of POs at an exchange varies widely, reflecting a wide range of competitive conditions, with those geographic areas served solely by BT being significantly less competitive than those geographic areas where all the POs are present. In setting the boundary of geographic markets in terms of the homogeneity of competitive conditions a decision will need to be taken as to whether these geographic areas can be consolidated to form a market in which it is appropriate to conduct a market assessment in order to identify if any operator, or group of operators has SMP.
- 3.263 We continue to consider that it is appropriate to group together those exchanges with one PO into a separate geographic market. As set out in the 2008 market review, the competitive conditions in exchanges where BT is the only PO present are likely to be sufficiently homogeneous and appreciably different from other neighbouring areas to identify these areas as a separate market. We also continue to consider that the competitive conditions between the two extremes of the remaining exchanges (those

with 2 POs and those with 7 POs) are unlikely to be sufficiently similar to define these areas to be in the same geographic market, suggesting at least one further geographic market boundary between these areas needs to be identified. However, it is difficult to identify a definitive and unambiguous break in the competitive conditions.

- 3.264 In the previous market review we argued that this further break falls between areas where there are three POs and those where there are four POs. It was our view that an area with two or three POs (one of which is BT) would have an appreciably lower level of competitiveness than one with four POs. We argued that, once the number of competitors has reached four, the addition of more competitors would be expected to have less of an appreciable impact on the competitive conditions. This is because, given the cost structures in the wholesale broadband access market, particularly those faced by LLU operators who have a high proportion of fixed costs, entrants may be expected to compete strongly to expand their subscriber base. Even at low prices, every extra sale makes a valuable contribution to fixed costs and profits. We judged that four POs, which in practice means at least two LLU operators, was the likely break point at which the nature of competition changed.
- 3.265 The last market review was undertaken before the full effects of large scale LLU deployment had emerged. In considering whether the approach we take in this market review to defining geographic markets should change from the approach we took in the 2008 review, we can take into account additional data, such as actual LLU deployments and the effects of these on market share. Whilst we also consider potential future LLU deployments, there is much less scope for the level of investment seen in the past few years.
- 3.266 A key question for the current market review is whether it continues to be reasonable to regard areas with two and three POs as having sufficiently similar competitive conditions to be grouped as a single geographic market and whether those competitive conditions are appreciably different to those exchanges where four or more POs are present. We address this by considering the potential for future LLU deployment, market share information and the level of coverage of each PO.

Potential for future LLU deployment

- 3.267 As different POs will use different base assumptions to inform them of whether to unbundle a particular exchange (for example, for average bandwidth per user and expected market share) and will have different margin requirements depending on other products in the retail bundle they are providing, they will have slightly different views on the maximum number of viable exchanges. BT has argued that deployment in up to 2000 exchanges (which would cover all of Market 2 as well as Market 3) may be economically viable for larger POs (using SMPF). Whilst entry in exchanges beyond the current rollout is possible, and POs will continue to assess the business case for further deployment on an ongoing basis, we believe that formal forecasts that provide some certainty in actual investment by POs in specific exchanges needs to be the key parameter in deciding the level of competition that may occur in an exchange.
- 3.268 We have looked at current and future rollout plans to gauge the potential for further deployment. Annex 10 sets out our geographic analysis based on data provided by each operator in response to formal information requests. This information shows that some LLU operators have no further rollout plans, whilst others have plans for rollout up to the end of June 2010. Beyond June 2010, operators had no further firm rollout plans, although some indicated they would continue assessing conditions in

exchanges and this could lead to further deployment in the future. From September 2009 to June 2010, there is a forecasted increase in the number of exchanges with a Principal LLU operator (that is a PO other than BT or Virgin Media) present from 1796 to 1931 exchanges (an increase of 7.5%). This equates to an increase in 2% of distribution points, because this additional rollout is expanding into smaller exchanges⁵⁶.

3.269 The result of this additional rollout is that one more PO has a coverage of over 60% of premises (bringing the number with coverage over 60% to five, including BT). Between September 2009 and June 2010 there is no increase in the number of POs with a coverage greater than 70% of premises – there remain two such POs, including BT. This is mainly because the increase in exchanges with an LLU operator present is due to expansion by into exchanges where currently only BT is present, therefore increasing the number of exchanges with two POs (and reducing the number with one PO)⁵⁷.

3.270 Therefore, the plans that have been presented to us (both those with definitive rollout forecasts and more speculative views on possible future rollout) indicate there may be further rollout but this is likely to be limited.

3.271 In Annex 12 we summarise our view of the economic drivers of LLU. Each PO will have different cost bases and will make different assumptions in assessing whether deployment in an exchange is economic or not. Our modelling is included to illustrate that, in our view, the economics of efficient LLU investment by multiple POs in an exchange become more questionable as the exchange size reduces. As discussed in Annex 12, the costs faced by a PO are likely to be higher, and more sensitive to market share in the remaining exchanges.

3.272 The factors a PO will take into account are likely to include:

- Its pricing model – POs currently set the same uniform price for services within their own LLU footprint. This approach may impact the ability to make a return in smaller exchanges where costs per user are likely to be higher.
- Backhaul costs – in smaller exchanges, a PO is likely to use lower bandwidth backhaul. Whilst Openreach has reduced the costs of backhaul, the reductions were greater for higher bandwidth connection than for the lower bandwidth connections more likely to be used to smaller exchanges.
- Equipment costs – there is less likely to be scope to benefit from economies of scale in the purchase of LLU equipment for deployment in smaller exchanges.
- Market share – as shown in Annex 12, expected market share is a significant factor in determining the average costs per user, particularly in the smaller exchanges such as those that currently have two or three POs present. POs with higher share, such as BT, will gain a greater advantage from this higher market share in smaller exchanges than in the larger ones.
- Business model – POs that use LLU to provide broadband only will have a different model to those that use LLU to provide both voice and broadband. Using

⁵⁶ see Table A10.8 in Annex 10.

⁵⁷ See Table A10.10 in Annex 10 which illustrates the largest change in number of exchanges is between areas with just BT compared to areas with two POs. Changes in numbers of exchanges with three or more POs are much smaller.

fully unbundled loops (MPF) to provide both voice and broadband opens up additional revenues streams to the PO (e.g. line rental and calls revenues).

- 3.273 Whilst changes in these costs will reduce the average costs per user, the shape of the curve stays the same. As such, POs with greater market share continue to gain greater benefit in smaller exchanges. We therefore need to consider the extent to which deployment in the smaller exchanges where the costs begin to increase has occurred.
- 3.274 Figure A12.2 in Annex 12 shows that both the absolute cost and the sensitivity to changes in market share (and therefore end customers connected) begin to increase where an exchange serves around 10,000 customers.
- 3.275 On average, exchanges with two POs serve just under 4,500 DPs, whilst exchanges with three POs serve around 7,500 DPs. Exchanges with four POs serve, on average, around 10,000 DPs.
- 3.276 In order to deploy LLU in exchanges with fewer than 10,000 DPs (e.g. the exchanges with two or three POs currently), the market share that the PO expects to achieve would need to be high to justify investment. This means that the opportunity for multiple POs to invest is more limited.
- 3.277 There is also a higher risk attached to the investment because if a PO does not achieve its forecasted market share, the average cost per customer will increase more than in the larger exchanges.
- 3.278 There are approximately 1000 exchanges that serve greater than 10,000 premises⁵⁸. Our analysis of current and planned rollout to June 2010 shows 1,287 exchanges with four or more POs present. Whilst these will not necessarily be the 1,287 largest exchanges in the country, it is reasonable to assume that the very large majority of the exchanges with four or more POs will be the largest exchanges. The 1,287th largest exchange in the UK serves around 7,370 premises.
- 3.279 Because of the different business models and the likely differences in cost bases of LLU operators, it is our view that the investment plans of POs are more informative as to the actual level of investment that is likely to occur.
- 3.280 Nevertheless, our analysis presented in Annex 12 appears to be consistent with the current and potential future deployment as indicated in POs future rollout plans.

Market share

- 3.281 Established case law indicates that market shares in excess of 50% carry the presumption of a dominant position. Further, market shares over 40% are, in the Commission's decision making practice, likely to be the source of concerns over dominance. Whilst this section considers market definition rather than SMP, the key purpose of our analysis is to group exchanges based on homogenous competitive conditions on which we can base our SMP analysis. As such, it is helpful to take into account the role played in this context by market share information when defining the precise market boundaries.
- 3.282 In reviewing market share information, a number of different starting points can be taken. First of all we consider exchanges that already had two POs and three POs at

⁵⁸ Source: Openreach S.135 response

the end of September 2009. Across all these exchanges (Market 2 as currently defined) BT's market share is 64%. There is some heterogeneity of BT's shares between exchanges with two POs and three POs. BT's average market share is, unsurprisingly, lower in exchanges with three POs than those with two POs (54% and 73%, respectively). Figure 3.4 below shows the spread of market shares in exchanges where there were already two or three POs in September 2009.

Figure 3.4: Variation in market share

	2 POs present	3POs present	Overall (2 or 3 POs present)
BT	73%	54%	64%
Number of other POs with share > 30%	0	0	0
Number of other POs with share > 25%	0	0	0
Number of other POs with share > 20%	0	1	0
Number of other POs with share > 15%	1	1	1
Number of other POs with share > 10%	2	2	2

- 3.283 As can be seen, even in the areas where there are three POs, BT's market share is over twice that of the next PO. The majority of the seven POs have very low shares.
- 3.284 Further, BT's share where there are two or three POs is significantly higher than the average market share across all exchanges with four or more POs (Market 3 as currently defined), where BT's average share is 28%. However, as may be expected, where there are exactly four POs, BT's share is higher than the Market 3 average at 43%.
- 3.285 The above data is based on exchanges where there are already two or three POs. However, if we take the same approach as in the last market review, we would include exchanges with forecasted rollout as well. Including these in market share analysis inevitably increases BT's current share, because of the inclusion of exchanges where deployment has not occurred. For example, this would include in the calculation of share exchanges moved from Market 1 where BT has a near 100% share. Figure 3.5 below shows the effect of this.

Figure 3.5: Relative shares when exchanges with forecasted rollout is included

	2 POs	3POs	Overall (2 or 3 POs present)
BT	78%	59%	69%
Number of other POs with share > 30%	0	0	0
Number of other POs with share > 25%	0	0	0
Number of other POs with share > 20%	0	1	0
Number of other POs with share > 15%	0	1	1
Number of other POs with share > 10%	1	2	2

- 3.286 We would expect the effect of defining the market including forecasted rollout to mean that BT's share will increase at the start of the review, but fall during the review back towards the levels shown in Figure 3.4.
- 3.287 There is evidence to suggest that BT's market share could fall below 50% in exchanges with three POs. A number of POs purchase WBA connections from BT Wholesale these exchanges even where they have deployed LLU⁵⁹. If all these connections were migrated off BT's network, we estimate BT's market share would fall to 46% in exchanges where there are already three POs (Figure 3.4 above (49% when the exchanges where three POs are forecasted (Figure 3.5 above) in the future are included).
- 3.288 However, beyond this possible migration, we do not expect BT's market shares to decline significantly in the next four years absent additional further LLU deployment. Whilst we expect there will be some ongoing changes in market share based on the current deployment of LLU as POs compete with each other, the main impact on BT's share occurs when each PO carries out the initial migration of customers onto its LLU platform (that is, POs usually build their customer bases using BT Wholesale products then deploy LLU when they have a sufficient base). As such, BT's market share in those exchanges with three POs would therefore remain high relative to its competitors for the review period.

Current coverage of POs

- 3.289 We have also looked at how many of the exchanges with two or three POs each individual PO is deployed in. Table 3.6 below shows that the majority of POs have a limited coverage of exchanges where there are two or three POs present.

Table 3.6: Coverage of each PO in exchanges with two or three POs (including BT)

	No. of POs in >10% of exchanges	No. of POs in >30% of exchanges	No. of POs in >50% of exchanges	No. of POs in >70% of exchanges	No. of POs in >80% of exchanges	No. of POs in >90% of exchanges
Exchanges with two POs	3	2	2	2	1 (BT)	1 (BT)
Exchanges with three POs	6	3	2	2	2	2

- 3.290 In areas where there are two and three POs, only one PO other than BT has significant coverage, with other operators having fairly fragmented coverage. Therefore, in these areas, much of the competitive constraint faced by BT is likely to arise from just one other PO. In areas where there are four POs, there is a wider range of POs with more significant coverage and the potential to impose a constraint on BT.

⁵⁹ This may be due to market consolidation or due to these POs not yet having migrated their whole existing customer base following deployment of LLU in the exchange.

Market consolidation

- 3.291 In the last market review we used the number of POs in each exchange area as the key criteria for assessing competition. In that review we concluded that the presence (or forecasted presence) of four POs was the most appropriate point to define as being competitive. Our rationale for this was that as the number of POs increases, the incremental effect on competitive conditions of an additional competitor is likely to decrease. It was our view that an area with two or three POs would have an appreciably lower level of competitiveness than one with four.
- 3.292 Since the last review, the number of POs has been reduced by one to seven, due to the acquisition of Tiscali by TalkTalk, resulting in fewer competitors in the market. We have considered whether the reduced number of competitors impacts our view that the most appropriate point for determining that a particular area is competitive is the presence of four POs.
- 3.293 There is a high fixed cost with deploying LLU. Each PO will still need to assess whether it can economically deploy LLU in an exchange before investing. Once the PO has made the decision to invest, it is in its interests to expand its customer base as much as possible. Where there are fewer competitors in the market following consolidation, any PO may expect to gain a greater market share than if there were more competitors and this may make the case for deploying LLU economic in more exchanges. As such, we would expect to see any strengthening of competitors in the market reflected in their rollout (actual and planned) and market shares.
- 3.294 In the case of the acquisition by TalkTalk of Tiscali we have taken account of rollout plans and market shares in our assessment in this review. In particular, we have taken account of each PO's rollout plans (including TalkTalk) in our definition of market boundaries. We have also considered the market shares of each PO including the impact that migrating consumers currently supplied by BT Wholesale onto the current and potential future LLU footprint would have.
- 3.295 Taking this into account, our view is that using the number of POs as the primary criteria for defining market boundaries is the right approach in this review. Where further market consolidation occurs, analysis of the impact of that consolidation may lead us to take a different approach to defining the criteria for setting market boundaries in future reviews. In addition, we would expect that the effects on competition of any market consolidation will be considered on its merits through the relevant regulatory process at the time.

Summary of geographic market definition

- 3.296 We propose to keep the criteria with which we determine the geographic market definition the same as they were in the previous market review except for one minor change to the criteria. We propose to remove the threshold for exchanges with less than 10,000 DPs – where these exchanges are forecast to have four or more POs in the future (but currently have less than four) we consider them to be in Market 3.
- 3.297 We consider that areas of monopoly where BT is the only operator present in an exchange have significantly different competitive conditions from other exchange areas where there are multiple operators present.
- 3.298 Despite some variation in the intensity of competition between those exchanges with two and three POs, we do not think those differences are currently sufficient to justify establishing separate geographic markets. Neither do we consider that the

competitive conditions in those exchanges with three POs are sufficiently similar to exchanges where there is a greater number of POs for these exchanges to be included in Market 3, where we have previously found competition to be effective. In particular, this is based on:

- The scope for further significant LLU deployment being limited;
- BT's average market share across exchanges where there are two or three POs present being high; and
- Only one PO other than BT having significant coverage in areas where there are two and three POs (whereas, in areas where there are four POs, a wider range of POs have significant coverage).

3.299 Therefore, we propose that the relevant geographic markets, taking account of additional LLU rollout since last review, are:

- Market 1: exchanges where only BT is present (14.2% of premises);
- Market 2: exchanges with 2 or 3 POs present or forecast (13.8% of premises);
- Market 3: exchanges with 4 or more POs present or forecast (71.3% of premises); and
- The Hull area (0.7% of premises).

3.300 This is based on assessing the relationship between the competitive dynamics within an exchange and the number of POs present in the exchange. In future, the approach to considering market boundaries will need to take account of developments in the market, such that the criteria for grouping exchanges may vary. These developments may include further market consolidation. We would expect that, in addition to market reviews, the effects on competition of any market consolidation will be considered on its merits through the relevant regulatory process.

Geographic market definition and NGA

3.301 In our product market definition we have proposed that services of all speeds are in the same product market. Therefore, services provided over NGA networks must be considered in addition to those provided using LLU when we consider our geographic market definition.

3.302 Our geographic market definition uses local exchanges as the relevant geographic unit and groups these where competitive conditions are sufficiently homogenous, based on the number of POs present in the exchange area. When NGA is taken into account, this approach remains appropriate, as discussed below.

3.303 BT has indicated it plans to build its NGA networks from 800 – 1000 of its current 5500+ local exchanges. This means an end-user premise may be connected to a different local exchange for NGA than it currently is for current generation services. It is very likely that the exchanges BT uses to support its NGA deployments will be exchanges that fall in the Market 3 area (although specific rollout plans are not yet confirmed).

3.304 Where a PO invests in infrastructure deployments at the 800 – 1000 local exchanges that BT uses as the handover points for its NGA deployments, it is in the interest of

the PO to compete for as many customers connected to the NGA network as possible to maximise the return on its investment. This includes customers that were previously connected to a different exchange via the current generation copper access network. The level of competition for all NGA customers served by any specific exchange will therefore be the same.

- 3.305 At local exchanges that BT uses to provide the handover point for its NGA deployments, a PO that has already deployed its own network for the purpose of using LLU will also be able to use this network to access the NGA non-physical remedy that we have proposed BT will be required to provide as a result of it having SMP in the WLA market. Again, the PO will be likely to derive the maximum benefit from its investment by using it to provide both current and next generation services. Therefore, the competitive conditions for current and next generation access are likely to be the same for a given exchange because the POs present in the exchange will have access to, and the incentive to make use of, the upstream WLA remedies provided over both technologies.
- 3.306 There are 76 exchanges in Market 3 where there are four POs and one of these is Virgin Media. If any of the 800 – 1000 exchanges that BT selects to provide NGA from is one of these exchanges, there may be a concern that since Virgin Media is not an LLU operator, it does not have access to the NGA non-physical remedy provided by BT. As such, customers taking NGA services that are served by these exchanges may not have a choice of four POs for the provision of their NGA service.
- 3.307 However, we do not consider this will lead to a significant reduction in competition. As services provided over the current generation and next generation access networks are in the same market, the constraint provided by the POs is exchange-wide across both current generation and NGA services. Also, whilst the percentage of premises that Virgin Media can serve in the exchange area may change, it will still be able to serve a significant proportion of premises and, to the extent that BT sets a uniform price across the exchange, the presence of Virgin Media will act across the whole exchange area.
- 3.308 In addition, the availability of NGA services at these exchanges may make it more attractive for other POs to deploy at this exchange for both current generation and NGA services, so that the level of competition increases.

Summary of proposed market definition

- 3.309 This section has discussed our approach to product market and geographic market definition for the wholesale broadband access (WBA) market in the UK. For the reasons set out in this section we propose the product market is defined as:

Asymmetric broadband access and any backhaul as necessary to allow interconnection with other communications providers which 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.

- 3.310 We have discussed the extent to which different competitive conditions exist in different geographic locations. Based on this we propose that four separate geographic markets exist:

- Market 1: those geographic areas covered by exchanges where BT is the only operator;
- Market 2: those geographic areas covered by exchanges where there are 2 or 3 POs present (actual or forecast);
- Market 3: those geographic areas covered by exchanges where there are currently four or more POs (actual or forecast); and
- The Hull Area.

Relationship between the wholesale broadband access market definition and the Commission's Recommendation on relevant product and services markets

3.311 In formulating our approach to market definition, we have taken utmost account of the Commission's approach, which is primarily set out in its *Recommendation on relevant product and service markets* (the "Recommendation on Markets") and the accompanying explanatory memorandum (the "EM"). In 2003, the Commission issued its *Recommendation on relevant product and services markets* identifying product and service markets within the electronic communication sector in which *ex ante* regulation may be warranted. The Commission revised the Recommendation on Markets in 2007.

3.312 Wholesale broadband access is defined in the Recommendation on Markets as follows:

"This market comprises non-physical or virtual network access including 'bitstream' access at a fixed location. This market is situated downstream from the physical access covered by market 4 listed above, in that wholesale broadband access can be constructed using this input combined with other elements."

3.313 Ofcom's approach to market definition set out in this Section is consistent with the approach set out in the Commission's Recommendation on Markets and SMP Guidance, taking into account the specific characteristics of the market in the UK. Where appropriate, we have also considered the Commission's draft Recommendation on regulated access to Next Generation Access Networks, taking into account that it has not yet been formally adopted.

3.314 In this market review, we have considered the existing market conditions, taking into account past performance and data. In light of such evaluation, we have taken into account expected or foreseeable market developments over the course of the four year forward look period.

3.315 On the basis of this assessment, we consider that the relevant product market in the UK remains the same as defined in the last review:

Asymmetric broadband access and any backhaul as necessary to allow interconnection with other communications providers which 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.

- 3.316 Our proposed market definition is consistent with the wholesale broadband access market listed in the Commission's Recommendation on the Markets at point 4 and as set out above.

Consultation questions

Question 3.1: *Do you agree with Ofcom's proposed product market definitions? If not, please explain why.*

Question 3.2: *Do you agree with Ofcom's view of the relevant criteria for assessing the geographic market boundaries? If not, please explain why.*

Question 3.3: *Do you agree with Ofcom's geographic market definitions? If not, please explain why.*

Section 4

Market Power

Summary

- 4.1 Market definition is not an end in itself. The definition of the relevant economic market is carried out in order to assess whether any operator has SMP in that market. SMP is the ability to act to an appreciable extent independently of competitors, customers and consumers.
- 4.2 In this Section we set out our proposals on the market power of CPs in each of the relevant product markets. We propose that:
- BT holds a position of SMP in the provision of WBA services in Market 1;
 - BT holds a position of SMP in the provision of WBA services in Market 2;
 - No operator holds a position of SMP in Market 3. and
 - KCOM holds a position of SMP in the provision of WBA services in the Hull Area.
- 4.3 In this Section we set out the analysis that leads us to our proposals in each of the markets.

Previous market review

- 4.4 In the 2008 WBA Statement, we found that BT had SMP in Market 1 and Market 2 and that no firm had SMP in Market 3. KCOM was found to have SMP in the Hull area. This means our proposals are consistent with the conclusions of our 2008 WBA market review.

Approach to market power assessment

- 4.5 Sections 45, 46 and 78 *et seq.* of the Act grant Ofcom the power under certain circumstances to set conditions binding Communication Providers, namely persons who provide an electronic communications network and/or an electronic communications service. Specifically, Section 46(7) states that SMP services conditions may be imposed on a particular person who is either a CP or a person who makes associated facilities available, and who has been determined to have SMP in a “services market” (i.e. a specific market for electronic communications networks, electronic communications services or associated facilities).
- 4.6 Accordingly, having identified the relevant product and geographic markets, Ofcom is required to analyse each market in order to assess whether any person or persons have SMP as defined in Section 78 of the Act (Article 14 of the Framework Directive).
- 4.7 Section 78 of the Act provides that SMP is defined as being equivalent to the competition law concept of dominance in accordance with Article 14(2) of the Framework Directive which provides:

“An undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent

to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers."

4.8 Further, Article 14(3) of the Framework Directive states that:

"Where an undertaking has significant market power on a specific market, it may also be deemed to have significant market power on a closely related market, where the links between the two markets are such as to allow the market power held in one market to be leveraged into the other market, thereby strengthening the market power of the undertaking".

4.9 Therefore, in the relevant market, one or more undertakings may be designated as having SMP where that undertaking, or undertakings, enjoy a position of dominance. Also, an undertaking may be designated as having SMP where it could leverage its market power from a closely related market into the relevant market, thereby strengthening its market power in the relevant market.

The Criteria for assessing SMP

4.10 In assessing whether an undertaking has SMP, Ofcom has taken due account of the SMP Guidelines as it is required to do under Section 79 of the Act. Ofcom has also considered the application of the equivalent Oftel Guidelines.

4.11 The SMP guidelines require NRAs to assess whether the competition in a market is effective (i.e. no operator is found individually or jointly dominant). This is undertaken through a forward looking evaluation of the market, determining whether the market is prospectively competitive, taking account of foreseeable developments.

4.12 Market share is an indicator of market power although the SMP Guidelines state that high market share alone is not sufficient to establish the possession of significant market power. The SMP Guidelines further state that, in the Commission's practice, single dominance normally arises where market shares are over 40%, and that in established case law, market shares of over 50% are taken as evidence for the presumption of a dominant position. This presumption of dominance is rebuttable and a thorough and overall analysis is required before coming to a conclusion on the existence of SMP. Non-exhaustive criteria are suggested to measure the power of an undertaking. The relevant section from the Guidelines is set out in Annex 6.

4.13 Where a market is found to be competitive then no SMP conditions can be imposed. Section 84(4) requires that any SMP condition in that market, applying to a person by reference to a market power determination made on the basis of an earlier analysis, must be revoked.

Assessment of SMP against relevant criteria

4.14 In the context of this market review, when assessing SMP it is appropriate to take account of the existing regulation of a service upstream of the market that is being considered. This relates to the regulated supply of cost-based unbundled local loops which can be used to assist entry into the relevant wholesale markets defined in the previous section. The existence of this current regulation needs to be taken into account in the present analysis in order to capture fully the competitive constraints in the (further downstream) market.

- 4.15 The SMP assessment is based on the most appropriate available information. This evidence may relate to the wholesale markets directly or may be based on information in relation to the retail markets, which can inform the wholesale analysis.
- 4.16 For example, in the analysis below, we have estimated market shares at the wholesale level from information on sales at the retail level, by vertically integrated suppliers, and sales to other operators at the wholesale level.
- 4.17 Following the approach we adopted in the previous WBA Market Review, we have identified those criteria for the assessment of SMP contained in the Commission's Guidelines and the ERG working paper that are most relevant for the WBA market, those that are less relevant and those that are not relevant. Having considered developments in the wholesale broadband market since the last Market Review within the context of a four year forward look, we do not believe that there is reason to make significant alterations to the weightings given to each criterion in the 2007 November consultation and the 2008 Statement. The one exception is that we are now able to consider BT's profitability within the three separate markets and hence evidence on excessive pricing is placed under the list of the most important criteria.
- 4.18 We regard the following criteria as most important in this review:
- Market growth and market shares;
 - Future potential market shares;
 - Barriers to entry and expansion, including the impact on number of operators present;
 - Economies of scale and scope;
 - Excessive pricing (and profitability); and
 - Countervailing buyer power.
- 4.19 However, we have also taken into account the following criteria in our assessment of SMP in wholesale broadband access markets:
- Overall size of the undertaking. As in the previous Review, we address advantages stemming from absolute size when considering economies of scale and scope.
 - Technological advantages or superiority. As in the previous Review, this is considered in the context of barriers to entry.
 - Vertical integration. The potential leverage of upstream market power into the downstream market has been addressed by the imposition of LLU remedies in the market for wholesale local access (WLA). The effectiveness of these remedies is reflected in the analysis of competitive conditions in the wholesale broadband access market.
 - Price trends and pricing behaviour. We address these issues in the section on excessive pricing and profitability.

- 4.20 In setting out our analysis of SMP of the four separate relevant markets defined in Section 3, we consider that the approach adopted in our 2008 market review is still appropriate.

Ofcom's proposal on SMP in Market 1

- 4.21 Market 1 is defined as those BT local exchanges where BT is the only PO present. Data provided by each PO shows their planned rollout for the forward look period. In this information, no PO provided a formal forecast of rollout beyond June 2010. Based on this information, in June 2010 3,578 local exchanges will fall in Market 1, accounting for 14.3% of UK delivery points, excluding Hull. As the following analysis shows, based on the SMP criteria and taking into account all the changes in the market since the previous Review, we propose BT has SMP in Market 1.

Market shares and pricing

- 4.22 Market 1 comprises those BT local exchanges where there is a single PO present. In these exchanges BT will at most face competition from either Virgin Media (where cable coverage within the exchange falls below the 65% threshold) or from LLU operators that have a small national presence and hence do not meet the definition of a PO.

Current shares

- 4.23 Table 4.1 outlines markets shares in Market 1 based on September 2009 volume data. The geographic market boundaries have been updated using information on planned rollout by LLUOs to June 2010, as discussed above.

Table 4.1: Market shares in Market 1

	BT	Other operators
WBA volumes (000s)	2,409	37.3
Market shares	98.5%	1.5%

- 4.24 The table shows that BT accounts for nearly all of the supply in the market. Virgin Media, the only operator that could potentially generate competitive constraints on BT's wholesale pricing, covers less than 5% of delivery points and currently has a very low market share. There is no realistic prospect of it imposing competitive constraints on BT and limiting BT's ability to raise prices above the competitive level in the absence of regulation.
- 4.25 It should be noted that under the modified Greenfield approach we need to take into account the fact that current market shares are influenced by SMP regulation at the level of the market being considered and downstream (but not upstream). In the case of the WBA market, the regulated availability of BT wholesale products will influence the decisions of competing operators on whether to invest in LLU. Absent the regulated availability of wholesale products such as IPStream, LLU rollout may become more attractive, and any LLU rollout would result in BT's market share falling below that shown in the table above. However, given the economies of scale and density involved in this market discussed below we do not believe this would have an appreciable influence on our conclusions with respect to Market 1. This is because

the economies of scale and density associated with LLU rollout mean that LLU operators would be at a severe cost disadvantage to BT in Market 1 exchange areas and therefore we consider they would be unlikely to impose a competitive constraint. This is reflected in the fact that even with LLU available at national average cost there has been no LLU take-up in these exchange areas.

Future shares

- 4.26 We have taken into account forecasts for future rollout so that where expansion by Virgin Media or deployment of LLU is planned to occur in an exchange area, these exchanges have been moved to Market 2. As such, in Market 1, BT remains the only PO.
- 4.27 BT's market share will only change if there is entry into these exchanges which has not, so far, been forecasted by other POs. However, any such entry will be minimal and, as such, BT's share in Market 1 is unlikely to materially change over the next four years.

Excessive pricing

- 4.28 BT's pricing of its WBA services are subject to a voluntary price ceiling commitment up until 31 December 2010 and were subject to a voluntary price floor commitment until 1 July 2009⁶⁰.
- 4.29 The price ceiling commitment requires BT to set prices for individual product components so that the price of a reference product made up of these components is below the ceiling. The following components are taken into account:
- The End-user rental charge for the IPStream Max product;
 - An allocated average charge for BT Central connection (amortised over a three year period); and
 - An allocated average charge for BT Central rental⁶¹.
- 4.30 Table 4.2 below shows BT's pricing of this reference product compared to the ceiling commitment. This reference model comparison applies in all three geographic markets though we note that in Market 3, BT can set bespoke prices and is not required to publish these prices.

Table 4.2: BT's pricing

	From 1/1/2009	From 1/12/2010
Ceiling level (ARPU pcm)	£9.49	£9.20
Reference price level (ARPU pcm) ⁶²	£8.75	£8.46

⁶⁰ <http://www.ofcom.org.uk/telecoms/ioi/bbpricing/>

⁶¹ In calculating the allocated connection and rental charges for BT Centrals, a reference throughput figure of 12.5kb/s per end user is assumed.

⁶² These figures do not include discounts. However, a discount scheme, based on monthly spend, is applicable to BT's wholesale products and are taken into account in calculating the ARPU.

- 4.31 Table 4.2 shows that BT is pricing below, but close to, the ceiling commitment (the reference model price is over 90% of the ceiling).
- 4.32 If BT has SMP in the supply of WBA, we would expect to see prices which are at or close to the voluntary ceiling and well above costs. However, BT may still choose to set prices a little below the ceiling even if, in theory, it could raise profits by pricing right up to it. This may be because, for example, BT prefers to set prices for the individual service components to ensure it does not breach the pricing ceiling, allowing a small amount of headroom. We therefore believe that the ceiling, rather than competitive pressure has been the primary constraint on prices, even though they have been generally a little below the voluntary maximum price. This is supported by our analysis of BT's return on capital employed, which suggests that BT has been able to earn a rate of return significantly in excess of the cost of capital in this market.
- 4.33 Overall, there does not appear to be any other constraint on BT raising its prices any further.

Profitability

- 4.34 Prior to the last market review, BT reported its revenues, costs and returns for the whole WBA market. BT's returns' over time across the whole WBA market are shown in Table 4.3 below

Table 4.3: BT's returns over time in WBA market⁶³

	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
Total revenue	622	716	1023	1163	1027	1049
Total expenses	695	697	819	809	741	641
Mean capital employed	707	1042	1177	1144	1034	1173
Return On Sales (ROS)	-11.70%	2.70%	19.90%	30.40%	27.80%	38.90%
Return On Capital Employed (ROCE)	-10.30%	1.80%	17.30%	30.90%	27.70%	34.80%

Source: BT regulatory financial statements⁶⁴

- 4.35 The table shows that accounting rates of return (ROCE) were initially negative but have been increasing over time and are now above the cost of capital. A pattern of early accounting losses offset by later profits is not in itself unreasonable where a new product is introduced and prices are initially low in order to develop the market, and does not necessarily indicate the exploitation of market power. Equally though, high and increasing rates of return are at least consistent with the possession of SMP, particularly when combined with other indicators which suggest the firm may have a position of market power. The above table suggests that losses when WBA volumes were relatively small and the market was at an early stage of development have now been recovered by later profits. In conjunction with other indicators, these appear to be consistent with the possession by BT of SMP in at least some of the geographic WBA markets.
- 4.36 Since the last review BT has disaggregated its reporting by market. However, some revenues and costs are not directly related to a specific market and so this data is not

⁶³ Note that prior to the 2008 review, two separate markets were defined – one for origination and one for conveyance. The figures in the table combine the financial information for the two markets.

⁶⁴ <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm>

broken down to show market specific data. Using the geographic boundaries set out in the 2008 Statement, the revenues, costs and returns reported by BT for the year ending March 2009 are as show in Table 4.4⁶⁵.

Table 4.4: BT's revenue, costs and returns in WBA market

	Market 1	Market 2	Market 3	Not geographically allocated	Total
Revenue	£281m	£166m	£350m	£252m	£1049m
Costs	£97m	£40m		£504m	£641m
MCE	£221m	£79m		£873m	£1173m
Gross margin					£408m

Source: BT regulatory financial statements

- 4.37 As can be seen there is a large amount of revenue that is not allocated by market. Further, the majority of costs have been included in BT's Financial Statements under Market 3, but also include costs that were not allocated by market. The returns by market will therefore be highly sensitive to allocation of revenues and costs to markets.
- 4.38 Within BT's financial regulatory statements, not all revenues are allocated to a specific market. Current costs and mean capital employed (MCE) are allocated to either Market 1, Market 2, or to a combined category of Market 3 containing non-geographically allocated costs. Some cost and capital categories have allocations to all three of these, whilst others only to the Market 3 plus non-geographic category. In addition to the information in the regulatory financial statements, BT has confidentially provided some further information to us.
- 4.39 We have considered several approaches to allocating revenues, costs and MCE in order to gauge the level of returns by market. Because of the size of the costs (and revenues) involved and in the absence of an agreed allocation methodology, an analysis of returns by market will inevitably produce a range of estimates for each market. However, we consider that reasonable allocations of revenues and cost suggest that the ROCE in all three markets may now be above the cost of capital, reflecting the returns being made in the market as a whole. We have said above that these returns may not necessarily be indicative of excessive pricing if they are needed to offset early losses in the market. However, and particularly when considered in conjunction with other indicators, they may also be consistent with the possession of SMP in at least some of the geographic WBA markets. In addition, we consider that returns in Market 3 may be lower than in the other two markets. This is because, whilst the relatively large average exchange size means that costs tend to be lower in Market 3 areas, reductions in BT's market share due to competition, and hence in its volumes, may tend to increase unit costs, and the greater competitiveness of Market 3 has also led to lower prices. As noted above, we consider that BT's pricing in Market 1 has been set to comply with its voluntary

⁶⁵ Section 6 of BT's Current Cost Financial Statements 2009
<http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm>

pricing commitment and that once this commitment expires there is unlikely to be any constraint to stop price rising above the competitive level.

- 4.40 Whilst this does not necessarily indicate historic returns have been excessive, neither does it demonstrate that BT's pricing would be constrained to the competitive level in Market 1. Absent regulation there is a real risk that prices could be maintained significantly above the level that might be expected in a competitive market.

Barriers to entry and expansion

- 4.41 Market 1 is characterised by very significant barriers to entry and expansion for existing and potential competitors to BT in the market for wholesale broadband access, primarily in the form of sunk costs (that is, costs which could not be recovered on exit) and economies of scale. These are described below.

Sunk costs

- 4.42 Sunk costs are costs which must be incurred in order to enter a market but which cannot be recovered on exit. Where an incumbent has already sunk the costs of entry, later entrants will be deterred from following suit and the incumbent is likely to be able to exploit SMP by increasing prices without encouraging entry. This is because, whatever the pre-entry price set by incumbent broadband access operators, what matters for the profitability of new entry is the price that would arise from competition between firms post-entry. If the expected post-entry price would be such that entrants' post-entry profits would fail to recover the sunk costs of entry and the entrant foresaw this, then entry would not take place.
- 4.43 There are two broad options available to a company wishing to compete in the provision of wholesale broadband access products. The first is to build a comprehensive access network, which could address end-users directly. The second is to take advantage of the LLU remedy.
- 4.44 Any company looking to build a competing comprehensive network in this market would incur both the costs of providing individual access and the costs of the support infrastructure. At the time of this review, Ofcom understands that there are no firms considering such investment.
- 4.45 The LLU remedy imposed in the review of the wholesale local access market means that operators seeking to use LLU do not have to incur the costs of provisioning an access network since these operators are able to purchase LLU inputs from BT and provide services in this manner. However, this can still require significant sunk costs, including co-location at BT's exchanges and securing access to backhaul services.
- 4.46 By contrast, BT possesses comprehensive infrastructure in this market. It has a ubiquitous access network and the associated DSLAMs and backhaul required to provide the broadband service. The greater part of this sunk cost is contained in BT's access network to homes and businesses. The provision of DSLAMs and a backhaul network would be a smaller, yet still significant cost.
- 4.47 Accordingly, the high sunk costs of entry and the potential for reduced prices post-entry are deterrents to new operators entering this wholesale broadband access market.
- 4.48 Further rollout by LLU operators beyond June 2010 is uncertain, as discussed in Section 3 of this Consultation. The barriers to entry are likely to be highest in the

smaller, more remote exchanges that categorise Market 1 and, as such, rollout into the Market 1 exchanges beyond June 2010 is likely to be limited.

Economies of scale, scope and density

- 4.49 A large proportion of the costs associated with broadband-enabling an exchange, or entering an exchange as an LLU operator is fixed and so WBA provision is subject to significant economies of scale and density.
- 4.50 Moreover, the exchange areas which make up Market 1 have characteristics which limit the ability for operators to achieve significant scale efficiencies. These exchange areas serve a relatively low number of end-users and therefore the potential markets for wholesale broadband access products are small. On average, each exchange within Market 1 serves 1,124 delivery points, whereas the national average is c.5,047 delivery points and the average for Market 2 and Market 3 is 5,445 and 15,734 delivery points respectively. Thus, if an operator using LLU believes that they can achieve (say) a 10% share of broadband services and with the current penetration of broadband services at 63%, then the numbers of customers it will achieve in the average exchange in Market 1 is 70 ($1,124 \times 0.63 \times 0.1$). This is in contrast with the numbers of customers it will achieve in the average exchange in Market 3 of 991. ($15,734 \times 0.63 \times 0.1$).
- 4.51 The average exchange size by market has fallen since the time of the last Review, reflecting the fact that the modest entry that has occurred centred on the larger exchanges. As such, the largest exchanges in Market 1 in the last review have moved into Market 2 but these exchanges are, in general, smaller than the average Market 2 exchanges. In the 2007 Consultation we noted that the average exchange in Market 1 served 1,381 delivery points whereas the current figure is 1,124, a fall of roughly 18%. This suggests there is currently an even greater barrier to entry in this market.
- 4.52 As the incumbent, BT is able to benefit from the available scale economies in this market as a result of its monopoly position and it would be very difficult for other operators to achieve similar scale economies. The small size of each exchange limits the potential market for wholesale broadband access products and thus the maximum achievable size for any one operator. An operator would need to achieve a higher market share to gain a certain absolute number of lines than in a larger exchange.
- 4.53 BT's economies of scale present a significant barrier to entry in Market 1. The small size of the exchanges in this market leads to an efficient scale being more difficult to achieve thus cementing BT's first mover advantage, resulting in there being little or no constraint on BT's behaviour in the market.

Countervailing buyer power and joint dominance

- 4.54 Ofcom does not believe that either countervailing buyer power or joint dominance is relevant for the analysis of SMP in Market 1.
- 4.55 With respect to countervailing buyer power, Ofcom has had regard in particular to the OFT guidance, which states that the strength of buyers and the structure of the buyers' side of the market may constrain the market power of a seller. The OFT Guidance notes that the relevant consideration in assessing the impact of buyer power on the ability of the seller to set a price is whether a buyer would have choice or, in other words, the benefit of an 'outside option'.

- 4.56 In Market 1 there are no alternative options available other than BT for buyers of the wholesale broadband access product. We have also considered whether any other factors would suggest that a buyer might be able to exercise countervailing buyer power in this market, taking into account that wholesale broadband access is not a two-way access service like, for example, mobile call termination. It does not appear that any buyer, regardless of size, would be in a position to bargain aggressively with BT in the purchase of wholesale broadband access services.
- 4.57 With respect to joint dominance, this is clearly not relevant since there is in effect only a single firm present in the market.

Conclusion

- 4.58 Given in particular BT's substantial market share, the high barriers to entry and the lack of countervailing buyer power, we consider that BT has a position of economic strength affording it the ability and incentive to behave to an appreciable extent independently of competitors, customers and ultimately consumers. Therefore we propose that BT has SMP in the market for wholesale broadband access in Market 1.

Ofcom's proposal on SMP in Market 2

- 4.59 We have defined Market 2 as a BT local exchange where there are either two or three POs present. Based on volumes in September 2009 and forecasts based on information supplied by operators (as above, POs did not have formal rollout plans for the four year forward look beyond June 2010), Market 2 comprises 722 exchanges and accounts for 13.9% of UK DPs (excluding Hull).
- 4.60 As the following analysis shows, based on the SMP criteria and taking into account all the changes in the market since the previous Review, we propose that BT has SMP in Market 2.

Market shares and pricing/profitability

Current shares

- 4.61 Tables 4.5 and 4.6 outline markets shares in Market 2 based on September 2009 volume data. The geographic market boundaries have been updated using information on planned rollout by LLU operators to June 2010.

Table 4.5: BT market share in Market 2

	BT
WBA volumes (000s)	1,660
Market share	69%

Table 4.6: Other POs market share in Market 2

	Other POs
WBA volumes (000s) – all other POs combined	731
Number of POs with share over 20%	0
Number of POs with share over 15%	1
Number of POs with share over 10% but less than 15%	1
Number of POs with share less than 10%	4

- 4.62 Unlike Market 1, BT does face some degree of competition in Market 2, most notably from Virgin Media and TalkTalk. However, neither operator has 100% coverage of exchanges in Market 2, with Virgin having coverage of less than a fifth of Market 2 whilst TalkTalk covers around 90%. This is reflected in the fact that neither has achieved the same market share as in Market 3 (see below). The limited inroads into BT's market share is particularly notable given that that LLUOs and Virgin Media typically set uniform retail prices within their network footprint and their prices in Market 2 will therefore be significantly influenced by the more competitive environment in Market 3 areas.
- 4.63 In any case, it is clear that BT, facing fewer competitors in this market compared to Market 3, is able to maintain a market share of nearly 70% in the market. Whilst there may be scope for future investment in Market 2 and, as set out in Section 3, the possibility for some POs to migrate customers away from BT's wholesale products in Market 2, we expect that BT's market share will remain high (above or very close to 50%) over the next four years.
- 4.64 As with Market 1, it is possible that, absent the availability of regulated wholesale products, LLU investment would increase, reducing BT's market share. However, as discussed below, whilst there is more potential for future entry than in Market 1, we consider that there are still barriers to entry in this market so that future entry during the next four years is unlikely to be sufficient to significantly reduce BT's market power.
- 4.65 Given this, the current market shares provide good reason to believe that BT has SMP in this market and, absent regulation, would be able to raise wholesale prices to the ultimate detriment of end users.

Excessive pricing and profitability

- 4.66 BT's pricing of its WBA services in Market 2 are subject to a voluntary price ceiling commitment up until 31 December 2010 and, as for Market 1, were subject to a voluntary price floor commitment until 1 July 2009⁶⁶. Its wholesale pricing in Market 2 is the same as in Market 1, as shown above.
- 4.67 We have considered the difficulty of analysing BT's returns by market in our discussion on profitability in Market 1 above. This discussion applies equally to

⁶⁶ <http://www.ofcom.org.uk/telecoms/loi/bbpricing/>

estimates of BT's returns in Market 2. In considering BT's pricing and profitability, the following points are relevant:

- BT's pricing in Market 2 is close to the voluntary ceiling. We have discussed why BT may not price at the ceiling in our discussion of pricing for Market 1. Whilst there is some competition to BT in Market 2, this does not appear to have brought about reductions in prices which appear to be primarily determined by the voluntary ceiling. As in Market 1 therefore, it may be the case that, absent regulation, BT would be able to price above the competitive level in Market 2.
- As discussed for Market 1, it is likely that the level of returns being made by BT in Market 2 is at least at the level of those seen across the whole market. Pricing in Market 2 is at the same level as in Market 1 and above that in Market 3, but the costs are likely to be lower than in Market 1 as there will be fewer very small and/or remote exchanges,
- Across the broader WBA market, ROCE has been above the cost of capital for a number of years and as such any losses in early years when volumes were small now appear likely to have been recovered.

4.68 Again, as for Market 1, whilst the pricing and profitability data presented above does not necessarily indicate excessive pricing or returns, it suggests that BT's pricing would not be constrained to the competitive level in Market 2. If BT was subject to a significant degree of competition in Market 2 we might expect to see this reflected in its pricing strategy, with sizeable discounts in Market 2 to reflect the lower costs and to act as a response to the competition that is present. This would be in much the same way that we observed BT reduce its wholesale charges in more competitive exchange areas prior to our last review (with these exchanges now predominantly residing in Market 3). However, we have not observed such pricing behaviour by BT. Therefore, we consider that, absent regulation, there is a real risk that prices could be set and maintained significantly above the level that might be expected in a competitive market.

Barriers to entry and expansion

- 4.69 There has been some new entry into those exchanges that were designated as part of Market 2 in the 2008 Statement, as a result of which some have now moved into Market 3 to reflect the increased competitive intensity present. In the 2008 Statement we estimated Market 2 would comprise 670 exchanges in February 2009 whereas data provided by POs in September 2009 shows 614 exchanges meet the criteria we have used to define this market. Investment in exchanges where there has previously been no POs other than BT (including forecasted entry) increases the number of exchanges in Market 2 to 722. This suggests entry is possible, although as discussed below entry has centred on the larger exchanges and the average size of exchanges in Market 2 has fallen as a result.
- 4.70 Nonetheless, we believe that there are significant barriers to entry present in Market 2, which, whilst not as severe as those found in Market 1, still serve to make entry and expansion in this market problematic.

Sunk costs

- 4.71 As outlined above in the discussion of Market 1, BT has already incurred large sunk costs in being able to provide wholesale broadband access to all customers within Market 2. The greater part of this sunk cost has been invested in the local-access

network. There has also been a smaller, but still significant sunk cost for BT in broadband-enabling its exchanges. Virgin Media has also incurred large sunk costs in providing a broadband access network to supply 15.4% of customers in Market 2.

- 4.72 Entry by LLU operators would also require them to incur significant sunk costs. Coverage by the majority of POs in Market 2 is limited as the table below shows. Despite a modest level of entry into some exchanges, reflected in the presence of at least one competitor to BT, there remain significant further sunk costs that would need to be incurred by each LLU operator to provide comprehensive coverage throughout the market. The following table shows the coverage of Market 2 exchanges by each PO in September 2009 and the forecast, based on information provided by each PO⁶⁷:

Table 4.7: PO coverage in Market 2

	No. of POs in >10% of exchanges	No. of POs in >30% of exchanges	No. of POs in >50% of exchanges	No. of POs in >70% of exchanges	No. of POs in >80% of exchanges	No. of POs in >90% of exchanges
Sep 09	6	2	2	1 (BT)	1 (BT)	1 (BT)
June 2010	6	2	2	2	2	1 (BT)

- 4.73 The table shows that, only one PO other than BT has significant coverage within Market 2 and expansion plans (particularly those for the POs with low coverage) during the months to June 2010 are modest. This suggests that there remain significant barriers to entry and expansion in this market such that there is only likely to be limited constraint on BT's behaviour over the forward look period of this market review.

Economies of scale/scope

- 4.74 As discussed above in relation to Market 1, the fixed costs associated with broadband enabling an exchange or entering an exchange using LLU mean that average costs are subject to significant economies of scale. On average, each exchange within Market 2 serves 5,445 delivery points, whereas the average for Market 1 and Market 3 is 1,124 and 15,734 delivery points respectively. Thus Market 2 may present a greater opportunity for LLU operators compared to Market 1. However, the lack of a consistent commitment by the LLU operators other than TalkTalk to enter the majority of exchanges in this market appears to suggest that the operators do not believe that many of the exchanges in Market 2 present a viable investment opportunity.
- 4.75 The average exchange size has fallen since the time of the last Review, reflecting the fact that the modest entry that has occurred centred on the larger exchanges. In the 2007 Consultation we noted that the average exchange in Market 2 served 6,812 delivery points, whereas the current figure is 5,445, a fall of nearly a quarter. This suggests that the exchanges where the barriers to entry were lowest have shifted to Market 3 and, as such, the barrier to entry in the exchanges remaining in Market 2 has increased. This means it is more difficult for entrants to achieve sufficient size to benefit from economies of scale in the remaining Market 2 exchanges. We believe that this is likely to limit the extent of any further entry or expansion by competitors to BT in market 2 and that BT will retain SMP in this market.

⁶⁷ To the extent that forecast deployments materialise, and updated forecasts are available at the time of our Final Statement, these investments will be reflected in the final geographic market definitions.

Countervailing buyer power and joint dominance

- 4.76 Ofcom does not believe that either countervailing buyer power or joint dominance is relevant for the analysis of SMP in Market 2.
- 4.77 With respect to countervailing buyer power, Ofcom has had regard in particular to the OFT guidance, which states that the strength of buyers and the structure of the buyers' side of the market may constrain the market power of a seller. The OFT Guidance notes that the relevant consideration in assessing the impact of buyer power on the ability of the seller to set a price is whether a buyer would have choice or, in other words, the benefit of an 'outside option'.
- 4.78 Other than BT, TalkTalk is the only provider that has a presence in the majority of Market 2 exchanges. TalkTalk could provide an alternate source of supply to purchasers of wholesale broadband access. However, to date, TalkTalk's wholesale sales are relatively small and it mainly supplies smaller ISPs. In fact, as TalkTalk does not cover every exchange in Market 2, there will be some Market 2 exchanges where a CP must purchase from BT. On this basis, there is little alternative to BT's supply of wholesale broadband access products.
- 4.79 We have also considered whether any other factors would suggest that a buyer might be able to exercise countervailing buyer power in this market, taking into account that wholesale broadband access is not a two-way access service like, for example, mobile call termination. It does not appear that any buyer, regardless of size, would be in a position to bargain aggressively with BT in the purchase of wholesale broadband access services.
- 4.80 For this reason Ofcom does not believe that any current wholesale customer is likely to be able to exert countervailing power to a material extent in Market 2.
- 4.81 With respect to joint dominance we do not consider, having taken into account all relevant Guidance and case law, that joint dominance is relevant in this market, in particular because there is a single firm with such a significant market share.

Conclusion

- 4.82 We consider that the market shares, barriers to entry and the other factors in this market mean that BT has a position of economic strength affording it the ability and incentive to behave to an appreciable extent independently of competitors, customers and ultimately consumers. Therefore we propose that BT has SMP in Market 2.

Ofcom's proposal on SMP in Market 3

- 4.83 We have defined Market 3 as those BT local exchanges where 4 or more POs are present. Based on volumes in September 2009 and forecasts based on information supplied by operators, Market 3 comprises 1,287 local exchanges and accounts for 71.8% of UK delivery points (excluding Hull). Based on the SMP criteria and taking into account all the changes in the market since the previous Review, for the reasons outlined below, we propose that no operator has SMP in Market 3.

Market growth and market shares

Current shares

- 4.84 Tables 4.8 and 4.9 outline markets shares in Market 3 based on September 2009 volume data. The geographic market boundaries have been updated using information on planned rollout by LLU operators to June 2010.

Table 4.8: BT market share in Market 3

	BT
WBA volumes (000s)	3,631
Market share	28.5%

Table 4.9: – Other POs market share in Market 3

	Other POs
WBA volumes (000s) – all other POs combined	9,114
Number of other POs with share over 25% but less than 30%	1
Number of other POs with share over 20% but less than 25%	1
Number of other POs with share over 15% but less than 20%	1
Number of other POs with share less than 15%	3

- 4.85 Since the last review BT has continued to lose market share, falling from 38% in February 2008 to around 28%. Although no PO other than BT has 100% coverage, three are forecast to have over 90% coverage by June 2010 and one will have coverage of 99.7% of delivery points. This suggests that Ofcom's previous conclusion that no operator possesses SMP in Market 3 remains valid.
- 4.86 We anticipate that over the future period covered by this review the general pattern of market shares will remain, that is several large operators will be present in this market with none having a market share significantly higher than the others.

Barriers to entry and expansion

- 4.87 As noted in the discussions of Market 1 and Market 2, sunk costs and economies of scale, scope and density can be significant barriers to entry and expansion.

Economies of scale/scope/density

- 4.88 As discussed above in relation to Market 1 and Market 2, the fixed costs associated with broadband enabling an exchange or entering an exchange using LLU create significant economies of scale. However this is less of a barrier to entry in Market 3 because of the much larger size of the local exchanges. On average, each exchange within Market 3 serves 15,734 delivery points, whereas the national average is c.

5,047 delivery points and the average for Market 1 and Market 2 is 1,124 and 5,470 delivery points respectively. Thus Market 3 presents a greater opportunity for LLU operators compared to Market 1 and Market 2 as evidenced by their actual investment and their current market shares. The number of entrants points to sunk costs and economies of scale not being a barrier to entry, whilst the market share data suggests no one firm has a scale advantage. By definition local exchanges in Market 3 have at least four POs present and most exchanges have more than this, as shown in Table A10.10 in Annex 10. The average number of POs in Market 3 exchanges is six. Furthermore the pattern of market shares discussed above shows that, once entry has occurred, operators have been successful in capturing market share suggesting no entrant has been able to exploit a scale advantage.

Pricing and profitability

- 4.89 Prior to the previous market review, BT offered exchange specific discounts in a number of exchanges. This was one of the factors in our considerations that led to deregulating Market 3. Since that time, BT has not been required to publish prices in Market 3 and is able to offer bespoke pricing. Based on information provided confidentially by BT in response to formal information requests, we are of the view that BT's pricing in Market 3 reflects this pricing freedom and the constraints applied by the presence of multiple competing POs.
- 4.90 In addition, the market appears to be operating as an effectively competitive unregulated market⁶⁸.
- 4.91 In Market 3, costs are likely to be lower⁶⁹ but, as explained above, pricing appears to be reflective of the more competitive conditions. It may therefore be reasonable to expect that returns in Market 3 are lower than those experienced in the other geographic markets (though the issues with assessing returns by market, as discussed above, also need to be taken into account in Market 3).

Countervailing buyer power and joint dominance

- 4.92 The pattern of market shares indicates that the market can be regarded as competitive, hence the concept of countervailing buyer power is not relevant for an SMP assessment. We do not believe there is a significant risk of joint dominance in the market given the number of competitors present and the highly innovative nature of the market, the latter of which is likely to make cooperation hard to sustain.

Conclusion

- 4.93 Given in particular the significant deployment by LLUOs in Market 3 exchanges and the success of these firms, along with Virgin Media, have had in securing market share Ofcom considers that no operator has the ability and incentive to behave to an appreciable extent independently of competitors, customers and ultimately consumers in Market 3. Therefore we propose that no operator has SMP in Market 3.

⁶⁸ We have not, for example, received any complaints related to competition or pricing behaviour in Market 3.

⁶⁹ We note, however, that reducing market share may result in some stranded assets in Market 3 that could impact the costs in the market and therefore the returns.

Ofcom's proposal on SMP in the Hull area

4.94 We propose that KCOM has SMP in the provision of wholesale broadband access in the Hull area for the reasons set out below.

Market growth and market shares

Current market shares

4.95 KCOM is vertically integrated and is the sole supplier of retail fixed broadband access in the Hull area and can therefore be assumed to have 100% of the market for wholesale fixed broadband access in the Hull area.

Future shares

4.96 KCOM's share of the wholesale broadband access market is not expected to change in the period of this review. There is no planned expansion of cable coverage into the Hull area and no planned uptake of LLU.

Barriers to Entry and Expansion

4.97 The Hull area is characterised by very significant barriers to expansion and entry for existing and potential competitors to KCOM in the market for wholesale broadband access, primarily in the form of sunk costs (that is, costs which could not be recovered if an operator were to exit) and economies of scale. These are described below.

Sunk costs

4.98 The arguments relating to sunk costs in the market in the Hull area are largely the same as those made above for Market 1 above.

4.99 In addition, of particular significance in this market are the fixed costs associated with purchasing LLU from KCOM, including the costs of developing systems that interface with KCOM's systems, which are required to order, maintain and manage LLU products. We understand that to date no operator has taken LLU from KCOM in this market and that no operator plans to over the period considered by this review.

4.100 Sunk costs are therefore a significant barrier to entry into the WBA market in the Hull area.

Economies of scale, scope and density

4.101 The fixed costs associated with broadband-enabling an exchange are subject to significant economies of scale and density. As the number of lines served from each exchange increases, the average costs per line associated with broadband enabling will fall. There are also fixed costs which operate above the level of the individual exchange, for example the costs of building backhaul networks. These costs are also reduced on a per unit basis if these backhaul links serve a large number of end-users. Therefore it is in the interest of operators to secure as large a number of lines served as possible in each exchange area and to serve as many end-users as possible with backhaul infrastructure.

4.102 KCOM has obtained the available scale economies in this market as a result of its legacy monopoly position. However, due to the limited number of end-users in the

Hull area, these economies of scale may prove very difficult for other operators to replicate as an entrant would need to take a large share of the market or suffer a significant cost advantage. KCOM's economies of scale therefore look to be a significant barrier to entry in the Hull area.

Countervailing buyer power and joint dominance

- 4.103 Ofcom does not believe that either countervailing buyer power or joint dominance is relevant for the analysis of SMP in the Hull area.
- 4.104 With respect to countervailing buyer power, Ofcom has had regard in particular to the OFT guidance, which states that the strength of buyers and the structure of the buyers' side of the market may constrain the market power of a seller. The OFT Guidance notes that the relevant consideration in assessing the impact of buyer power on the ability of the seller to set a price is whether a buyer would have choice or, in other words, the benefit of an 'outside option'.
- 4.105 In the Hull area there are no alternative options available other than KCOM for buyers of the wholesale broadband access product. We have also considered whether any other factors would suggest that a buyer might be able to exercise countervailing buyer power in this market, taking into account that wholesale broadband access is not a two-way access service like, for example, mobile call termination. It does not appear that any buyer, regardless of size, would be in a position to bargain aggressively with KCOM in the purchase of wholesale broadband access services.
- 4.106 With respect to joint dominance, this is clearly not relevant since there is in effect only a single firm present in the market.

SMP proposals for the Hull area

- 4.107 We consider that KCOM's market position, barriers to entry and the other factors in this market mean that KCOM has a position of economic strength affording it the ability and incentive to behave to an appreciable extent independently of competitors, customers and ultimately consumers. Therefore we propose that KCOM has SMP in the Hull area.

Conclusion

- 4.108 As set out above, we propose that:
- BT holds a position of SMP in the provision of WBA services in Market 1;
 - BT holds a position of SMP in the provision of WBA services in Market 2;
 - No operator holds a position of SMP in the provision of WBA services Market 3; and
 - KCOM holds a position of SMP in the provision of WBA services in the Hull Area.

Consultation questions

Question 4.1: *Do you agree with Ofcom's proposal that BT holds SMP in Market 1? If not, please explain why.*

Question 4.2 Do you agree with Ofcom's proposal that BT holds SMP in Market 2? If not, please explain why.

Question 4.3: Do you agree with Ofcom's proposal that no operator has SMP in Market 3? If not, please explain why.

Question 4.4: Do you agree with Ofcom's proposal that KCOM holds SMP in the Hull Area? If not, please explain why.

Section 5

Remedies

Summary

5.1 In this Section we set out the regulatory remedy options for addressing, respectively, BT's SMP in Market 1, BT's SMP in Market 2 and KCOM's SMP in the Hull area. We evaluate each option and propose the most appropriate remedy for each market, taking into account in particular the relevant legal tests and our statutory obligations. The remedies we propose to impose are summarised in Table 5.1 below.

Table 5.1: Proposed Remedies by market

Market	Operator	Remedy
Market 1	BT	Requirement to provide network access on reasonable request Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges, terms and conditions Transparency as to quality of service Requirement to notify technical information Basis of charges Charge control Cost accounting Requirement to account separately
Market 2	BT	Requirement to provide network access on reasonable request Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges, terms and conditions Transparency as to quality of service Requirement to notify technical information Basis of charges Cost accounting Requirement to account separately
The Hull Area	KCOM	Requirement to provide network access on reasonable request Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges, terms and conditions Transparency as to quality of service Requirement to notify technical information Requirement to account separately

5.2 In Market 3 we propose that no operator holds a position of SMP and, as such, we are under a duty not to impose any SMP obligations on any operator. However, for exchanges that move from Market 2 to Market 3, we propose a period of notice of 12 months during which a subset of remedies will continue to apply.

The regulatory remedies that apply presently

- 5.3 In the last review in May 2008 we concluded that there were four economic wholesale markets in the UK. We also concluded that BT had SMP in Market 1 and Market 2 whilst KCOM had SMP in the Hull area. No operator had SMP in Market 3.
- 5.4 We imposed the following remedies on BT in Market 1 and Market 2 and on KCOM in the Hull area:
- Requirement to provide network access on reasonable request;
 - Requirement not to unduly discriminate;
 - Requirement to publish a reference offer;
 - Requirement to notify charges, terms and conditions;
 - Transparency as to quality of service;
 - Requirement to notify technical information; and
 - Requirement to account separately.

Imposition of ex ante regulation

- 5.5 We set out in Annex 6 the factors relevant when assessing the need for *ex ante* regulation and whether competition law might be appropriate to address the competition concerns identified.
- 5.6 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person is dominant in a particular market, it must set such SMP services conditions as it considers appropriate and as are authorised under the Act. Section 87(1) implements Article 8 of the Access Directive.
- 5.7 Paragraphs 21 and 114 of the SMP Guidelines state that NRAs must impose one or more SMP services conditions on a dominant provider, and that it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.
- 5.8 The Act (Sections 45-50 and 87-92) sets out the obligations that Ofcom can impose if it finds that any undertaking has SMP. Sections 87 to 92 implement Articles 9 to 13 of the Access Directive and Articles 17 to 19 of the Universal Service Directive.
- 5.9 Recital 27 of the Framework Directive provides that *ex-ante* regulation should be imposed only where there is not effective competition and where competition law remedies are not sufficient to address the perceived problem. In order to provide a full analysis, Ofcom has considered whether it could rely on competition law alone, while noting the obligations referred to above.
- 5.10 Section 3 of the Act sets out Ofcom's general duties. Section 3(1) states that Ofcom's principal duty is to further the interests of citizens in relation to communications matters and consumers in relevant markets, where appropriate, by promoting competition. Specifically, Section 3(2)(b) states that Ofcom is required to secure the availability of a wide range of electronic communications services throughout the UK. Section 3(4)(b) explains that, in meeting these requirements, Ofcom must have

regard to the desirability of promoting competition in relevant markets. Section 3(4)(e) states that Ofcom must have regard, in performing its duties, to the desirability of encouraging the availability and use of high speed data transfer services throughout the UK. Also, in furthering the interests of consumers, Ofcom must have regard to choice, price, quality of service and value for money. Additionally, Section 4 of the Act sets out the Community duties on Ofcom which flow from Article 8 of the Framework Directive.

- 5.11 Ofcom, in considering whether to propose any SMP services conditions, has considered all of these requirements. In particular, it has considered the requirement to promote competition in relation to the provision of electronic communications networks and electronic communications services.
- 5.12 Also, SMP services conditions must be appropriate (Section 87(1) of the Act) and satisfy the tests set out in Section 47(2) of the Act. These are that each condition must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
 - not such as to discriminate unduly against particular persons or a particular description of persons;
 - proportionate to what the condition is intended to achieve; and
 - in relation to what it is intended to achieve, transparent.

Aims of regulating wholesale broadband access

- 5.13 In Section 4, we have explained why we consider that BT has SMP in the provision of wholesale broadband access services in Market 1 and separately in Market 2 and that KCOM has SMP in the provision of wholesale broadband access services in the Hull area. Article 16 of the Framework Directive provides that

“where an NRA determines that the relevant market is not effectively competitive, it shall identify undertakings with SMP on that market... and... shall on such undertakings impose appropriate specific regulatory obligations... “.

- 5.14 The Commission considers that in most cases it is preferable to apply regulation at the wholesale level⁷⁰. We agree with the Commission’s view. Regulation at the wholesale level could be used to address SMP concerns in the relevant wholesale market and hence, in turn, increase competition in the downstream markets that rely on these wholesale inputs.
- 5.15 The application of regulation at the wholesale level rather than at the retail level also fits with the Community requirement that NRAs take measures which meet the objective of encouraging efficient investment in infrastructure and promoting innovation. The introduction of regulation in wholesale markets is likely to encourage providers to purchase wholesale products and combine them with their own capabilities so as to provide competition to KCOM and BT in downstream markets.

⁷⁰ For example see the EM.

- 5.16 Regulation at the wholesale level would also help to ensure that the objectives of Sections 4(7) and 4(8) of the Act are met. These are that we take measures which encourage the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and for the purpose of securing the maximum benefit for the persons who are customers of CPs and of persons who make such facilities available. Regulation at the wholesale level would be likely to, as noted above, help to increase the level of competition in the downstream markets and this would in turn help to ensure that the benefits in terms of price, choice and quality would be optimised for retail consumers of broadband internet services.
- 5.17 In assessing the appropriate level of regulation to be applied, we have also taken into account the SMP Guidelines which state at paragraph 15 that regulation should aim to promote an open and competitive market, and at paragraph 16 that *ex-ante* regulations should be imposed to ensure that an SMP provider cannot use its market power to restrict or distort competition on the relevant market or leverage market power on to adjacent markets.
- 5.18 We have also taken full account of Oftel's guidelines, which were published on 13 September 2002 ("the Access Guidelines"), on the imposition of access obligations under the new Directives⁷¹. These describe the circumstances in which we would consider the imposition of wholesale access obligations to be appropriate, give guidance on the nature of the wholesale products we would expect to be supplied as a result of an obligation to provide access, and describe the conditions under which products should be made available.
- 5.19 In addition, we have considered the Revised ERG Common Position on the approach to Appropriate remedies in the electronic communication networks and services (ECNS) regulatory framework⁷² ("the ERG Remedies Position") and, in particular, the statement that
- "...there is a presumption that *ex ante* regulation is appropriate on the 18 markets in the Recommendation if a position of SMP is found."⁷³
- 5.20 The ERG Remedies Position sets out that in the case of markets where there is a single firm having SMP, remedies should be considered to address the following concerns:
- entry-deterrence;
 - exploitative behaviour; and
 - productive inefficiencies.
- 5.21 The ERG Remedies Position sets out that, in the case of a single firm having SMP in a wholesale market such as that for wholesale broadband access, the following remedies should be considered to address the concerns set out above:

⁷¹ These guidelines can be found at

http://www.ofcom.org.uk/static/archive/oftel/publications/ind_guidelines/acce0902.htm

⁷² See http://erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

⁷³ See page 9. Note: the number of markets has been reduced to 7 in the Recommendation (second edition)

- a requirement to publish a reference offer;
- an obligation to meet reasonable requests for access to, and use of, specific network elements and associated facilities;
- an obligation for access charges to be cost-orientated;
- a requirement to pre-notify changes in tariffs;
- the setting of price controls; and
- an obligation not to discriminate.

5.22 The ERG has also published a *common position on best practice in bitstream access remedies imposed as a consequence of a position of significant market power in the market for wholesale broadband access*⁷⁴ (“the ERG Bitstream Position”). The ERG Bitstream Position sets out a methodology for dealing with remedies in the wholesale broadband access market. We have considered each of the suggested remedies in the ERG Remedies Position and the ERG Bitstream Position in this section.

Impact Assessment

- 5.23 As set out in Annex 6, Section 7 of the Act sets out Ofcom’s obligations in relation to carrying out Impact Assessments.
- 5.24 In this section we discuss our options for imposing regulatory remedies in markets where we have proposed that an undertaking has SMP. We discuss the impact of each option on stakeholders and how each option relates to Ofcom’s duties.
- 5.25 As such, the analysis set out in the remainder of this Section constitutes an Impact Assessment under Section 7 of the Act.
- 5.26 Annex 6 also sets out our obligations to assess the potential impact of all our functions, policies, projects and practices on race, disability and gender equality. This review is based on assessing the ability of communications providers to compete at the wholesale level and, as set out in Section 3, is based on an analysis of competitive conditions in the coverage areas of BT’s local exchanges. As such we do not believe our proposals will have any particular effect on one group of consumers over another.

Remedies considered – Market 1

- 5.27 As explained in the above Section on market power, Market 1 is characterised by, in particular, the current absence of any competitors to BT, very high barriers to entry and sunk costs and economies of scale, scope and density. We therefore consider that BT has the ability and incentive to behave to an appreciable extent independently of competitors, customers and ultimately consumers.
- 5.28 In this section we set out our proposals for remedies in Market 1 to address these concerns. We start by discussing three general options for remedies:
- Option 1: no remedies;

⁷⁴ See http://erg.eu.int/doc/publications/erg_06_69rev1_wba_cp.pdf

- Option 2: general access and non-discrimination remedies; and
- Option 3: price controls in addition to general access and non-discrimination remedies.

5.29 Having discussed the approach that we consider to be most appropriate, we then discuss each specific SMP condition in relation to whether it meets the relevant legal tests for imposing conditions on a dominant provider.

Option 1 (no regulation)

5.30 As set out in Section 4, Ofcom considers that BT has SMP in Market 1 and that there is little potential for competition in this market. Ofcom considers that it is unlikely to be economically viable to build the networks necessary for the provision of downstream broadband access services in this market and therefore considers that SMP is entrenched.

5.31 An absence of regulation, therefore, would be unlikely to result in the development of effective competition in downstream services (in terms of price, rollout, service quality and product differentiation). Other providers would be less likely to enter to provide downstream services as they would require access to be provided by BT and, in the absence of regulation, BT would have little incentive to provide services to them. The consequence of this would be a restriction of competition in Market 1 and in the provision of downstream broadband services.

5.32 For these reasons, Ofcom considers that *ex-ante* regulation is required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality are optimised for citizens and consumers in Market 1.

Option 2 (access and non-discrimination obligations)

5.33 As set out above, in the absence of regulatory remedies in Market 1, BT would not have the incentive to provide access to other providers and this could restrict competition in the provision of retail offers. An absence of wholesale products is unlikely to stimulate investment from other providers.

5.34 As such, in order to promote competition in the provision of downstream broadband services, a suite of regulatory remedies requiring BT to provide Network Access would be required. These remedies would aim to ensure that other providers can obtain wholesale products from BT.

5.35 Requiring BT to provide Network Access would allow other providers to compete in the downstream market by allowing them to access the products they need, but cannot replicate themselves due to the high costs of deploying the network needed to provide these products.

5.36 The Network Access provided by BT should be that required by third parties to compete in the retail market, including the ability to differentiate their products as far as possible from those of BT's retail divisions. However, it would not be appropriate to require BT to provide any type of Network Access required by third parties. A requirement to provide Network Access could result in BT being requested to develop multiple products at potentially high costs with very limited customer demand. It would only be appropriate to require BT to meet those requests that are reasonable (for example, have a high expected customer demand, or a low cost of development, or can be charged at a premium to recover costs of development).

- 5.37 If BT is only required to provide Network Access it may discriminate in favour of its own retail divisions. As the competitors have no other source of supply, this would limit their ability to compete with BT in the downstream market. This discrimination may take the form of setting excessive prices for wholesale products or in providing products of inferior quality or functionality.
- 5.38 Therefore, the obligation to provide Network Access is more likely to be effective if it is supported by an obligation not to unduly discriminate. In the WBA market this would require BT to provide the same service functionality to its wholesale customers as it provides to its own downstream divisions. For example, BT would be required to allow competitors to have access to the higher maximum available speeds based on the deployment of new technology (e.g. ADSL2+) and to features it uses to meet the needs of its own business customers, such as lower contention ratios.
- 5.39 In order to ensure BT is complying with the obligations to provide Network Access and the requirement not to unduly discriminate, additional obligations related to ensuring transparency may also be required. In addition, transparency obligations would provide third parties with access to the information they need in order to make informed decisions about purchasing BT's wholesale products. Without these obligations, not only would it be difficult for third parties to assess whether BT was meeting its obligations to provide Network Access and to not discriminate unduly, it may also be the case that third parties do not have sufficient information in order to decide whether, or how, to enter the downstream market by purchasing BT's wholesale products. This could ultimately result in fewer providers, and therefore less choice, for consumers.
- 5.40 Transparency obligations would require BT to publish a reference offer, charges, terms and conditions and technical information related to the product with sufficient notice so that third parties could act on the information in a timely manner. Without this, BT could change products or pricing with insufficient or no notice to its wholesale customers with the intent of discriminating in favour of its retail divisions.
- 5.41 A further transparency obligation is related to providing information as to quality of service. BT could seek to favour its own retail divisions by, for example, providing service more quickly to its retail division than to third parties. Alternatively it may offer preferential repair for its retail divisions or prioritise the broadband traffic of its retail customers over third party traffic. An obligation to provide transparency as to quality of service would ensure BT complies with its obligation not to unduly discriminate by reporting the quality of service provided internally and externally.
- 5.42 Given that in Market 1 BT holds a position of SMP and faces no competition from other providers, in the absence of regulation it has no incentive to provide products on equitable terms to potential competitors of its own downstream divisions. Therefore, we propose general access, non-discrimination and transparency obligations are required in Market 1.

Option 3 (price controls)

- 5.43 In a competitive market, the pricing of services on the basis of the commercial judgements of individual companies could be expected to deliver cost reflective pricing. However, where competition cannot be expected to provide effective constraints, ex-ante regulation may be desirable to prevent excessive pricing. Such intervention could also have as its objectives the aim of promoting efficiency and of allowing the development of effective competition in downstream markets.

- 5.44 In Market 1, BT is the only provider. As discussed in Section 4 above, there is little likelihood of entry based on LLU in this market. We do not consider that entry, or the threat of entry, will act to constrain BT's wholesale prices. As such, BT may have the incentive to set prices above the competitive level. BT's competitors at the retail level would be forced to pay these high prices in order to provide service on a national basis.
- 5.45 We did not impose a price control in the previous WBA market review due to uncertainty about future fixed broadband subscriber growth, and to ensure CP's had sufficient incentive to invest in LLU in WBA markets with SMP. However, since our previous review, the rate of growth in fixed broadband subscriber numbers and LLU roll-out has decreased, with LLU roll-out beyond 2010 likely to be more limited. Our expectation that any rollout is not likely to be in Market 1 to any significant extent.
- 5.46 Whilst BT has had some flexibility in the level it set wholesale broadband access prices, its ability to price excessively in areas where LLU based competition did not develop were constrained by a voluntary price ceiling. Once the current voluntary commitment expires, it may therefore be in BT's interests to increase this price. We consider that there are four possible approaches to price regulation:
- Retail minus;
 - Cost orientation;
 - Safeguard cap; or
 - Charge control.

"Retail minus"

- 5.47 In the absence of specific pricing obligations, BT may be constrained by the "retail minus" cap that results from the imposition of the requirement to provide Network Access and the obligation not to unduly discriminate. This retail minus approach provides a light touch approach to regulation and is appropriate in certain circumstances, for example when we consider a market is moving towards being competitive or there is a risk that price regulation could deter investment. However, in Market 1 there is no operator other than BT and significant entry is unlikely during the forward look period of this review. We consider that the position of SMP held by BT is entrenched and the market is not moving towards becoming effectively competitive.
- 5.48 We therefore are of the view that ex ante pricing obligations are required to address BT's SMP in Market 1.

Cost orientation

- 5.49 Without some intervention in pricing, BT would have the ability to charge excessive prices in order to maximise profits by increasing its revenues. Excessive prices at the wholesale level could make it difficult for third party CPs to compete at the retail level with BT and in the long term, may result in market exit. In terms of the effect on the retail market, unjustifiably high wholesale charges are also likely to result in high retail prices, which indicates that consumers may be paying more for a service than they should expect if wholesale prices were constrained by effective competition.
- 5.50 A cost orientation obligation would require BT to set prices based on its costs incurred in Market 1, to provide a safeguard against excessive pricing.

- 5.51 LRIC plus an appropriate mark up for common costs and for recovery of cost of capital is the preferred method for this type of regulation in communications markets. This is because communications markets experience economies of scale and scope. Common costs need to be recovered through mark-ups over LRIC in situations of one-way access where rivals buy wholesale inputs from the SMP wholesale provider without also selling wholesale inputs to the SMP wholesale provider. A requirement for charges to reflect an appropriate mark-up allows sufficient flexibility for this to be done in an efficient way whilst avoiding anti-competitive low prices or excessive prices.
- 5.52 A cost orientation obligation would act in addition to the “retail minus” approach set out above, providing a further constraint on BT. The cost orientation obligation would apply to each and every charge so that BT would not be able to set charges (such as transfers) at excessive levels⁷⁵.
- 5.53 If we were to impose just a cost orientation obligation on BT, along with guidance as to the interpretation of this (for example, we could provide guidance that BT’s prices must, as a “first order test”, be between DLRIC⁷⁶ and DSAC⁷⁷), BT would be required to adjust its prices to comply with the obligation if its current pricing was outside this range. As such, BT’s prices would be constrained based on the costs incurred in Market 1.
- 5.54 However, as BT is the monopoly provider in Market 1, it is unlikely to be incentivised to reduce its costs and set prices at the competitive level. It would be likely to be able to recover higher costs through higher prices charged at the wholesale level, which would ultimately be passed on in higher retail charges.
- 5.55 In addition, as set out above, there are significant costs related to the WBA market that are not currently allocated to geographic markets. BT may seek to recover these costs, as well as common costs, through its prices in Market 1 given the absence of alternate supply.

Safeguard Cap

- 5.56 The key benefit of a safeguard cap is that it sets a maximum price level that BT could charge. However, other than basing this maximum level on the costs in Market 1 (as discussed below in relation to a charge control), it is not clear what would be the basis for the maximum level. Previously, Ofcom has set safeguard caps based on current prices (via either an RPI-0% or RPI-RPI approach), but in Market 1 where BT is a monopoly provider, and where its prices have been set based on a voluntary commitment rather than its costs, it is not clear that prices reflect costs.
- 5.57 The danger, therefore, of an RPI-0% or RPI-RPI cap is that prices are currently above the competitive level and BT could maintain this pricing level, irrespective of the costs that would be expected to be incurred by an efficient operator in a competitive market.

⁷⁵ Although this in itself could be difficult because the costs associated with transferring service to another provider may be difficult to ascertain.

⁷⁶ Distributed Long Run Incremental Cost.

⁷⁷ Distributed Stand Alone Costs.

Charge Control

- 5.58 Where there is a risk of a firm setting excessive prices due to a lack of competition in the market, a charge control with transparent, easy to monitor compliance conditions can help ensure that firms do not abuse their dominant position and that competition develops to the benefit of consumers.
- 5.59 While a cost orientation obligation constrains the incumbent from charging its competitors prices for individual services that are either too high, or too low, compared with a level reflective of competitive market conditions, it may not by itself provide a sufficient control on average charges across a number of services. Further it is unlikely to encourage the incumbent to reduce its costs over time by becoming more efficient in the provision of such services. Under Ofcom's preferred method of charge control regulation, RPI+/-X, incentives are created on the dominant provider to increase its efficiency, thereby imitating the effect of a competitive market. If the firm can reduce its costs below the level expected when the cap was set, then the firm retains the increased profits, at least for the period the control is in place.
- 5.60 Communications markets experience significant economies of scope. This means that it is more efficient for the same operator to supply a number of different services rather than for each to be provided by a different operator. It also means that there are likely to be significant common costs that cannot be attributed to the provision of any one service. In these cases it may be difficult to determine if prices are excessive in one market, without understanding the recovery of costs from related markets. A charge control will include the allocation of common costs to the provision of certain services.
- 5.61 Imposing a charge control in addition to a cost orientation obligation would allow for this as the charge control could be structured to incentivise efficiency improvements and/or investment by BT in Market 1, which would be of benefit to all purchasers of WBA products (and, ultimately, would result in better products and lower prices for consumers). It would also provide more certainty over the life of the control period about the maximum level of WBA charges.
- 5.62 A charge control would result in prices being based on a forward-look view of the costs⁷⁸ related to provision of service in Market 1 at the end of the period, taking into account efficiency improvements and possible future investment by BT that will be of benefit to consumers and citizens.
- 5.63 A charge control would provide certainty for purchasers of BT's products in Market 1 in that the maximum price which they can be charged would be known for the period of the review. It would provide BT with an incentive to improve its efficiency as any cost reductions resulting from efficiency improvements beyond those included in the charge control would be retained by BT. It would also allow BT to make a reasonable return on its investment in Market 1, taking account of the associated risk.
- 5.64 A charge control may, however, have negative effects. In deciding on whether to invest in deployment of LLU, an operator will take into account the returns that can be made on its investment. Where the competition it will face in making those returns is based on the incumbent's charge controlled services, the level of the charge control will constrain the level of returns that can be made.

⁷⁸ We propose to consider the specifics of the charge control, including the relevant costs, in a separate consultation.

- 5.65 Therefore, the returns available would be limited not just for BT but also for LLU operators. Where there has already been investment in LLU, by operators other than BT, the full effect of this investment may not have fully developed. In addition, the reduced returns available to LLU operators may inhibit future investment and may send the wrong signals about future investment in other markets.
- 5.66 However, in Market 1, there has been no investment by operators other than BT and, in our view, based on information provided to us by LLU operators, there is little prospect of such investment in the forward look period of this review. Therefore, in Market 1, broadband services will continue to be based on BT's wholesale products. If the price of these products is high, it will impact all competing providers and it will be reflected in the retail prices.
- 5.67 In Section 4 we have set out that, based on BT's historic returns in the whole of the WBA market, we consider that it is reasonable to expect early losses when the investment was first made and product volumes were low have been recovered. In considering the detail of any charge control we would need to take into account, amongst other things, BT's initial investment in WBA in Market 1, the risk associated with this investment and the lifetime returns that may be expected on such an investment.

Conclusion on price controls

- 5.68 We propose that, based on BT's position as the only provider in Market 1, we should impose a charge control in addition to cost orientation. In Section 4 we have discussed BT's historic returns in WBA and the difficulty in assessing precise returns in each market, given the revenues and costs that are currently not allocated by market. However, without a charge control in Market 1 there is a danger that BT could set prices at an excessive level.
- 5.69 We propose to consult separately on the detail of the charge control. In particular, in that consultation we will need to address how to allocate the costs and revenues that are currently not allocated to geographic markets. We will also need to consider the level of returns that BT should be allowed to make in Market 1. In this assessment, our aim, as discussed above, will be to ensure that BT is constrained from exploiting its position as the monopoly provider in Market 1 areas, while being appropriately compensated for the risk it has taken in investing in Market 1 to date. We will also consider the potential for future investments BT may make in Market 1 during the period of the charge control, such that the charge control does not act to disincentivise efficient investment.
- 5.70 In addition, we consider that an additional transparency obligation requiring BT to provide cost accounting data is appropriate in order to provide transparency of BT's costs in Market 1. This will allow us and other stakeholders to ensure BT is complying with these obligations.

Proposed conditions in Market 1

- 5.71 Based on the above, the following are the specific remedies we propose:
- Requirement to provide Network Access on reasonable request;
 - Requirement not to unduly discriminate;
 - Transparency obligations;

- Requirement to publish a reference offer;
 - Requirement to notify charges, terms and conditions;
 - Requirement to publish technical information
 - Transparency as to quality of service; and
 - Requirement to account separately.
- Charge control;
 - Basis of charges (cost orientation); and
 - Cost accounting.

5.72 We discuss each of these specific conditions below, specifically in relation to how they address our competition concerns in Market 1.

Requirement to provide Network Access on reasonable request

5.73 Section 87(3) of the Act authorises the setting of an SMP services condition requiring the dominant provider to provide Network Access as Ofcom may, from time to time, direct. These conditions may, pursuant to Section 87(5), include provision for securing fairness and reasonableness in the way in which requests for Network Access are made and responded to and for securing that the obligations in the conditions are complied with within periods and at times required by or under the conditions. When considering the imposition of such conditions in a particular case, Ofcom must have regard to the six factors set out in Section 87(4) of the Act, including *inter alia*, the technical and economic viability of installing other competing facilities and the feasibility of the proposed Network Access.

5.74 The proposed condition will require BT as a result of its SMP to meet reasonable requests for Network Access. The condition will also require BT to provide Network Access in response to such a reasonable request on fair and reasonable terms and conditions, including charges. BT will also be obliged to provide Network Access on such terms and conditions, including charges, as Ofcom may from time to time direct.

Aims and effects of the condition

5.75 Ofcom considers that it is appropriate to impose a requirement on BT as a result of its SMP to meet reasonable requests for Network Access. Ofcom considers that, in the absence of such a requirement, BT would have the ability and the incentive not to provide such access. Therefore we consider it necessary to impose an obligation on BT to provide Network Access on reasonable request.

5.76 Our market analysis has shown that there are considerable sunk costs associated with building networks to provide broadband services. Ofcom considers that it is unlikely to be economically viable for other CPs to build direct access networks in Market 1 on a sufficient scale to provide a viable alternative to BT. Therefore, Ofcom is currently of the view that a requirement on BT to provide access to its network in Market 1 is appropriate as it would be likely to facilitate competition in downstream markets by enabling CPs to compete without the need to invest in a network which might not be economically viable.

Legal tests

- 5.77 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.78 An obligation to provide Network Access is objectively justifiable in that it will encourage greater access to BT's network and will therefore foster competition. The obligation does not discriminate unduly between providers, as it is imposed on BT and BT is the only operator active in Market 1. The proposed obligation is also proportionate in what it is trying to achieve since it is directly targeted at addressing the market power which Ofcom believes BT holds in this market and it does not require BT to provide access where it is not technically feasible or reasonable. The proposed obligation also passes the requirement of transparency since the aims and effects described above are clear on the face of the condition itself, the text of which is set out in the notification at Annex 5.
- 5.79 Ofcom has also taken into account the factors set out in Section 87(4) of the Act. In particular, the proposed obligation would require BT to meet requests that are reasonable only, by which it is meant, *inter alia*, that the terms of access are technically and economically viable, and feasible. The requirement on BT only to meet reasonable network access requests also ensures that due account is taken of the investment made by BT initially in providing the network whilst ensuring that effective competition is secured in the long term.
- 5.80 Ofcom has considered its duties under section 3 of the Act. We consider that, in ensuring Network Access at the reasonable request of third parties, the proposed condition would in particular further the interests of citizens and further the interests of consumers in relevant markets by the promotion of competition.
- 5.81 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular would promote competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.82 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

- 5.83 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of Network Access.
- 5.84 Recital 17 of the Access Directive states that no undue discrimination obligations ensure that undertakings with market power do not distort competition, in particular where they are vertically integrated undertakings that supply services to competitors in downstream markets. This is clearly the case with respect to wholesale broadband access.

- 5.85 The proposed condition will provide that BT must not unduly discriminate against particular persons or against a particular description of persons in relation to matters connected with Network Access.

Aims and effects of the condition

- 5.86 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP not to unduly discriminate in the provision of Network Access. Ofcom considers that, in the absence of such a requirement, BT would have the ability and the incentive to give preferential treatment to its downstream business. Therefore, this obligation serves as an important complementary remedy to the network access obligation.

Legal tests

- 5.87 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.88 Ofcom considers that the proposed obligation is objectively justifiable, in that it provides safeguards to ensure that competitors, and hence consumers, are not disadvantaged by BT discriminating unduly in favour of its own retail activities or between different providers. The proposed obligation does not discriminate unduly between providers, as it is imposed on BT and BT is the only operator active in Market 1. The proposed obligation is proportionate since it only prevents behaviour which is unduly discriminatory. Behaviour that is unduly discriminatory (particular in favour of the dominant provider's own retail divisions) is likely to have a negative effect on consumers by reducing the effectiveness of competitors to the dominant provider, as their wholesale input products would be of inferior quality (or not competitively priced), compared to those available to the dominant provider's own retail division. However, it is no more intrusive than necessary to achieve its purpose effectively as it only relates to undue discrimination. Differences that reflect, for example, costs of provision, are not necessarily undue discriminatory.
- 5.89 Finally, the proposed obligation is transparent since its aims and effects described above are clear on the face of the condition itself, the text of which is set out in the notification at Annex 5. In addition, Ofcom has considered how it will treat undue discrimination in its guidelines of 15 November 2005 on undue discrimination by SMP providers ("the Discrimination Guidelines"). Ofcom considers that undue discrimination occurs when an SMP provider does not reflect relevant differences between (or does not reflect relevant similarities in) the circumstances of customers in the transaction conditions it offers, and where such behaviour would harm competition. Ofcom further considers that, in the case of non-price differences in transaction conditions (and similar prices) offered by a vertically integrated SMP provider between an internal and external wholesale customer, Ofcom may presume discrimination. Such a presumption may be rebutted if an SMP provider can demonstrate objective justification for the differences.
- 5.90 We have also considered our statutory obligations and the Community objectives set out in sections 3 and 4 of the Act.
- 5.91 As Ofcom considers that BT has SMP in the provision of wholesale broadband access in Market 1, it controls a key input into a range of downstream services, principally asymmetric broadband internet access. Together with an obligation to provide Network Access, the proposed obligation would in particular encourage the provision of Network Access and service interoperability for the purpose of efficiency

and sustainable competition in downstream markets by ensuring that BT does not unduly discriminate. This will ensure a legal competitive playing field, leading to the promotion of competition and the interests of consumers through the maximisation of choice in downstream markets.

- 5.92 Therefore, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.93 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.94 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to publish a Reference Offer

- 5.95 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information, and in such manner as Ofcom may direct, for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the reference offer. Finally, Section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.
- 5.96 Ofcom considers that, where we require a RO to be published, this should include:
- a clear description of the services on offer;
 - terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The RO should provide sufficient information to enable providers to make technical and commercial judgements such that there is no material adverse effect on competition;
 - information relating to technical interfaces and points of interconnection. Such information should ensure that providers are able to make full and effective use of all the services provided;
 - conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the RO, that provides for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion; and
 - terms and conditions that are fair and reasonable. This will ensure that products are offered on terms and conditions as they would in a competitive market and

that they are sensible, practical, and do not impose a margin squeeze on competitors.

Aims and effect of the condition

- 5.97 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP to publish a Reference Offer (RO). The main reasons for the publication of an RO are to assist transparency for the monitoring of potential anti-competitive behaviour and to give visibility to the terms and conditions on which other providers would be able to purchase wholesale access services.
- 5.98 The requirement to publish a RO would complement the network access conditions to secure freedom of choice for wholesale customers of BT and allow CPs to make informed decisions about future entry into the relevant market. Further, the proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the proposed obligation would make it easier for Ofcom and other CPs in the relevant market to monitor any instances of discrimination.
- 5.99 Overall, the publication of a RO would therefore help to ensure stability in markets and ensure that incentives to invest would not be undermined.

Legal tests

- 5.100 Ofcom considers that the proposed obligation satisfies the tests set out in Section 47(2) of the Act.
- 5.101 The proposed obligation is objectively justifiable, in that it relates to the need to ensure that competition develops to the benefit of consumers. In particular, the RO will enable operators to make full and effective use of Network Access. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator active in Market 1. The proposed obligation is proportionate in that only information that is necessary to ensure that there is no material adverse effect on competition is required to be provided. The proposed obligation meets the test of transparency set out in the Act since its aims and effects described above are clear on the face of the condition itself, the text of which is set out in the notification at Annex 5.
- 5.102 We have also considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.
- 5.103 The requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability, secure freedom of choice for wholesale customers of BT and allow CPs to make informed decisions about future entry into the relevant market. Further, the proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the proposed obligation would make it easier for Ofcom and other CPs in the relevant market to monitor any instances of discrimination.
- 5.104 For the reasons set out above, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.

- 5.105 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.106 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to notify charges, terms and conditions

- 5.107 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency. Section 87 (6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract (e.g by the publication of a reference offer).

Aims and effects of the condition

- 5.108 The notification of charges, terms and conditions at the wholesale level has two main purposes: to assist transparency for the monitoring of potential anti-competitive behaviour and to give advanced warning of charge changes to competing providers purchasing wholesale access services. The latter is important to ensure that competing providers have sufficient time to plan for such changes, as they may want to restructure their own offerings in response to changes at the wholesale level. Publication of charges, terms and conditions therefore helps to ensure stability in markets and without it incentives to invest might be undermined and market entry less likely.
- 5.109 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP to publish any planned changes to charges, terms and conditions in advance of those changes taking place. The main benefit of this in wholesale markets is that other CPs would have the opportunity to consider whether these changes necessitate a change in their retail offerings. This would then create a 'ripple effect' that passes any wholesale changes down to end-users.

Legal tests

- 5.110 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.111 The objective justification for imposing such an obligation is that general and reliable visibility of a dominant operator's prices is needed to enable Ofcom and competitors to monitor BT's prices for possible anti-competitive behaviour. This will work in conjunction with the requirement to provide Network Access to ensure effective entry to the market for third parties. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is to be imposed on BT, which is the only operator active in Market 1. We consider that a 28 day notification period achieves the purpose of allowing third party providers a sufficiently long period to plan for changes to terms, conditions and charges and adjust their own offerings, whilst not being unduly burdensome for BT. Therefore, we consider that the condition is proportionate. The proposed condition is transparent since its aims and effects

described above are clear on the face of the condition itself, as set out in the notification at Annex 5.

- 5.112 We have also considered our statutory obligations and the Community requirements under sections 3 and 4 of the Act.
- 5.113 In particular, the proposed obligation would encourage compliance with transparency, for the purpose of facilitating service interoperability and securing freedom of choice for the customers of CPs. The proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. The proposed obligation would also promote competition in downstream markets by allowing BT's competitors to make appropriate changes to their products. Finally, the proposed obligation would make it easier for Ofcom and BT's competitors to monitor any instances of discrimination.
- 5.114 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.115 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.116 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to publish technical information

- 5.117 Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency.

Aims and effects of the condition

- 5.118 In Ofcom's view, in Market 1, BT should be required to publish any new or modified technical characteristics, points of Network Access and technical standards at least 90 days in advance of BT either entering into a contract to provide new Network Access or making technical changes to existing Network Access unless Ofcom consents otherwise.
- 5.119 The main benefit of this in wholesale markets is that other CPs could ensure that their systems are interoperable with any changes to technical specifications that would be likely to affect their business.

Legal tests

- 5.120 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.121 The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator active in Market 1. The proposed obligation is proportionate in that in most circumstances 90 days is the minimum necessary to allow competing providers to modify their networks and any extension would be required only where it was reasonable to do so. The proposed obligation is also transparent since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.
- 5.122 We consider that, by ensuring that other CPs' systems are interoperable with any changes to technical specifications that might affect their businesses, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.123 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.124 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency as to quality of service

- 5.125 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency.

Aims and effects of the condition

- 5.126 Vertically integrated operators have the ability to favour their own downstream business over third party CPs by differentiating on price or terms and conditions. This discrimination could also take the form of variations in quality of service (either in service provision and maintenance or in the quality of network service provided by the dominant provider to external providers compared to its own retail operations). This has the potential to distort competition at the retail level by placing third party CPs at a disadvantage in terms of the services they can offer consumers to compete with the downstream retail business of the vertically integrated operator.
- 5.127 In light of this, Ofcom believes that it is appropriate to impose a requirement on BT, as a result of its SMP, to publish information related to transparency as to quality of service. The main benefit of this in wholesale markets is that other CPs could ensure that the service they receive from BT is equitable to that provided by BT to its own retail divisions.

- 5.128 The obligation will require BT to publish information as directed by Ofcom, rather than requiring BT to publish specific information from the date of the imposition of the obligation. This is the same as the condition imposed in previous reviews. As we have not considered it necessary to issue any such direction based on concerns that BT may be discriminating in the quality of service it provides, we are of the view that it is appropriate to continue this approach.

Legal tests

- 5.129 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.130 The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access and to ensure that, in purchasing this access, they are not unduly discriminated against. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator active in Market 1. The proposed obligation is proportionate because it only requires BT to publish information as directed by Ofcom in the event we consider such information is required to monitor BT's compliance with its other obligations, which is the minimum condition to ensure the desired objective. The proposed obligation is also transparent since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.
- 5.131 We consider that, in ensuring the Network Access that third party CPs receive from BT is equitable to that provided by BT to its own retail divisions, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.132 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.133 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to account separately

- 5.134 Sections 87(7) and 87(8) of the Act authorises Ofcom to impose appropriate accounting separation obligations in respect of the provision of Network Access, the use of the relevant network and the availability of relevant facilities. That is to say, an operator with SMP may be required to maintain a separation for accounting purposes between such different matters relating to Network Access or the availability of relevant facilities. Accounting separation would prevent a vertically integrated operator with SMP from providing wholesale services on terms and conditions that discriminate in favour of its own retail activities in such a way that may have a material effect on competition because internal transfer prices and external charges would be visible.

5.135 On 22 July 2004, Ofcom published a statement on the regulatory financial reporting obligations on BT: accounting separation and cost accounting systems⁷⁹. In that statement, Ofcom imposed SMP services conditions for regulatory financial reporting on BT (Conditions OA1 to OA34) covering all forms of regulatory reporting and directions under those conditions, setting out:

- the network components to be reported on (draft direction 1);
- the transparency of the systems (draft direction 2);
- the financial statements to be prepared and published and the appropriate audit levels (draft direction 3);
- the form and content of these financial statements (draft direction 4);
- the fairly presents in accordance with (FPIA) audit opinion (draft direction 5); and
- the properly prepared in accordance with (PPIA) audit opinion (draft direction 6).

5.136 Ofcom considers that, in the event that it is appropriate to impose an SMP services condition requiring accounting separation in relation to the wholesale broadband access markets, the SMP services conditions set out above would apply in respect of the details of such accounting.

Aims and effects of the condition

5.137 Ofcom believes that it is appropriate to impose a requirement on CPs with SMP to account separately for internal and external 'sales' of wholesale broadband access services. The main benefit of this in wholesale markets is that other CPs and the regulator can monitor the SMP operator to ensure that it does not discriminate in favour of its own downstream business and to monitor profitability.

Legal tests

5.138 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

5.139 Ofcom believes that given the importance of non-discrimination in these markets the imposition of an accounting separation obligation is objectively justifiable. That is, in order to ensure that the obligation to not unduly discriminate is met and the benefits are realised, it is essential that Ofcom is able to monitor the obligations via an accounting separation obligation. The proposed obligation does not discriminate unduly between providers, as it is imposed on BT and BT is the only operator active in Market 1. It is proportionate as it is necessary as a mechanism to allow Ofcom and third parties to monitor for discriminatory behaviour by BT in Market 1, whilst not being more intrusive than necessary with respect to BT's business to achieve its purpose effectively. It is transparent as it is clear the intention is to allow Ofcom and third parties to monitor compliance with specific remedies (in particular the obligation not to unduly discriminate) imposed to address BT's SMP in Market 1. The requirements for meeting the obligation are agreed and clearly documented.

⁷⁹ *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, 22 July 2004, http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/

- 5.140 In particular, the imposition of an accounting separation obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of an accounting separation obligation will ensure that obligations designed to curb potentially damaging leverage of market power can be effectively monitored and enforced. This is particularly important where there are adjacent geographic markets with different competitive conditions, as in this case. This is because the SMP operator could try to recover some of the cost incurred in these adjacent markets in the market where it holds SMP, thus undermining the prospects of competition in the adjacent markets. In addition the imposition of an accounting separation obligation would allow Ofcom to monitor the profitability of the SMP provider in the market in which it has SMP.
- 5.141 For these reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.142 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.143 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Basis of charges

- 5.144 Section 87(9) of the Act authorises the setting of SMP services conditions imposing on the dominant provider rules concerning the recovery of costs and cost orientation.

Aims and effects of the condition

- 5.145 A basis of charges obligation would require BT to set its charges based on its costs and would apply to each and every charge so that BT would not be able to set charges such as transfers at excessive levels. LRIC plus an appropriate mark up for common costs and for recovery of cost of capital is the preferred method for this type of regulation in communications markets. Common costs need to be recovered through mark-ups over LRIC in situations of one-way access where rivals buy wholesale inputs from the SMP wholesale provider without also selling wholesale inputs to the SMP wholesale provider. A requirement for charges to reflect an appropriate mark-up allows sufficient flexibility for this to be done in an efficient way whilst avoiding anti-competitive low prices or excessive prices.
- 5.146 If we were to impose a basis of charges condition on BT, our view would be that the interpretation of the basis of charges obligation would be that BT's prices must, as a "first order test", be between DLRIC⁸⁰ and DSAC⁸¹ and BT would be required to adjust its prices to comply with the obligation if its current pricing was outside this

⁸⁰ Distributed Long Run Incremental Cost.

⁸¹ Distributed Stand Alone Costs.

range. As such, BT's prices would be constrained based on the costs incurred in Market 1.

Legal tests

- 5.147 We consider that a basis of charges condition meets the criteria set out in section 47(2) - being objectively justifiable, non-discriminatory, proportionate and transparent - and the further criteria set out in section 88 of the Act in relation to price control conditions
- 5.148 The obligation is objectively justifiable based on the evidence outlined in this section that BT's revenue is high based on the underlying costs. The obligation is intended to reduce BT's ability to charge excessive prices to consumers in a market where BT currently faces no competitive or pricing constraints for WBA. The obligation would not unduly discriminate against BT since BT is the only operator active in Market 1. The obligation is proportionate in that it allows BT to make a return on investment in Market 1 whilst acting to constrain BT's ability to set wholesale prices above the competitive level which may ultimately result in consumers paying higher retail prices. The obligation is transparent since its clear intention is to ensure BT should set its charges on a LRIC plus basis and its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.
- 5.149 Price control obligations must also satisfy the conditions set out in section 88 of the Act. According to section 88, we may impose a basis of charges obligation if we consider that there is sufficient risk of adverse effects arising from price distortion. We must also consider if the pricing obligation promotes efficiency, promotes sustainable competition and confers the greatest possible benefits on end users. We must also take account of the extent of investment made by the Dominant Provider.
- 5.150 As an operator with an established dominant position in the provision of wholesale broadband access, BT is able to use its market power to set prices at an excessive level and restrict or distort competition in Market 1. The basis of charges condition would act to ensure that each and every price would be set based on costs and so could not be set at excessively high levels that would ultimately impact the prices paid by end users.
- 5.151 We are also of the view that the basis of charges condition promotes efficiency and sustainable competition, conferring the greatest possible benefit on consumers. CPs seeking to compete based on purchasing LLU in Market 1 will only enter the market if they are equally or more efficient than BT. It recognises investment in that BT is able to make a return on its investment in Market 1, and any operator that enters the market will only do so if it can make an investment compared to BT's prices.
- 5.152 For all these reasons we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.153 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.

- 5.154 We also consider that any pricing to be charged on a fair and reasonable basis under the proposed network access obligations would be appropriate in order to promote efficiency and sustainable competition and provide the greatest possible benefits to end users by enabling competing providers to buy network access at levels that might be expected in a competitive market.
- 5.155 For the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Charge Control

- 5.156 Section 87(9) of the Act authorises the setting of SMP services conditions imposing on the dominant provider price controls connected with the provision of network access.

Aims and effects of the condition

- 5.157 As discussed above, in Market 1, BT is the only provider. There is little likelihood of entry based on LLU in this market. We do not consider that entry, or the threat of entry, will act to constrain BT's wholesale prices. As such, BT has the ability and the incentive to set prices above the competitive level. BT's competitors at the retail level would be forced to pay these high prices in order to provide service on a national basis. We therefore are of the view that ex ante pricing obligations are required to address BT's SMP in Market 1.
- 5.158 As BT is the monopoly provider in Market 1, it is unlikely to be incentivised to reduce its costs and set prices at the competitive level. It would be likely to be able to recover higher costs through higher prices charged at the wholesale level, which would ultimately be passed on in higher retail charges.
- 5.159 In addition, as set out above, there are significant costs related to the WBA market that are not currently allocated to the different geographic markets. BT may seek to recover these costs, as well as common costs, through its prices in Market 1 given the absence of alternate supply.
- 5.160 Imposing a charge control would allow for these effects to be addressed. The charge control could be structured to incentivise efficiency improvements and/or investment by BT in Market 1, which would be of benefit to all purchasers of WBA products (and, ultimately, could result in better products and lower prices for consumers). It would also provide more certainty over the life of the control period about the maximum level of WBA charges.
- 5.161 The charge control would result in prices being based on a forward-look view of the costs⁸² related to provision of service in Market 1 at the end of the period, taking into account efficiency improvements and possible future investment by BT that will be of benefit to consumers and citizens.

⁸² We propose to consider the specifics of the charge control, including the relevant costs, in a separate consultation.

Legal tests

- 5.162 We consider that a charge control obligation would meet the criteria set out in section 47(2) of the Act, since it is objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.163 A charge control is objectively justifiable based on the evidence outlined in this section that BT's revenue is high based on the underlying costs. The proposed obligation is intended to reduce BT's ability to charge excessive prices to consumers, in a market where BT currently faces no competitive or pricing constraints. A charge control would not unduly discriminate against BT since BT is the only operator active in Market 1. We would also ensure that the charge control is proportionate in that it would allow BT to make a return on investment in Market 1 whilst acting to constrain BT's ability to set wholesale prices above the competitive level which may result in consumers paying higher retail prices. The proposed obligation would be transparent since its aims and effects are described above and the terms of the condition will be clear on its face.
- 5.164 In setting a charge control, we will also consider whether the conditions set out in section 88 of the Act are fulfilled. We will consult further on this test in our separate charge control consultation.
- 5.165 As set out above, we consider there is a risk of adverse effects arising if BT maintains some or all of its prices at an excessively high level, reducing benefits for end-users of WBA services.
- 5.166 A charge control would work in conjunction with the basis of charges condition discussed above. The basis of charges condition requires BT to set each price based on its costs in Market 1. However, the basis of charges condition is unlikely to incentivise BT to reduce its costs. It would be likely to be able to recover higher costs through higher prices charged at the wholesale level, which would ultimately be passed on in higher retail charges
- 5.167 A charge control would address this as it could be structured to incentivise efficiency improvements and/or investment by BT, which would be of benefit to all purchasers of WBA products (and, ultimately, could result in better products and lower prices for consumers). The structure of the charge control will be considered as part of a separate project.
- 5.168 We are of the view that a charge control condition will promote efficiency by requiring BT to price at the level of an efficient firm in the absence of competitive constraints in this market. We will aim to ensure BT is incentivised to improve its efficiency ahead of the efficiency improvements built into the charge control. The charge control will also aim to promote sustainable competition by only encouraging equally or more efficient CPs to compete based on LLU. It will also aim to promote sustainable competition at the retail level by restricting BT's ability to price excessively with the aim of making it more difficult for other providers to compete. We expect that the benefits of this pricing will eventually flow through to end-users of WBA services.
- 5.169 In setting a charge control, we would consider the level of existing and planned investment in Market 1 by BT. In doing so we would need to take into account how costs will be allocated to this market and identify the most appropriate methodology. We will consider this as part of a separate charge control project.

5.170 For the reasons set out above, we consider that the imposition of a charge control would in particular further the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act. Further, we consider that, in line with section 4 of the Act, the proposed condition will, in particular, promote competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.

Cost Accounting

5.171 Under sections 87(9) to 87(11) and 88 of the Act, appropriate cost accounting obligations may be imposed on dominant providers in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities. Cost accounting rules may be made in relation to charge controls, the recovery of costs and cost orientation.

5.172 Where an obligation for prices to be cost orientated (via a basis of charges obligation and/or charge control obligation) a cost accounting obligation requires the provider subject to the cost orientation obligation to publish accounting data to demonstrate that their charges meet this obligation.

5.173 BT is required to comply with obligations governing cost accounting systems and processes as set out in an Ofcom statement published in 2004.⁸³ The outputs include:

- Generic cost orientation and non-discrimination requirements:
 - Preparation of a variety of financial statements;
 - Preparation of extensive supporting documentation explaining how the financial statements have been put together;
 - Provision of an independent assurance statement;
 - Publication of most of the information; and
 - Preparation of reconciliation statements;
- Cost orientation specific requirements:
 - Preparation of service level cost data compared to average charges;
 - Preparation of costs of network components used to deliver services; and
 - Analysis of service cost stack by component;
- Non-discrimination specific requirements:

⁸³ *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, 22 July 2004, http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/

- Analysis of internal and external sales including volume data.

Aims and effects of condition

5.174 Ofcom believes that it is appropriate to impose a cost accounting obligation on BT in Market 1. The main benefit of this in wholesale markets is that other CPs and the regulator can monitor BT to ensure that it meets its cost orientation and charge control obligations.

Legal tests

5.175 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

5.176 Ofcom believes that the imposition of a cost accounting obligation is objectively justifiable to ensure the basis of charges and charge control obligations are met. The proposed obligation does not discriminate unduly between providers, as it is imposed on BT and BT is the only operator active in Market 1. It is proportionate because without such an obligation, it would not be clear that BT is meeting its obligations and it is transparent since its aims and effects described above are clear on and its terms are set out in Ofcom's 2004 statement on cost accounting.

5.177 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.

5.178 In particular, the imposition of an cost accounting obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation will ensure that obligations designed to curb potentially damaging leverage of market power – in particular the setting of prices at excessive levels - can be effectively monitored and enforced. This is particularly important where there are adjacent geographic markets with different competitive conditions, as in this case. This is because the SMP operator could try to recover some of the cost incurred in these adjacent markets in the market where it holds SMP, thus undermining the prospects of competition in the adjacent markets.

5.179 For these reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.

5.180 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.

5.181 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Impact of Market 1 proposed remedies on NGA

- 5.182 As we have set out in our consideration of geographic market boundaries in Section 3, BT plans to deploy NGA during the period covered by the forward look of this review. It plans to connect these NGA deployments to 800 – 1000 local exchanges.
- 5.183 Whilst BT has not currently selected the exact exchanges yet, it is likely that the exchanges chosen to host NGA will be in the Market 3 area. These are the larger exchanges and are likely to be located closer to the core of BT's network. As such, using these local exchanges is likely to be more efficient than using smaller, more remote exchanges that are more likely to be in Market 1 or Market 2.
- 5.184 Where the NGA handover points are provided in Market 3 exchanges, no remedies will apply in the WBA market, because there will be sufficient POs able to access the upstream WLA remedy. If, however, BT decides to locate NGA handover points in exchanges within the Market 1 or Market 2 areas, the relevant remedies we propose above would apply, with the exception of the proposed charge control obligations in Market 1.
- 5.185 We do not propose to include WBA services that use NGA in the charge control because:
- This is consistent with our approach to active NGA remedies in the WLA market;
 - We do not have cost data on which to base a charge control;
 - We do not have details of what the WBA products will look like;
 - There may be adverse effects that arise from imposing a charge control on services before they develop; and
 - We have defined a broad market (at both the retail and wholesale level) including services support on current and next generation access networks. The current generation products will therefore provide a constraint on pricing of the next generation products.

Conclusion on proposed remedies in Market 1

- 5.186 We are proposing to impose a range of both general obligations and price controls on BT in Market 1. The proposed set of remedies are:
- Requirement to provide network access on reasonable request
 - Requirement not to unduly discriminate
 - Requirement to publish a reference offer
 - Requirement to notify charges, terms and conditions
 - Transparency as to quality of service
 - Requirement to notify technical information
 - Requirement to account separately

- Basis of charges condition
- Charge control
- Requirement for cost accounting

5.187 We consider that this suite of proposed remedies would operate together effectively to ensure effective network access on terms and conditions that will enable third party providers to enter the market and compete with BT effectively in the downstream retail markets.

Consultation questions

Question 5.1: *Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on BT in relation to the market for wholesale broadband access in Market 1? If not, please explain why.*

Question 5.2: *Do you agree with Ofcom's proposal to impose a basis of charges obligation and a charge control on BT in relation to the market for wholesale broadband access in Market 1? If not, please explain why.*

Remedies considered – Market 2

5.188 In this section we set out our approach to remedies in Market 1. We start by discussing three general options for remedies:

- Option 1: no remedies;
- Option 2: general access and non-discrimination remedies; and
- Option 3: price controls in addition to general access and non-discrimination remedies.

5.189 Having discussed the approach that we consider to be most appropriate, we then discuss each specific SMP condition in relation to whether it meets the relevant legal tests for imposing conditions on a dominant provider.

Option 1 (no regulation)

5.190 As set out in Section 4, Ofcom considers that BT has SMP in Market 2. In contrast to Market 1, however, there has been some entry by competitors to BT and there is some potential for further entry, although we believe this potential to be limited for the forward look period of this review.

5.191 In the absence of regulation on BT, competition would be limited to those providers that have deployed in Market 2. Further, in the absence of regulation, providers would be limited to competing in exchanges where they have deployed their own networks in order to use LLU. It may be argued that the absence of regulated products may promote investment, because in order to compete, POs would need to provide their own capability based on LLU. However, in proposing that BT has SMP we have taken the view that there are barriers to entry in Market 2 due to the high sunk costs incurred in deploying LLU. Therefore, we do not expect that an absence of regulation is likely to promote a significant level of efficient investment by POs in entering the market, leading to competition.

- 5.192 As for Market 1, in the absence of regulation BT would have little incentive to provide wholesale products to these third parties as this would allow them to compete with BT's retail divisions. As such, our analysis of the deployment by POs (current and planned) indicates that without regulated wholesale products, most POs would not be able to compete in large parts of Market 2.
- 5.193 The consequence of this would be a restriction of competition in Market 2 and in the provision of downstream broadband services.
- 5.194 For these reasons, Ofcom considers that *ex-ante* regulation is required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality are optimised for citizens and consumers in Market 2. Ofcom considers, therefore, that it should impose *ex-ante* regulation in this market.

Option 2 (access and non-discrimination obligations)

- 5.195 Whilst there is some, limited competition in Market 2 based on the investment to date by POs other than BT, in the absence of regulatory remedies in Market 2, BT would not have the incentive to provide access to other providers and this could restrict competition in the provision of retail offers. An absence of wholesale products is unlikely to stimulate significant further investment from other providers.
- 5.196 Our view is that, as for Market 1, general access and non-discrimination obligations, supported by the relevant transparency obligations are required in Market 2. Whilst market conditions are different due to the limited competition and the potential for limited future investment in Market 2 compared to Market 1, we propose the following complementary remedies in order to allow network access and ultimately to promote competition:
- Requirement to provide Network Access on reasonable request;
 - Requirement not to unduly discriminate; and
 - Transparency obligations.
 - Requirement to publish a reference offer;
 - Requirement to notify charges, terms and conditions;
 - Requirement to publish technical information
 - Transparency as to quality of service; and
 - Requirement to account separately.
- 5.197 Without these remedies BT would be able to refuse to supply Network Access on reasonable terms, or would be able to supply such access but only in an unduly discriminatory way and this could limit the ability of third parties to compete with BT downstream. The result would be that consumers' choice would be limited to those providers that had deployed using LLU (or Virgin via its cable network where available). As such, our rationale for proposing these remedies is similar to that set out for Market 1 (recognising that the market conditions vary).

Option 3 (price controls)

- 5.198 At the time of the last review, the level of growth in LLU was uncertain as LLUOs continued to deploy their networks. Our aim was to provide these CPs with the right conditions to deploy LLU in order to provide services in the downstream markets. Our concern was that price regulation of BT may set a wholesale price at such a level to act to inhibit the deployment of LLU in the less competitive areas. Therefore, we decided not to impose a cost orientation obligation or a charge control in any geographic WBA market.
- 5.199 Whilst BT has had some flexibility in the level it set wholesale broadband access prices, its ability to price excessively in areas where LLU based competition did not develop were constrained by a voluntary price ceiling. In addition, we effectively imposed a “retail minus” cap on BT’s wholesale broadband access price by imposing general access and non-discrimination remedies. Finally, in the 2008 WBA market review, we noted that we would monitor BT’s profitability in Market 1 and Market 2, and reconsider a price control if this became a concern.
- 5.200 Since the 2008 WBA market review, the rate of growth in fixed broadband subscriber numbers and LLU roll-out has decreased. Responses to our information requests did not indicate that POs currently had plans for rollout beyond 2010, although there may be some opportunity for further rollout for POs based on their own assumptions of market share and costs of rollout. Our view of the potential for LLU rollout (set out in Annex 12) is consistent with the limited forecasts provided by POs.
- 5.201 Furthermore, BT’s voluntary commitment to set wholesale broadband access prices below an agreed ceiling is set to expire on 1 January 2011. In light of this, and the scope for some further investment and competition benefits to emerge over the market review period, we need to establish what form of price regulation will be appropriate and proportionate in Market 2. We have identified a number of options for how we might approach price regulation in Market 2:
- Retail minus
 - Cost orientation
 - Safeguard cap
 - Charge control

“Retail minus”

- 5.202 A “retail minus” cap provides a light touch approach to regulation and is appropriate in certain circumstances, for example when we consider a market is moving towards being competitive or there is a risk that price regulation could deter investment. While we do not consider that Market 2 will become effectively competitive during the period of the review, there may be the potential for some further investment or expansion by LLU operators beyond the June 2010 forecasts included already in our market analysis to take place. A “retail minus” approach to regulation in Market 2 may be sufficient to limit BT’s pricing freedom without stifling potential further investment.
- 5.203 As noted above, a “retail minus” cap is effectively imposed through a combination of the general access and non-discrimination remedies that we propose to impose to address SMP in Market 2. This is because if BT were to margin squeeze this would

equate to constructive refusal to supply. With a retail minus obligation in place, if the retail price is constrained e.g. by competition, then the wholesale price would also be constrained. Such a constraint may occur if BT sets a uniform national retail price, and the retail price in Market 3 geographic areas is constrained by competition.

- 5.204 However, a “retail minus” approach, alone, will not control the absolute level of BT’s wholesale prices. The fact that BT currently set its prices close to their voluntary ceiling in Market 2, may suggest there is a risk that prices in Market 2 could increase further once BT’s voluntary commitment expires on 1 January 2011. This may support imposing some form of safeguard cap on the absolute price level in Market 2, in addition to a “retail minus” regulation, to prevent the risk of excessive prices. It is also important to note that our assessment of market power in Section 4 above found that any further movements in Market 2 areas – in terms of further LLU investment or expansion by existing investors – is unlikely to be sufficient to deliver effective competition. Therefore, while it is appropriate to take a light touch approach to price regulation in Market 2, at this stage some form of price control or safeguard, in addition to “retail minus”, is likely to be proportionate to the scale and nature of any further investment benefits in the market.
- 5.205 Finally, there are a number of pricing elements that make up the WBA products. Whilst retail minus may constrain the main rental prices, BT may be able to seek to set other prices in such a way as to restrict competition. For example, it may try to set the wholesale price for transfers between CPs at an excessive level to restrict switching away from BT. In this case, we may need to intervene (or settle disputes) in future.

Cost orientation

- 5.206 A cost orientation obligation would act in addition to the “retail minus” approach set out above, providing a further constraint on BT. In proposing a cost orientation obligation we would provide guidance on how it should be interpreted. The standard approach would be to interpret it as allowing BT to price up to DSAC as a “first order” test. BT would be likely to be required to adjust its prices to comply with the obligation if its current price was outside this range. Further, the cost orientation obligation would apply to each and every charge so that BT would not be able to set charges such as transfers at excessive levels.
- 5.207 We do not currently have data on the DSAC level in the different geographic markets. We would seek to establish this and provide further guidance on the level that would be considered below DSAC as part of the charge control project for Market 1.
- 5.208 Cost orientation is likely to provide BT with more flexibility in setting prices than a cost-based charge control, but could provide a stronger safeguard against excessive prices than “retail minus” cap alone. However, there might be a concern that, were BT to set prices at the DSAC level, this could potentially lead to higher prices in Market 2 than currently. However, there are several reasons why we might expect BT to set prices below the DSAC level:
- Firstly, given the small size of Market 2, the added complexity of managing separate pricing approaches for different markets may not be worthwhile.
 - Second, at the retail level, given historic practice, BT may be expected to continue to price the same in Market 2 and in Market 1. In Market 1, the wholesale price will be charge controlled and there will be an obligation to provide to other CPs on the same terms as BT provides it to its own retail

divisions. BT Retail will therefore be somewhat constrained in how far above the wholesale price it can charge at the retail level in Market 1. Where BT prices the same in Market 1 and Market 2, the retail minus approach that flows from the use of no undue discrimination as the basis of a 'no margin-squeeze' approach will act to constrain the wholesale price in Market 2.

- Similarly the retail price in Market 2 is also likely to be the same as that in Market 3 where retail prices are constrained from competition from LLU operators and Virgin Media as opposed to a wholesale charge control as in Market 1.
- Finally, there may be some constraint from the wholesale competition that exists in Market 2 (for example from TalkTalk). BT has been arguing that it is increasingly constrained by competition in Market 2. It would be counter to this argument to price materially higher in Market 2 than Market 1 as this would provide an opportunity for the competition that does exist to expand further.

Safeguard cap

5.209 There is a risk that a cost orientation obligation may not provide sufficient certainty for BT and CPs on what prices would be considered within the cost orientation obligation and how those prices might evolve. We have therefore considered the relative merits of imposing a definite cap on the price level in Market 2, in the form of a safeguard cap. A safeguard cap could be either in addition to, or instead of, cost orientation. The retail minus approach would still exist due to the imposition of the general access and non-discrimination obligations.

5.210 The key benefit of a safeguard cap is certainty of the maximum price that BT could set (it could price below the cap level). However, it is not immediately clear at what level the safeguard cap should be set. Whilst there may be a number of approaches to setting a cap, we consider that the following two are likely to be the most appropriate in Market 2:

- Prices in Market 2 could be constrained so they are not allowed to be above those in Market 1. We expect the costs to be lower in Market 2 and so higher prices in Market 2 than Market 1 would tend to indicate BT is pricing above the competitive level.
- Alternatively, we could impose a cap that prevents prices from increasing relative to current prices (either RPI-0% or RPI-RPI).

5.211 In both cases, the safeguard cap would not be based on costs in Market 2. Where an arbitrary safeguard cap leads to prices being set in a way that does not reflect costs, there is a risk that efficient investment will be discouraged if the safeguard cap level is too low. Alternatively, BT may be able to price at an excessive level if the safeguard cap is too high and other POs do not make significant further investments.

Charge control

5.212 In proposing that BT has SMP in Market 2, our view is that there is insufficient constraint in the market without regulation to restrict BT from acting independently of competitors, customers and ultimately consumers (e.g. by setting prices above the competitive level). In order to ensure prices reflect costs, we could impose a charge control in Market 2, with prices being driven to (projected) LRIC plus an appropriate mark-up to reflect common costs at the end of the control period, as proposed for Market 1.

5.213 It is likely that a strict charge control in Market 2 would lead to a lower price in the areas with some competition than the area of enduring SMP (Market 1) because of lower costs. Whilst this may be cost reflective, there is a risk that it would choke off any potential future investment in LLU in this market by eliminating any returns to investment by BT above its cost of capital. Also, it is possible that the full effects of past entry are yet to fully materialise. For example, there might be potential for existing LLU entrants to expand their provision of services, bringing further competitive benefits in Market 2. Therefore, our view is that a strict charge control in Market 2, with prices being driven to LRIC plus an appropriate mark-up for common costs at the end of the control period, could stifle any potential further LLU roll-out and might send the wrong signal about future investment in other markets given the investment that has occurred to date in this market.

Conclusion on price controls

5.214 Our aim in Market 2 is to have a regulatory approach that takes into account the investment by other operators (both current and potential future) while at the same time ensuring BT's pricing is not excessive. While we consider that some form of price cap is necessary to protect against the risk of excessive pricing, there is a risk that a charge control or safeguard cap could set a level that deters efficient and sustainable investment.

5.215 Our view is that BT should be given flexibility to set prices in Market 2 in a way that reflects the current and prospective competitive conditions in the market. On balance, we think that the suite of general access and non-discrimination remedies which together impose a "retail minus" cap on WBA prices will support the potential for further investment in LLU in Market 2. However, in order to safeguard against the risk of excessive prices, we also propose having a cost orientation obligation, which will impose a cap on prices at the DSAC level. We believe this approach will also provide an opportunity to CPs to continue making returns on investment already made and allow for future investment in LLU in Market 2.

5.216 As set out above, we expect there are good reasons why BT would have an incentive to price below the DSAC cap that would be imposed as part of a cost orientation obligation. Furthermore, we will continue to monitor prices and should we be concerned at the level of prices in Market 2, then we would take this into account when we review the remedies in this market in the future.

5.217 In addition, we consider that an additional transparency obligation requiring BT to provide cost accounting data is appropriate in order to provide transparency of BT's costs in Market 1. This will allow us and other stakeholders to ensure BT is complying with these obligations,

Proposed conditions in Market 2

5.218 Based on the above, we propose the following conditions are required to address our competition concerns:

- Requirement to provide Network Access on reasonable request;
- Requirement not to unduly discriminate;
- Transparency obligations;
 - Requirement to publish a reference offer;

- Requirement to notify charges, terms and conditions;
 - Requirement to publish technical information;
 - Transparency as to quality of service; and
 - Requirement to account separately.
- Basis of charges (cost orientation); and
 - Cost accounting.

5.219 We discuss each of these specific conditions below.

Requirement to provide Network Access on reasonable request

5.220 The proposed condition will require BT as a result of its SMP to meet reasonable requests for Network Access. The condition will also require BT to provide Network Access in response to such a reasonable request on fair and reasonable terms and conditions, including charges. BT will also be obliged to provide Network Access on such terms and conditions, including charges, as Ofcom may from time to time direct.

5.221 The aims and effects of a condition to provide Network Access in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal test

5.222 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

5.223 An obligation to provide Network Access is objectively justifiable in that it will encourage greater access to BT's network and will therefore foster competition. The obligation does not discriminate unduly between providers, as it is imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2. The proposed obligation is also proportionate in what it is trying to achieve since it is directly targeted at addressing the market power which Ofcom believes BT holds in this market and it does not require BT to provide access where it is not technically feasible or reasonable. The proposed obligation also passes the requirement of transparency since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.

5.224 Ofcom has also taken into account the factors set out in Section 87(4) of the Act. In particular, the proposed obligation would require BT to meet requests that are reasonable only, by which it is meant, *inter alia*, that the terms of access are technically and economically viable, and feasible. The requirement on BT only to meet reasonable network access requests also ensures that due account is taken of the investment made by BT initially in providing the network whilst ensuring that effective competition is secured in the long term.

5.225 Ofcom has considered its duties under section 3 of the Act. For all the above reasons, we consider that ensuring Network Access on reasonable request will further the interests of citizens and consumers in relevant markets by the promotion of competition.

- 5.226 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular would promote competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.227 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

- 5.228 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of Network Access.
- 5.229 The proposed condition will provide that BT must not unduly discriminate against particular persons or against a particular description of persons in relation to matters connected with Network Access.
- 5.230 The aims and effects of a condition not to unduly discriminate in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.231 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.232 Ofcom considers that the proposed obligation is objectively justifiable, in that it provides safeguards to ensure that competitors, and hence consumers are not disadvantaged by BT discriminating unduly in favour of its own retail activities or between different providers. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2. The proposed obligation is proportionate since it only prevents behaviour which is unduly discriminatory. Behaviour that is unduly discriminatory (particular in favour of the dominant provider's own retail divisions) is likely to have a negative effect on consumers by reducing the effectiveness of competitors to the dominant provider, as their wholesale input products would be of inferior quality (or not competitively priced), compared to those available to the dominant provider's own retail division. However, it is no more intrusive than necessary to achieve its purpose effectively as it only relates to undue discrimination. Differences that reflect, for example, costs of provision, are not necessarily undue discriminatory.
- 5.233 Finally, the proposed obligation is transparent since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5. In addition, Ofcom has given guidance as to how it might treat undue discrimination in the Discrimination Guidelines.
- 5.234 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.

- 5.235 In particular, as Ofcom considers that BT should be required to provide Network Access, the proposed obligation would encourage the provision of Network Access and service interoperability for the purpose of efficiency and sustainable competition in downstream markets by ensuring that BT does not unduly discriminate. This is necessary to ensure that there is a competitive level playing field. As Ofcom considers that BT has SMP in the provision of wholesale broadband access in Market 2, it controls a key input into a range of downstream services, principally asymmetric broadband internet access. Ofcom considers that an obligation designed to prevent undue discrimination would promote competition and the interests of consumers and maximise choice in downstream markets.
- 5.236 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.237 Ofcom has considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.238 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to publish a Reference Offer

- 5.239 We believe that it is appropriate to impose a requirement on BT as a result of its SMP to publish a Reference Offer (RO). The terms of the RO are listed in relation to Market 1 above. The main reasons for the publication of an RO are to assist transparency for the monitoring of potential anti-competitive behaviour and to give visibility to the terms and conditions on which other providers would be able to purchase wholesale access services.
- 5.240 The aims and effects of a condition to publish a reference offer in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.241 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.242 The proposed obligation is objectively justifiable, in that it relates to the need to ensure that competition develops to the benefit of consumers. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2. The proposed obligation is proportionate in that only information that is necessary to ensure that there is no material adverse effect on competition is required to be provided. The proposed obligation meets the test of transparency set out in the Act since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.

- 5.243 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.244 The publication of a RO would mean that other CPs would have the necessary information readily available to allow them to make informed decisions about entry into the market. It would also, in combination with a requirement not to discriminate unduly, facilitate service interoperability and secure freedom of choice for the customers of CPs. Further, the proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the proposed obligation would make it easier for Ofcom and BT's competitors to monitor any instances of discrimination.
- 5.245 Ofcom has considered its duties under section 3 of the Act. For all the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition.
- 5.246 Ofcom has considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.247 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to notify charges, terms and conditions

- 5.248 We believe that it is appropriate to impose a requirement on BT as a result of its SMP to publish any planned changes to charges, terms and conditions in advance of those changes taking place. The main benefit of this in wholesale markets is that other CPs would have sufficient notice to consider whether these changes necessitate a change in their retail offerings.
- 5.249 The aims and effects of a condition to publish charges, terms and conditions in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.250 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.251 The objective justification for imposing such an obligation is that general and reliable visibility of a dominant operator's prices is needed to enable Ofcom and competitors to monitor BT's prices for possible anti-competitive behaviour. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is to be imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2 and therefore other providers' behaviour would not be capable of having a materially adverse effect on competition. We consider that a 28 day notification period achieves the purpose of allowing third party

providers a sufficiently long period to plan for changes to terms, conditions and charges and adjust their own offerings, whilst not being unduly burdensome to BT. The proposed obligation is transparent since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.

- 5.252 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.253 In particular, the proposed obligation would encourage compliance with transparency, for the purpose of facilitating service interoperability and securing freedom of choice for the customers of CPs. The proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. The proposed obligation would also promote competition in downstream markets by allowing BT's competitors to make appropriate changes to their products. Finally, the proposed obligation would make it easier for Ofcom and BT's competitors to monitor any instances of discrimination.
- 5.254 We consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.255 With respect to section 4 of the Act, we consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.256 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to publish technical information

- 5.257 As a result of our proposal that BT has SMP in Market 2 we believe it is appropriate to require BT to publish any changes to technical information 90 days in advance of making such changes to existing Network Access unless Ofcom consents otherwise.
- 5.258 The aims and effects of a condition to publish technical information in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.259 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.260 The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2. The proposed obligation is proportionate in that in most circumstances 90 days is the minimum necessary to allow competing providers to modify their networks and any extension would be required only where it was

reasonable to do so. The proposed obligation is also transparent since its aims and effects described above are clear on the face of the condition itself, as set out in the notification at Annex 5.

- 5.261 Ofcom has considered its duties under section 3 of the Act. We consider that, in ensuring that Communication Providers' systems are interoperable with any changes to technical specifications likely to affect their business, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition.
- 5.262 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.263 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency as to quality of service

- 5.264 We believe that it is appropriate to impose a requirement on BT, as a result of its SMP, to publish information related to transparency as to quality of service. The main benefit of this in wholesale markets is that other CPs could ensure that the service they receive from BT is equitable to that provided by BT to its own retail divisions. The obligation will require BT to publish information as directed by Ofcom, rather than requiring BT to publish specific information from the date of the imposition of the obligation. This is the same as the condition imposed in previous reviews. As we have not considered it necessary to issue any such direction based on concerns that BT may be discriminating in the quality of service it provides, we are of the view that it is appropriate to continue this approach.
- 5.265 The aims and effects of a condition to provide transparency as to quality of service in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.266 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.267 The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access and to ensure that, in purchasing this access, they are not unduly discriminated against. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2. The proposed obligation is proportionate because it only requires BT to publish information as directed by Ofcom in the event we consider such information is required to monitor BT's compliance with its other obligations. The proposed obligation is also transparent since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5; it is clear that BT should publish the information to allow competing providers to ensure

that they wholesale services they purchase are provided by BT on a basis that does not unduly discriminate against them.

- 5.268 Ofcom has considered its duties under section 3 of the Act. We consider that, in allowing other parties to monitor whether any undue discrimination is occurring in the way BT provides WBA services to competing providers compared to its own retail divisions, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition.
- 5.269 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.270 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to account separately

- 5.271 We believe that, because of its SMP, BT should be required to account separately for internal and external sales to provide monitoring of its other SMP services conditions in this market, notably those requiring BT to not unduly discriminate. The specific details of such accounting would be as set out for Market 1.
- 5.272 The aims and effects of a condition to require accounting separation in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.273 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.274 Ofcom believes that given the importance of non-discrimination in these markets the imposition of an accounting separation obligation is objectively justifiable. That is, in order to ensure that the obligation to not unduly discriminate is met and the benefits are realised, it is essential that Ofcom is able to monitor the obligations via an accounting separation obligation. The proposed obligation does not discriminate unduly between providers, as it is imposed on BT and BT is the only operator which has been provisionally found to hold SMP in Market 2. The proposed obligation is proportionate as it is necessary as a mechanism to allow Ofcom and third parties to monitor for discriminatory behaviour by BT in Market 2, whilst not being more intrusive to BT's business than necessary to achieve its purpose effectively. It is transparent as it is clear the intention is to allow Ofcom and third parties to monitor compliance with specific remedies (in particular the obligation not to unduly

discriminate) imposed to address BT's SMP in Market 2. The requirements for meeting the obligation are agreed and clearly documented⁸⁴.

- 5.275 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.276 In particular, the imposition of an accounting separation obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of an accounting separation obligation will ensure that obligations designed to curb potentially damaging leverage of market power can be effectively monitored and enforced. This is particularly important where there are adjacent geographic markets with different competitive conditions, as in this case. This is because the SMP operator could try to recover some of the cost incurred in these adjacent markets in the market where it holds SMP, thus undermining the prospects of competition in the adjacent markets. In addition the imposition of an accounting separation obligation would allow Ofcom to monitor the profitability of the SMP provider in the market in which it has SMP.
- 5.277 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.278 We also consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.279 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Basis of charges

Aims and effects of condition

- 5.280 Our view is that BT should be given flexibility to set prices in Market 2 in a way that reflects the current and prospective competitive conditions in the market. On balance, we think that the suite of general access and non-discrimination remedies which together impose a "retail minus" cap on WBA prices will support the potential for further investment in LLU in Market 2. However, in order to safeguard against the risk of excessive prices, we also propose having a cost orientation obligation. We believe this approach will also provide an opportunity to CPs to continue making returns on investment already made and allow for future investment in LLU in Market 2.

⁸⁴ *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, 22 July 2004, http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/

- 5.281 A basis of charges obligation would act in addition to the “retail minus” approach set out above, providing a further constraint on BT. In proposing a cost orientation obligation we would provide guidance on how it should be interpreted.
- 5.282 LRIC plus an appropriate mark up for common costs and for recovery of cost of capital is the preferred method for this type of regulation in communications markets. This is because communications markets experience economies of scale and scope. Common costs need to be recovered through mark-ups over LRIC in situations of one-way access where rivals buy wholesale inputs from the SMP wholesale provider without also selling wholesale inputs to the SMP wholesale provider. A requirement for charges to reflect an appropriate mark-up allows sufficient flexibility for this to be done in an efficient way whilst avoiding anti-competitive low prices or excessive prices.
- 5.283 As a “first order” test the standard approach would be to interpret the obligation as requiring prices to be no higher than Distributed Stand Alone Costs (DSAC). The cost orientation obligation would apply to each and every charge so that BT would not be able to set charges such as transfers at excessive levels.
- 5.284 Our aim in Market 2 is to have a regulatory approach that takes into account the investment by other operators (both current and future) while, at the same time, ensuring BT’s pricing is not excessive. We consider that the basis of charges obligation, in support of the retail minus approach imposed by the general access and non-discrimination obligations, provides sufficient safeguard.

Legal test

- 5.285 We consider that a condition requiring BT to apply a cost orientation obligation for WBA meets the criteria set out in section 47(2) of the Act, to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.286 A basis of charges obligation would be objectively justifiable based on the evidence outlined in this section that BT’s revenue is high based on the underlying costs. BT only faces limited competition, and requirement for cost orientation is the appropriate level of regulation required in Market 2 for the period of this review. The obligation would not unduly discriminate against BT as it recognises the particular competitive characteristics of this market requires BT to set prices based on its costs in a market where we propose it has SMP; BT is the only operator which has been provisionally held to have SMP in Market 2. It is proportionate as it recognises the differing conditions in Market 2 compared to Market 1 by not imposing a strict charge control. It provides flexibility to BT for the level it sets its WBA prices, allowing BT to make sufficient returns, and encouraging BT to increase efficiency through cost reductions.
- 5.287 The proposed condition is transparent with the intention being to constrain BT’s ability to price excessively in relation to WBA, while not discouraging existing and future investment in LLU by other CPs.
- 5.288 Section 88 of the Act allows Ofcom to impose the cost orientation obligation if we consider that there is sufficient risk of adverse effects arising from price distortion. We must also consider if the setting of the condition promotes efficiency, promotes sustainable competition and confers the greatest possible benefits on end users. We must also take account of the extent of investment made by BT.
- 5.289 Ofcom considers that imposing a basis of charges obligation on BT in Market 2, alongside a “retail minus” cap on prices, will satisfy the tests set out in Section 88 of

the Act. This approach is intended to constitute a lower level of regulatory control than a direct price control, allowing the SMP operator to have some degree of flexibility in setting prices according to its commercial judgement. It is likely to be a proportionate response to the degree of market power being exercised in Market 2 and will help ensure that incentives to invest are not undermined. At the same time, a basis of charges obligation (interpreted to mean that, as a “first order test”, prices should not be above the DSAC level) will safeguard against the risk of excessive pricing by the SMP operator and will ensure that other network operators are able to participate in the provision of services to customers on a fair competitive basis. The approach strikes the right balance between setting efficient prices today and securing longer term benefits for retail consumers through further LLU investment and additional competition in Market 2, whilst allowing BT to make a return on its investment in Market 2.

- 5.290 For all these reasons we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.
- 5.291 Further, we consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.292 We also consider that any pricing to be charged on a fair and reasonable basis under the proposed network access obligations would be appropriate in order to promote efficiency and sustainable competition and provide the greatest possible benefits to end users by enabling competing providers to buy network access at levels that might be expected in a competitive market.
- 5.293 For the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Cost Accounting

- 5.294 Where an obligation for prices to be cost orientated is imposed (via a basis of charges obligation and/or charge control obligation), a cost accounting obligation requires the provider subject to the cost orientation obligation to publish accounting data to demonstrate that their charges meet this obligation. We propose to impose a cost accounting obligation on BT, as summarised above in relation to Market 1. The aims and effects of a condition to require cost accounting in Market 2 would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.295 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.296 Ofcom believes that given the importance of non-discrimination in these markets the imposition of a cost accounting obligation is objectively justifiable to ensure the basis of charges obligation is met. The proposed obligation does not discriminate unduly between providers, as it is imposed on BT only to ensure compliance with other

obligations and BT is the only operator which has been provisionally found to hold SMP in Market 2. It is proportionate because it is the least intrusive means to ensure that BT is meeting its obligations and it is transparent as it is clear the obligation is imposed to ensure BT's pricing meets the basis of charges obligation and its terms are set out in Ofcom's 2004 statement on cost accounting.

- 5.297 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.298 In particular, the imposition of an cost accounting obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation will ensure that obligations designed to curb potentially damaging leverage of market power – in particular the setting of prices at excessive levels - can be effectively monitored and enforced. This is particularly important where there are adjacent geographic markets with different competitive conditions, as in this case. This is because the SMP operator could try to recover some of the cost incurred in these adjacent markets in the market where it holds SMP, thus undermining the prospects of competition in the adjacent markets.
- 5.299 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.300 We also consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.301 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Impact of Market 2 proposed remedies on NGA

- 5.302 As discussed in relation to Market 1, where the NGA handover points are provided in Market 3 exchanges, no remedies will apply in the WBA market, because there will be sufficient POs able to access the upstream WLA remedy. If, however, BT decides to locate NGA handover points in exchanges within the Market 2 areas, the relevant remedies we propose above would apply.

Conclusion on proposed remedies in Market 2

- 5.303 We are proposing to impose a range of both general obligations and price controls on BT in Market 2. The proposed set of remedies include:
- Requirement to provide network access on reasonable request
 - Requirement not to unduly discriminate
 - Requirement to publish a reference offer

- Requirement to notify charges, terms and conditions
- Transparency as to quality of service
- Requirement to notify technical information
- Requirement to account separately
- Basis of charges condition
- Requirement for cost accounting

5.304 We consider that this suite of proposed remedies would operate together effectively to ensure effective network access on terms and conditions that will enable third party providers to enter the market and compete with BT effectively in the downstream retail markets.

Consultation questions

Question 5.3: *Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on BT in relation to the market for wholesale broadband access in Market 2? If not, please explain why.*

Question 5.4: *Do you agree with Ofcom's proposal to impose a basis of charges obligation on BT in relation to the market for wholesale broadband access in Market 2? If not, please explain why.*

Market 3

5.305 As set out in Section 4, we are proposing that no operator holds a position of SMP in Market 3. Where a market has been found to be competitive, the framework requires that no remedies are imposed. We took this approach in the 2008 market review by revoking remedies in the Market 3 areas. As such, no remedies apply in this market and as such there is no requirement to revoke obligations.

5.306 However, in the period since the last review was concluded, LLU rollout has progressed. As such, 114 exchanges have moved from Market 2 into Market 3.

5.307 In relation to these exchanges we need to consider whether maintenance of existing regulation is necessary for a transitional period prior to the formal revocation of those conditions.

Legal Basis

5.308 Article 16(3) of the Framework Directive and Section 84 (4) of the Act require Ofcom to revoke SMP conditions where we find that a market is competitive.

5.309 However, as set out in Article 16(3) of the Framework Directive, where Ofcom revokes SMP conditions, it should provide an appropriate period of notice to parties affected by such a withdrawal. The ERG Remedies Position (paragraph 5.6.2) provides further guidance

5.310 Therefore, where Ofcom concludes that an undertaking no longer has SMP in a relevant market, it must revoke all SMP services conditions which it had previously applied in that market. In doing so, Ofcom needs to consider the disruptive effects on the market of a removal of regulation and whether maintenance of existing regulation is necessary for a transitional period prior to the formal revocation of those conditions.

Parties affected by a withdrawal of SMP services conditions

5.311 The move of exchanges into Market 3, and the resultant revocation of SMP conditions, could potentially affect parties other than BT, as well as BT itself. We consider that the parties most likely to be affected by such a revocation of SMP services conditions in Market 3 would be CPs who currently purchase wholesale broadband access products from BT and their customers, including end-users.

5.312 We note that the position is not exactly the same as in the last review. Prior to our definition of separate geographic markets in the last review and the conclusion that Market 3 was competitive, BT had been previously found to have SMP in the whole of the UK except Hull. As such, all services were provided on a regulated basis. However, following the last review, the Market 3 area has been de-regulated. BT has nevertheless continued to supply service on a commercial basis. It may therefore be the case that BT continues to supply service on purely commercial terms in these exchanges that will move into Market 3, in line with the rest of Market 3, and that its WBA wholesale customers will therefore receive service and reasonable terms.

5.313 However, our concern is that, where BT is no longer required to provide Network Access on reasonable request, it could decide to stop supplying wholesale broadband access products or may offer terms that favour its own retail divisions before other purchasers of its WBA services are able to secure alternate supply.

5.314 Given this, we consider that it is appropriate to provide affected parties with a period of notice prior to the removal of certain SMP services conditions in exchanges that move into Market 3. This would ensure that CPs relying on BT would have the opportunity to maintain supply in the short term thus reducing the potential of the removal of regulation to have a material adverse effect on competition.

5.315 The objective of this period of notice would be to provide existing wholesale broadband access customers of BT with sufficient time to make alternative arrangements for their customers so as to avoid consumer detriment. There is likely to be several possibilities for alternative arrangements. However, one possibility is that the CP will secure an alternative supply arrangement and then be required to migrate its end-user customer based onto a different platform. Such an alternative arrangement would require the CP to agree the product specification and commercial terms and then implement the logistics of switching provider. This will include system integration for functions such as ordering and fault reporting and possibly interconnection arrangements.

Period of Notice

5.316 As set out above, we consider that an appropriate period of notice should be given to existing wholesale broadband access customers of BT prior to the formal withdrawal of the SMP services conditions in place in Market 3. In light of our objectives in providing a period of notice, we are only proposing to maintain those SMP service conditions necessary to ensure that undesired market consequences can be

avoided. We consider that the conditions that should remain in place for the transitional period are:

- EA7: Requirement to provide Network Access on reasonable request;
- EA8: Requirement not to unduly discriminate;
- EA10: Requirement to notify charges, terms and conditions; and
- EA12: Requirement to notify technical information.

Requirement to provide Network Access on reasonable request

- 5.317 Ofcom's view is that the requirement for BT to provide Network Access on reasonable request should be maintained in the exchanges that move to Market 3 for a short period following the conclusion of this market review to ensure that existing wholesale broadband access customers continue to obtain Network Access for a sufficient period to allow those customers to obtain alternative supply in the event that BT indicates it no longer intends to supply a wholesale product.
- 5.318 Given the fact that the period of notice referred to in Article 16(3) Framework Directive relates only to affected parties, Ofcom considers that this Condition should only be maintained in respect of existing wholesale broadband access customers of BT in these exchanges. BT would not therefore be required to provide new Network Access where requested by a third party.
- 5.319 Ofcom's understanding is that, were BT to indicate that it would cease to supply a wholesale broadband access product, its customers would require a period of up to 12 months in order to establish an alternative supply arrangement. This period is necessary in order to allow a customer to enter into negotiations with alternative supplies and to agree product details and then to integrate systems and work out migration plans.
- 5.320 In the absence of the condition, Ofcom does not consider that the contractual provisions in place would necessarily prevent undesired market consequences resulting from an immediate revocation of the requirement to provide Network Access on reasonable request in respect of exchanges that move from Market 2 to Market 3.
- 5.321 Ofcom is therefore of the view that the revocation of the requirement to provide Network Access in exchanges that move from Market 2 to Market 3 insofar as it relates to existing wholesale broadband access customers of BT should not occur until 12 months after the date of the conclusion of this market review in order to allow a reasonable period of notice to market participants and prevent undesirable market outcomes. BT would therefore be required to provide Network Access on reasonable terms and conditions to its existing customers during this period.

Requirement not to unduly discriminate

- 5.322 Ofcom is of the view that, in order to achieve Ofcom's aim of ensuring continued supply for existing WBA customers in relation to exchanges that move from Market 2 to Market 3, it would be appropriate to maintain a requirement upon BT not to unduly discriminate in relation to matters connected with Network Access. In the absence of such a condition, Ofcom considers that it would be possible to undermine its objective of ensuring supply on reasonable terms for a period of notice by increasing prices to prohibitive levels. Ofcom considers that a requirement not to unduly

discriminate should ensure that WBA customers in these exchanges will be able to obtain supply on reasonable terms during the notice period of 12 months.

Requirement to notify charges, terms and conditions

5.323 Ofcom considers that, in order to secure its objective of maintaining supply for existing customers on reasonable terms in those exchanges moving into Market 3 during the notice period, it is important for Ofcom and WBA customers to be able to assess the terms and conditions which are applied by BT. Such transparency allows Ofcom to assess whether or not BT is providing WBA products on reasonable terms. As set out above, Ofcom's aim in providing a period of notice for the revocation of the SMP services conditions to allow existing customers to obtain supply on reasonable terms for a sufficient period to allow them to make alternative arrangements should they consider it necessary to do so as a result of the revocation of SMP regulation. Ofcom therefore considers that, in ensuring that such supply is available to existing customers, BT should ensure that Ofcom is able to monitor compliance with the relevant conditions during the period of notice. Ofcom is therefore proposing that Conditions EA10 in relation to notification of charges, terms and conditions should not be revoked until the end of the notice period of 12 months.

Requirement to notify technical information

5.324 As for terms and conditions, Ofcom considers that, in order to secure its objective of maintaining supply for existing customers on reasonable terms in those exchanges moving into Market 3 during the notice period, it is important for Ofcom and WBA customers to be able to assess the technical information related to the products supplied by BT. Such transparency allows Ofcom to assess whether or not BT is providing WBA products on reasonable terms. As set out above, Ofcom's aim in providing a period of notice for the revocation of the SMP services conditions is to allow existing customers to obtain supply on reasonable terms for a sufficient period to allow them to make alternative arrangements should they consider it necessary to do so as a result of the revocation of SMP regulation. Ofcom is therefore proposing that Conditions EA12 in relation to notification of technical information should not be revoked until the end of the notice period of 12 months.

Implementation of notice period

5.325 For all the reasons above, and in line with Article 16(3) Framework Directive, we propose to continue to apply the following conditions imposed in our 2008 WBA market review to the exchanges moving from Market 2 to Market 3 as a result of this review:

- EA7: Requirement to provide Network Access on reasonable request;
- EA8: Requirement not to unduly discriminate;
- EA10: Requirement to notify charges, terms and conditions; and
- EA12: Requirement to notify technical information

Consultation questions

Question 5.5: Do you agree that Ofcom should allow a period of notice in the exchanges that move from Market 2 to Market 3 in which the above conditions should apply? Do you agree that 12 months is an appropriate period of notice? If not, please explain why.

Remedies considered – the Hull area

5.326 In this section we set out our approach to remedies in the Hull area. We start by discussing three general options for remedies:

- Option 1: no remedies;
- Option 2: general access and non-discrimination remedies; and
- Option 3: price controls in addition to general access and non-discrimination remedies.

5.327 Having discussed the approach that we consider to be most appropriate, we then discuss each specific SMP condition in relation to whether it meets the relevant legal tests for imposing conditions on a dominant provider.

Option 1 (no regulation)

5.328 As set out in Section 4, we consider that KCOM has SMP in the Hull area and that there is little potential for competition in this market. We consider that it is unlikely to be economically viable to build the networks necessary for the provision of downstream broadband access services in this market and therefore considers that SMP is entrenched.

5.329 An absence of regulation, therefore, would be unlikely to result in the development of effective competition in downstream services (in terms of price, rollout, service quality and product differentiation). Other providers would be unlikely to enter to provide downstream services as they would require access to be provided by KCOM and, in the absence of regulation, KCOM would have little incentive to provide services to them. The consequence of this would be a restriction of competition in the Hull area and in the provision of downstream broadband services.

5.330 For these reasons, we consider that *ex-ante* regulation is required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality are optimised for citizens and consumers in the Hull area. We consider, therefore, that we should impose *ex-ante* regulation in this market.

Option 2 (access and non-discrimination obligations)

5.331 Whilst we have not seen any significant entry into the Hull area based on provision of services based on KCOM's regulated wholesale offers, we consider it is important that these offers are available on non-discriminatory terms so that, should another provider wish to enter the market they are able to compete with KCOM in the downstream retail market.

5.332 Because of this, for the same reasons discussed in relation to Market 1, we propose to impose the following general access and non-discrimination obligations on KCOM:

- Requirement to provide Network Access on reasonable request;
- Requirement not to unduly discriminate;
- Transparency obligations;
 - Requirement to publish a reference offer;
 - Requirement to notify charges, terms and conditions;
 - Requirement to publish technical information;
 - Transparency as to quality of service; and
- Requirement to account separately

Option 3 (price controls)

5.333 In addition to the general remedies set out above, we have considered the appropriateness of imposing price controls on KCOM. In Hull, there is unlikely to be LLU rollout due to the very small size of the market and the cost to each LLU operator of establishing processes and systems that interface with KCOM. It does not appear to us that the lack of a charge control is a key consideration in CPs' investment decisions in relation to the Hull area. We do not consider cost orientation/charge control remedies would be effective in promoting entry by other CPs at the retail level. There does not appear to be demand from CPs to enter the Hull market based on a wholesale broadband product from KCOM.

5.334 We are of the view that the best approach is to impose general access remedies so that CPs can request a product on non-discriminatory terms in order to enter the broadband market – if they choose. If we impose additional regulatory burdens on KCOM, the costs of these would need to be recovered from its own retail customers if no wholesale demand emerged. Even if we only imposed a cost orientation obligation, KCOM would still face the additional burden of more detailed reporting and, it is unlikely this data would be particularly useful because as long as KCOM is the only purchaser of its wholesale products, its pricing and cost allocations to specific products and organisational units are relatively artificial.

5.335 Ofcom has considered the Community requirements set out in section 4 of the Act. We consider that a condition requiring KCOM to comply with a cost orientation or charge control obligation for WBA would not meet the criteria set out in Section 88 of the Act. Section 88 allows Ofcom to impose cost orientation and charge control obligations if we consider that there is sufficient risk of adverse effects arising from price distortion. We must also consider if the setting of the condition promotes efficiency, promotes sustainable competition and confers the greatest possible benefits on end users. We must also take account of the extent of investment made by the Dominant Provider.

5.336 We are of the view that it is unlikely that either a cost orientation or charge control obligation will promote sustainable competition. Third parties have indicated to us that, in the four year forward look period of this review, they are unlikely to enter the market in the Hull Area. The pricing of KCOM's wholesale services does not appear

to the driver of this lack of entry. Rather, it is the high fixed costs a third party would incur establishing the networks and systems to take interconnect to KCOM in order to purchase SMP services (irrespective of the price of these services) together with the low returns likely in Hull due to the relatively small market size, that appear to act as the deterrent to market entry.

5.337 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act and consider that our proposal not to impose a price control on KCOM in the Hull area is consistent with these. In particular, we do not consider that a price control imposed in this market would act to further the interests of citizens and consumers in the relevant markets by the promotion of competition nor would it be likely to encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services.

Proposed conditions in the Hull area

5.338 Based on the above, we propose the following conditions are required to address our competition concerns:

- Requirement to provide Network Access on reasonable request;
- Requirement not to unduly discriminate;
- Transparency obligations;
 - Requirement to publish a reference offer;
 - Requirement to notify charges, terms and conditions;
 - Requirement to publish technical information;
 - Transparency as to quality of service; and
 - Requirement to account separately.

5.339 We discuss each of these specific conditions below.

Requirement to provide Network Access on reasonable request

5.340 The proposed condition will require KCOM as a result of its SMP to meet reasonable requests for Network Access. The condition will also require KCOM to provide Network Access in response to such a reasonable request on fair and reasonable terms and conditions, including charges. BT will also be obliged to provide Network Access on such terms and conditions, including charges, as Ofcom may from time to time direct.

5.341 The aims and effects of a condition to provide Network Access in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

5.342 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

- 5.343 With regard to the tests in Section 47 of the Act, an obligation to provide Network Access is objectively justifiable in that it will encourage greater access to KCOM's network and will therefore foster competition. The obligation does not discriminate unduly between providers, as it is imposed on KCOM and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is also proportionate in what it is trying to achieve since it is directly targeted at addressing the market power which Ofcom believes that KCOM holds in this market and it does not require KCOM to provide access where it is not technically feasible or reasonable. The proposed obligation also passes the requirement of transparency since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5.
- 5.344 Ofcom has also taken into account the factors set out in Section 87(4) of the Act. In particular, the proposed obligation would require KCOM to meet requests that are reasonable only, by which it is meant, *inter alia*, that the terms of access are technically and economically viable, and feasible. The requirement on KCOM only to meet reasonable network access requests also ensures that due account is taken of the investment made by KCOM initially in providing the network whilst ensuring that effective competition is secured in the long term.
- 5.345 Ofcom has considered its duties under section 3 of the Act. We consider that, in ensuring Network Access upon reasonable request, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition.
- 5.346 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.347 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

- 5.348 The proposed condition will provide that KCOM must not unduly discriminate against particular persons or against a particular description of persons in relation to matters connected with Network Access.
- 5.349 The aims and effects of a condition not to unduly discriminate in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.350 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.351 Ofcom considers that the proposed obligation is objectively justifiable, in that it provides safeguards to ensure that competitors, and hence consumers, are not disadvantaged by KCOM discriminating unduly in favour of its own retail activities or

between different providers. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on KCOM and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate since it only prevents behaviour which is unduly discriminatory. Behaviour that is unduly discriminatory (particular in favour of the dominant provider's own retail divisions) is likely to have a negative effect on consumers by reducing the effectiveness of competitors to the dominant provider, as their wholesale input products would be of inferior quality (or not competitively priced), compared to those available to the dominant provider's own retail division. However, it is no more intrusive than necessary to achieve its purpose effectively as it only relates to undue discrimination. Differences that reflect, for example, costs of provision, are not necessarily undue discriminatory.

- 5.352 Finally, the proposed obligation is transparent since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5. In addition, Ofcom has given guidance as to how it might treat undue discrimination in the Discrimination Guidelines.
- 5.353 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.354 In particular, as Ofcom considers that KCOM should be required to provide Network Access, the proposed obligation would encourage the provision of Network Access and service interoperability for the purpose of efficiency and sustainable competition in downstream markets by ensuring that KCOM does not unduly discriminate. This is necessary to ensure that there is a competitive level playing field. As Ofcom considers that KCOM has SMP in the provision of wholesale broadband access in the Hull area, it controls a key input into a range of downstream services, principally asymmetric broadband internet access. Ofcom considers that an obligation designed to prevent undue discrimination would promote competition and the interests of consumers and maximise choice in downstream markets.
- 5.355 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.356 We also consider the proposed condition, in line with section 4 of the Act, in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.357 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to publish a Reference Offer

- 5.358 Ofcom believes that it is appropriate to impose a requirement on KCOM as a result of its SMP to publish a Reference Offer (RO). The main terms of the RO are summarised above in relation to Market 1. The main reasons for the publication of an RO are to assist transparency for the monitoring of potential anti-competitive behaviour and to give visibility to the terms and conditions on which other providers would be able to purchase wholesale access services.

- 5.359 The aims and effects of a condition to publish a reference offer in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.360 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.361 The proposed obligation is objectively justifiable, in that it relates to the need to ensure that competition develops to the benefit of consumers. The proposed obligation does not discriminate unduly between providers since KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate in that only information that is necessary to ensure that there is no material adverse effect on competition is required to be provided. The proposed obligation meets the test of transparency set out in the Act since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5.
- 5.362 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.363 In particular, the proposed obligation would encourage the provision of Network Access and service interoperability for the purpose of securing efficiency and sustainable competition and the maximum benefit for customers of CPs. The requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability and secure freedom of choice for potential wholesale customers of KCOM. Other CPs would have the necessary information readily available to allow them to make informed decisions about entry into the market. Finally, the proposed obligation would make it easier for Ofcom and KCOM's potential competitors to monitor any instances of discrimination.
- 5.364 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.365 We consider the proposed condition, in line with section 4 of the Act, in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.366 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to notify charges, terms and conditions

- 5.367 We believe that it is appropriate to impose a requirement on KCOM as a result of its SMP to publish any planned changes to charges, terms and conditions in advance of those changes taking place. The main benefit of this in wholesale markets is that other CPs would have sufficient notice to consider whether these changes necessitate a change in their retail offerings.

5.368 The aims and effects of a condition to publish charges, terms and conditions in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

5.369 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

5.370 The objective justification for imposing such an obligation is that general and reliable visibility of a dominant operator's prices is needed to enable Ofcom and potential competitors to monitor KCOM's prices for possible anti-competitive behaviour. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is to be imposed on KCOM and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. We consider that a 28 day notification period achieves the purpose of allowing third party providers a sufficiently long period to plan for changes to terms, conditions and charges and adjust their own offerings, whilst not being unduly burdensome for KCOM. The proposed obligation meets the test of transparency since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5.

5.371 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.

5.372 In particular, the proposed obligation would encourage compliance with transparency, for the purpose of facilitating service interoperability and securing freedom of choice for the customers of CPs. The proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with KCOM, in response to changes in KCOM's terms and conditions. The proposed obligation would also promote competition in downstream markets by allowing KCOM's competitors to make appropriate changes to their products. Finally, the proposed obligation would make it easier for Ofcom and KCOM's competitors to monitor any instances of discrimination.

5.373 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.

5.374 We consider the proposed condition, in line with section 4 of the Act, in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.

5.375 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to publish technical information

5.376 As a result of our proposal that KCOM has SMP in the Hull area we believe it is appropriate to require KCOM to publish any changes to technical information 90 days in advance of making such changes to existing Network Access unless Ofcom consents otherwise.

5.377 The aims and effects of a condition to publish technical information in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

5.378 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

5.379 The proposed obligation is objectively justifiable in that it enables any future competing operators to make full and effective use of Network Access. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on KCOM and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate in that in most circumstances 90 days is the minimum necessary to allow any future competing providers to modify their networks and any extension would be required only where it was reasonable to do so. The proposed obligation is also transparent since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5.

5.380 Ofcom has considered its duties under section 3 of the Act. We consider that, in ensuring that CPs' systems are interoperable with any changes to technical specifications that would likely affect their business, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition.

5.381 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.

5.382 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency as to quality of service

5.383 We believe that it is appropriate to impose a requirement on KCOM, as a result of its SMP, to publish information related to transparency as to quality of service. The main benefit of this in wholesale markets is that other CPs could ensure that the service they receive from KCOM is equitable to that provided by KCOM to its own retail divisions. The obligation will require KCOM to publish information as directed by Ofcom, rather than requiring KCOM to publish specific information from the date of the imposition of the obligation. This is the same as the condition imposed in previous reviews. As we have not considered it necessary to issue any such direction based on concerns that KCOM may be discriminating in the quality of service it provides, we are of the view that it is appropriate to continue this approach.

5.384 The aims and effects of a condition to provide transparency as to quality of service in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.385 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.386 The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access and to ensure that, in purchasing this access, they are not unduly discriminated against. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on KCOM and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate because it only requires KCOM to publish information as directed by Ofcom in the event we consider such information is required to monitor KCOM's compliance with its obligations. The proposed obligation is also transparent since its aims and effects are clear on the face of the condition itself, as set out in the notification at Annex 5.
- 5.387 Ofcom has considered its duties under section 3 of the Act. We consider that, in ensuring the Network Access CPs receive from KCOM is equitable to that provided by KCOM to its own retail divisions, the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition.
- 5.388 Ofcom has also considered the Community requirements as set out in section 4 of the Act. We consider the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.389 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement to account separately

- 5.390 We believe that, because of its SMP, KCOM should be required to account separately for internal and external sales to provide monitoring of its other SMP services conditions in this market, notably those requiring KCOM to not unduly discriminate. The specific details of such accounting would be as set out for Market 1.
- 5.391 The aims and effects of a condition to require accounting separation in the Hull area would be the same as those discussed above in Market 1, as would the proposed condition. As such we do not repeat those discussions here.

Legal tests

- 5.392 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.
- 5.393 Ofcom believes that given the importance of non-discrimination in these markets the imposition of an accounting separation obligation is objectively justifiable. That is, in order to ensure that the obligation to not unduly discriminate is met and the benefits

are realised, it is essential that Ofcom is able to monitor the obligations via an accounting separation obligation. The proposed obligation does not discriminate unduly between providers, as it is imposed on KCOM and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area. It is proportionate because without such an obligation, it would not be clear that KCOM is meeting its obligations. It is transparent as it is clear the intention is to allow Ofcom and third parties to monitor compliance with specific remedies (in particular the obligation not to unduly discriminate) imposed to address KCOM's SMP. The requirements for meeting the obligation are agreed and clearly documented⁸⁵.

- 5.394 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.395 In particular, the imposition of an accounting separation obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for any future customers of KCOM. This is because the imposition of an accounting separation obligation will ensure that obligations designed to prevent potentially damaging leverage of market power can be effectively monitored and enforced. In addition the imposition of an accounting separation obligation would allow Ofcom to monitor the profitability of the SMP provider in the market in which it has SMP.
- 5.396 For the above reasons, we consider that the proposed condition in particular furthers the interests of citizens and furthers the interests of consumers in relevant markets by the promotion of competition, in line with section 3 of the Act.
- 5.397 We consider that, in line with section 4 of the Act, the proposed condition in particular promotes competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 5.398 For all the reasons set out above, we consider that the proposed condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Conclusion on proposed remedies in the Hull area

- 5.399 We consider that in the absence of regulatory obligations to supply wholesale broadband access, meet reasonable requests for wholesale broadband access, and do so on terms that were not unduly discriminatory competition in the provision of broadband services in the Hull area might not develop.
- 5.400 The proposed regulatory remedies will not, however, secure competition in the provision of downstream broadband services in the Hull area in the event that other CPs do not consider it to be economically viable to supply customers in the Hull area. Nonetheless, the regulatory remedies proposed would enable other CPs to enter the Hull area and compete with KCOM, should they choose to do so.

⁸⁵ *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, 22 July 2004, http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/

- 5.401 Ofcom considers, however, that the potential for entry might be enhanced should KCOM be required to show that it does not discriminate in the level of service offered to its downstream business and other CPs in the Hull area. Survey evidence has shown that consumers place a high level of importance on service quality and reliability⁸⁶.
- 5.402 Ofcom recognises that at the present time there is no demand for a wholesale product from KCOM and as such monitoring the relative level of service offered to its downstream business and other CPs would have no meaning. Ofcom therefore considers that a proportionate remedy would only require KCOM to publish quality of service information in the event that demand was to materialise.

Retail products in Hull

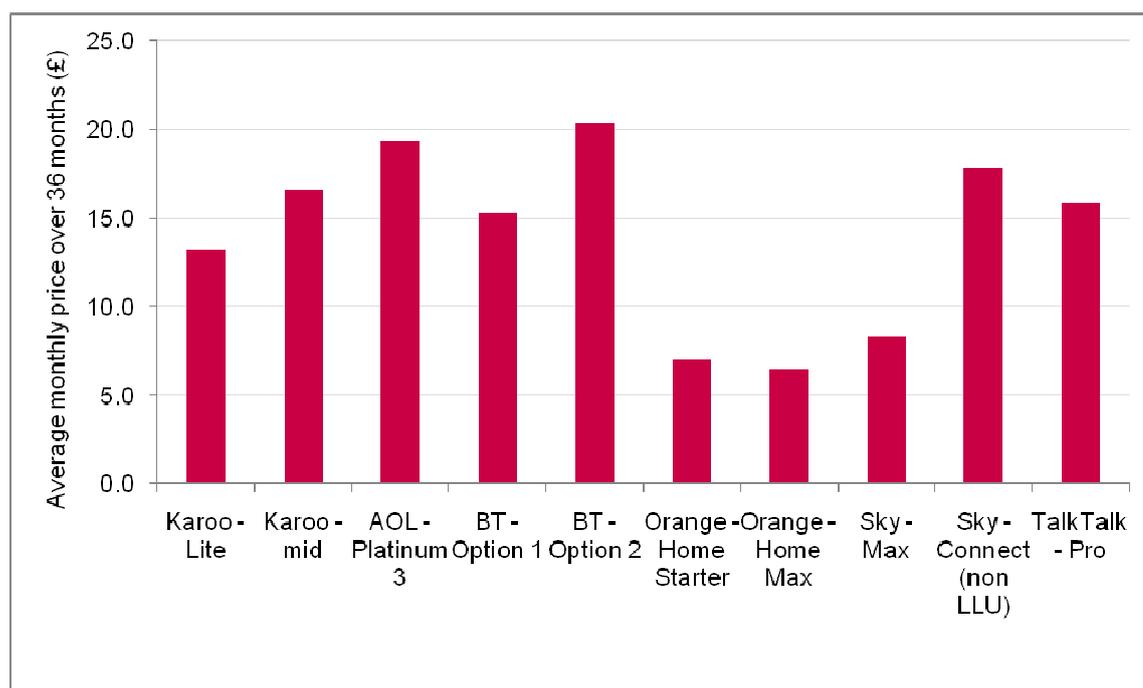
- 5.403 This market review is considering the wholesale markets. However, given the current level of wholesale competition, we have considered whether we should review the retail market in Hull, as additional wholesale regulation is unlikely to be effective if other CPs are not going to enter the market based on this wholesale regulation.
- 5.404 We have examined the retail market in Hull. Whilst direct comparisons need to be understood in the context of the different packages on offer, we see that:
- KCOM consumers are now offered more (in terms of broadband speed) for slightly less, compared to our 2008 findings: prices have dropped very slightly, whilst speeds have increased to 'up to' 24M compared to 'up to' 8M in 2008.
 - KCOM packages are 16% (by cheapest package) and 23% (by next cheapest) cheaper than comparative BT packages⁸⁷
 - When compared to packages available in the rest of the UK (based on LLU operators own network and on BT provided wholesale inputs where LLU operators have not deployed their networks) the pricing of KCOM's cheapest and second cheapest package is around the middle of the range .
 - Comparison between *24M only* package providers shows that KCOM is also in the middle of the pack (second of three offers; again there is a trade off between price and download limit).
- 5.405 Table 5.2 below compares Karoo's⁸⁸ pricing to other offers available in the UK.

⁸⁶ <http://www.ofcom.org.uk/consult/condocs/wbamr/research.pdf>

⁸⁷ KCOM offers a high maximum download speed than (24M to BT's 20M) but has a lower not download limit (KCOM 2G & 10G, BT 10G & 20G).

⁸⁸ Karoo is the brand name under which KCOM offers its retail broadband products in Hull

Table 5.2: Karoo's pricing compared to other UK broadband offers



5.406 This tends to indicate that consumers in Hull are receiving offers in terms of pricing and functionality generally in line with the rest of the UK⁸⁹. We are therefore not proposing to look more formally at the retail broadband market in Hull at this time.

5.407 The full list of regulatory obligations that Ofcom proposes to impose on KCOM in the Hull area is set out below and in the draft Notification set out at Annex [X]. The proposed remedies are:

- Requirement to provide Network Access on reasonable request;
- Requirement not to unduly discriminate;
- Requirement to publish a Reference Offer;
- Requirement to notify charges, terms and conditions;
- Transparency as to quality of service;
- Requirement to publish technical information; and
- Requirement to account separately.

5.408 We consider that this suite of proposed remedies would operate together effectively to ensure the consumer in the Hull area continues to receive an adequate service at a reasonable price and to ensure effective network access on terms and conditions that would enable third party providers to enter the market and compete with KCOM effectively in the downstream retail markets should they wish to do so in the future.

⁸⁹ The comparison looks in particular at retail offers from other providers that are only available in certain areas within the rest of the UK, where LLU has taken place. Sky's Connect option, for its non-LLU areas, is included for reference to areas where LLU may not be available.

Consultation questions

Question 5.6: Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on KCOM in relation to the market for wholesale broadband access in the Hull area? If not, please explain why.

Question 5.7: Do you agree with Ofcom's approach to price remedies in the Hull area? If not, please explain why.

Question 5.8: Are there other remedies that, if imposed by Ofcom, would promote entry into the market in the Hull area by other providers?

Account taken of the ERG Bitstream position

5.409 Table 5.3 summarises how Ofcom has taken into account the ERG Bitstream Position in proposing the package of remedies to be imposed in the Hull area, Market 1 and Market 2.

Table 5.3: Account taken of the ERG Bitstream Position

Objective of remedy	Account taken by Ofcom
Assurance of access	The requirement to provide Network Access on reasonable request should provide competitors with confidence to enter the market.
Level playing field	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that entrants will be able to compete on a level playing field.
Avoidance of unfair first-mover advantage	The requirement not to unduly discriminate, together with the Discrimination Guidelines, should ensure that there is no unfair first-mover advantage.
Transparency of terms and conditions	The requirement to publish a Reference Offer and the requirement to notify charges, terms and conditions should provide clarity of terms and conditions of access.
Reasonableness of technical parameters of access	The requirement to publish a Reference Offer and the requirement to publish technical information should ensure that the technical parameters of access are reasonable.
Fair and coherent access pricing	Ofcom has taken different approaches in different markets. In Market 1, where BT is the only provider of wholesale products, it is our view that a specific charge control is required. In Market 2, the general access and non-discrimination obligations safeguard against margin squeeze whilst the basis of charges obligation requires prices to be based on costs. In the Hull Area our view is that imposing specific pricing remedies would not lead to entry by other CPs. Other CPs can request access and the general access and non-discrimination obligations would combine to guard against margin squeeze.

Objective of remedy	Account taken by Ofcom
Reasonable quality of access products	The requirement not to unduly discriminate, together with the Discrimination Guidelines, the requirement to publish a Reference Offer and the requirement to have transparency as to quality of service should ensure that access products are of reasonable quality.
Assurance of efficient and convenient switching processes	On 22 February 2007 Ofcom introduced a new General Condition (GC22). This places an obligation on broadband providers to use an efficient migrations process.
Assurance of backhaul from the point of delivery of the bitstream service to a reasonable point of handover to the alternative provider	Ofcom's product definition includes "...any backhaul to allow interconnection with other CPs."
Assurance of co-location at delivery points	To the extent that this is necessary for interconnection to take place Ofcom considers that this is provided for under the requirement to provide Network Access on reasonable request.

Annex 1

Responding to this consultation

How to respond

- A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 1 June 2010**.
- A1.2 Ofcom strongly prefers to receive responses using the online web form at <https://www.ofcom.org.uk/consult/condocs/wba/howtorespond/form>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.
- A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email wba@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Steve Perry
4th Floor
Competition Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 4109

- A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

- A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Steve Perry on 020 7783 4151.

Confidentiality

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

all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

- A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

Next steps

- A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in autumn 2010.
- A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

- A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

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

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Ofcom's consultation principles

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

Before the consultation

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

During the consultation

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

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

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

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

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

After the consultation

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

Annex 3

Consultation response cover sheet

- A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.
- A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.
- A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

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

Nothing Name/contact details/job title	<input type="checkbox"/>	<input type="checkbox"/>
Whole response Organisation	<input type="checkbox"/>	<input type="checkbox"/>
Part of the response If there is no separate annex, which parts?	<input type="checkbox"/>	

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

DECLARATION

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

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

Name

Signed (if hard copy)

Annex 4

Consultation question

A4.1 Within this Consultation, we have asked the following questions that we would like stakeholders to consider:

Market Definition

Question 3.1: Do you agree with Ofcom's proposed product market definitions? If not, please explain why.

Question 3.2: Do you agree with Ofcom's view of the relevant criteria for assessing the geographic market boundaries? If not, please explain why.

Question 3.3: Do you agree with Ofcom's geographic market definitions? If not, please explain why.

Market power assessment

Question 4.1: Do you agree with Ofcom's proposal that BT holds SMP in Market 1? If not, please explain why.

Question 4.2: Do you agree with Ofcom's proposal that BT holds SMP in Market 2? If not, please explain why.

Question 4.3: Do you agree with Ofcom's proposal that no operator has SMP in Market 3? If not, please explain why.

Question 4.4: Do you agree with Ofcom's proposal that KCOM holds SMP in the Hull Area? If not, please explain why.

Remedies

Question 5.1: Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on BT in relation to the market for wholesale broadband access in Market 1? If not, please explain why.

Question 5.2: Do you agree with Ofcom's proposal to impose a basis of charges obligation and a charge control on BT in relation to the market for wholesale broadband access in Market 1? If not, please explain why.

Question 5.3: Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on BT in relation to the market for wholesale broadband access in Market 2? If not, please explain why.

Question 5.4: Do you agree with Ofcom's proposal to impose a basis of charges obligation on BT in relation to the market for wholesale broadband access in Market 2? If not, please explain why.

Question 5.5: *Do you agree that Ofcom should allow a period of notice in the exchanges that move from Market 2 to Market 3 in which the above conditions should apply? Do you agree that 12 months is an appropriate period of notice? If not, please explain why.*

Question 5.6: *Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on KCOM in relation to the market for wholesale broadband access in the Hull area? If not, please explain why.*

Question 5.7: *Do you agree with Ofcom's approach to price remedies in the Hull area? If not, please explain why.*

Question 5.8: *Are there other remedies that, if imposed by Ofcom, would promote entry into the market in the Hull area by other providers?*

Annex 5

Legal Instrument

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

Proposals for identifying markets, making market power determinations and the setting of SMP services conditions to be applied to BT and KCOM under section 45 of the Communications Act 2003

Background

1. On 21 May 2008, the Office of Communications (“Ofcom”) published a statement entitled *Wholesale broadband access market review*⁹⁰ (the “**2008 Notification**”) identifying the services markets of wholesale broadband access services, making market power determinations and setting SMP services conditions applying to BT and KCOM.
2. On 22 July 2004, Ofcom published a statement entitled *The Regulatory Financial Reporting Obligations on BT and Kingston Communications Final Statement and Notification*⁹¹ (the “**2004 Regulatory Accounting Notification**”) imposing various regulatory financial reporting obligations on BT and KCOM (as amended).

Proposals for services market identifications and market power determinations

3. Ofcom hereby makes the following proposals for identifying markets, making market power determinations and the setting of SMP services conditions by reference to such determinations (“SMP service conditions”).
4. Ofcom is proposing to identify in accordance with section 80 of the Act the following markets for the purpose of making market power determinations:
 - (a) wholesale broadband access provided in Market 1;
 - (b) wholesale broadband access provided in Market 2;
 - (c) wholesale broadband access in Market 3; and
 - (d) wholesale broadband access provided in the Hull area;
5. Ofcom is proposing in accordance with section 80 of the Act to make market power determinations that the following persons have significant market power:
 - (a) in relation to the markets set out in paragraphs 4(a) and 4(b) above, BT; and
 - (b) in relation to the market set out in paragraph 4(d), KCOM;
6. The effect of, and Ofcom’s reasons for, making the proposals to identify the markets set out in paragraph 4 above are contained in section 3 of the explanatory statement published with this Notification;
7. The effect of, and Ofcom’s reasons for, making the proposals to make the market power determinations set out in paragraph 5 above are contained in section 4 of the explanatory statement published with this Notification ;

⁹⁰ <http://www.ofcom.org.uk/consult/condocs/wbamr07/statement/statement.pdf>

⁹¹ *The regulatory financial reporting obligations on BT and Kingston Communications Final statement and notification*, 22 July 2004
http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/finance_report.pdf

Proposals to set SMP service conditions

8. Ofcom is proposing to set SMP conditions on the persons referred to in paragraph 5 above as set out in Schedules 1 to 3 to this Notification;
9. The effect of, and Ofcom's reasons for making, the proposals to set the SMP conditions set out in Schedules 1 to 3 to this Notification are contained in section 5 of the explanatory statement published with this Notification .

Proposals to revoke SMP service conditions

10. Ofcom is proposing, in accordance with section 48(2) of the Act, to revoke all the SMP services conditions set out at Annex 1 of the 2008 Notification, and any subsequent modifications to the SMP services conditions set out at Annex 1 of the 2008 Notification, in accordance with paragraphs 11 and 12 below.
11. Insofar as the SMP services conditions set out at Annex 1 of the 2008 Notification relate to the markets set out in paragraph 4 above, those notifications shall, in accordance with section 48(2) of the Act, be revoked by this Notification when it takes effect under sections 48(1) and 79(4) of the Act, unless otherwise stated in paragraph 12 of this Notification.
12. Insofar as Conditions EA7, EA8, EA10 and EA12 of Schedule 2 to Annex 1 of the 2008 Notification apply to exchanges that for the purposes of this market review fall within Market 3 and insofar as these Conditions relate to the provision of Network Access to a Third Party which is an existing wholesale broadband access customer of the Dominant Provider these Conditions shall be revoked by this Notification on the day which is one year from the date on which it takes effect under sections 48(1) and 79(4) of the Act. The relevant exchanges are set out in Appendix 4 to this Notification. For the avoidance of doubt conditions EA9 and EA11 of Schedule 2 to Annex 1 of the 2008 Notification, insofar as they relate to Market 3, shall be revoked by this Notification when it takes effect under sections 48(1) and 79(4) of the Act.

Ofcom's duties and legal tests

13. In identifying and analysing the markets referred to in this Notification, and in considering whether to make the corresponding proposals, Ofcom has, in accordance with section 79 of the Act, taken due account of all applicable guidelines and recommendations which have been issued or made by the European Commission in pursuance of a Community instrument, and relate to market identification and analysis or the determination of what constitutes significant market power.
14. Ofcom considers that the proposed SMP conditions above comply with the requirements of sections 45 to 47, 87, 88 and 90 of the Act, as appropriate and relevant to each such SMP condition, and further that the proposed revocations of the SMP conditions referred to above comply with the requirements of sections 45 to 47, 87 and 88 of the Act as appropriate and relevant to them.
15. In making all of the proposals referred to in this Notification, Ofcom has considered and acted in accordance with section 3 of the Act and the six Community requirements in section 4 of the Act.

Making representations

16. Representations may be made to OFCOM about the proposals set out in this Notification and the accompanying explanatory statement by 1 June 2010.

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

Interpretation

18. Except for the purposes of paragraph 4 of this Notification and except as otherwise defined in this Notification, words or expressions used shall have the same meaning as they have been ascribed in the Act.

19. In this Notification:

“**2004 Regulatory Accounting Notification**” has the meaning given in paragraph 2 above;

“**2008 Notification**” has the meaning given in paragraph 1 above;

“**the Act**” means the Communications Act 2003 (c. 21);

“**BT**” means British Telecommunications plc whose registered company number 1800000, and any British Telecommunications plc subsidiary or holding company, or any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

“**Hull area**” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and Kingston Communications (Hull) plc, (now known as KCOM);

“**KCOM**” means KCOM Group plc whose registered company number 2150618, and including any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

“**Market 1**” means the area covered by the BT exchanges set out at Appendix 1 to Schedule 2 of this Notification;

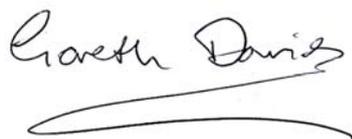
“**Market 2**” means the area covered by the BT exchanges set out at Appendix 2 to Schedule 2 of to this Notification;

“**Market 3**” means the area covered by the BT exchanges set out at Appendix 3 to Schedule 2 of to this Notification;

“**Ofcom**” means the Office of Communications as established pursuant to section 1(1) of the Office of Communications Act 2002;

“**United Kingdom**” has the meaning given to it in the Interpretation Act 1978 (c.30).

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



Gareth Davies
Competition Policy Director

A person authorised by Ofcom under paragraph 18 of the Schedule to the Office of Communications Act 2002
23 March 2010

SCHEDULE 1 – BT CONDITIONS IN MARKET 1

The SMP services conditions proposed to be imposed on BT under sections 45, 87 and 88 of the Communications Act 2003 as a result of the analysis of Market 1 in which it is proposed BT has significant market power (“SMP conditions”)

Part 1: Application, definitions and interpretation relating to the SMP conditions in Part 2

1. These conditions shall apply to the markets for wholesale broadband access in Market 1 (“**the Market**”).

2. In this Schedule:

“**Access Charge Change Notice**” has the meaning given to it in Condition EAA4;

“**Access Contract**” means:

(i) a contract for the provision by the Dominant Provider to another person of Network Access to the Dominant Provider’s Electronic Communications Network;

(ii) a contract under which Associated Facilities in relation to the Dominant Provider’s Public Electronic Communications Network are made available by the Dominant Provider to another person;

“**the Act**” means the Communications Act 2003 (c. 21);

“**Dominant Provider**” means British Telecommunications plc whose registered company number 1800000, and any British Telecommunications plc subsidiary or holding company, or any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

“**Ofcom**” means the Office of Communications as established pursuant to section 1(1) of the Office of Communications Act 2002;

“**Reference Offer**” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract.

“**Third Party**” means either:

(a) a person providing a Public Electronic Communications Network; or

(b) a person providing a Public Electronic Communications Service.

“**Transfer Charge**” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market 1 and the use of Network Components in Market 1;

“**Usage Factor**” means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in the Notification and paragraph 2 above and otherwise any word or expression shall have the same meaning as it has in the Act.

4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.

5. Headings and titles shall be disregarded.

Part 2: The SMP conditions

Condition EAA1 – Requirement to provide Network Access on reasonable request

EAA1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

EAA1.2 The provision of Network Access in accordance with paragraph EAA1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms, and conditions and charges and on such terms, and conditions and charges as Ofcom may from time to time direct.

EAA1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EAA2 – Requirement not to unduly discriminate

EAA2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

EAA2.2 In this Condition the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition EAA3 – Requirement to publish a Reference Offer

EAA3.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

EAA3.2 Subject to paragraph EAA3.9 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of the network);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;
- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;

- (iv) a definition and limitation of liability and indemnity; and
- (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location); and
- (n) the standard terms and conditions for the provision of Network Access.
- (o) the amount applied to:

- (i) each Network Component used in providing Network Access with the relevant Usage Factors; and
- (ii) the Transfer Charge for each Network Component or combination of Network Components described above,

reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider

EAA3.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
 - (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,
- in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraph EAA3.2 (a)-(o).

EAA3.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date this Condition enters into force.

EAA3.5 The Dominant Provider shall update and publish in relation to any amendments or in relation to any further Network Access provided after the date this Condition enters into force.

EAA3.6 Publication referred to above shall be effected by:

- (a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and
- (b) sending a copy of the Reference Offer to Ofcom.

EAA3.7 The Dominant Provider shall give Ofcom at least ten days prior written notice of any amendment to the Reference Offer coming into effect, unless such amendment is directed or determined by Ofcom or is required by a notification or enforcement notification issued by Ofcom under sections 94 or 95 of the Act.

EAA3.8 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that Person's written request (or such parts which have been requested). The provision of such a copy of the Reference Offer may be subject to a reasonable charge.

EAA3.9 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

EAA3.10 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

EAA 3.11 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EAA4 – Requirement to notify charges, terms and conditions

EAA4.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

EAA4.2 Except where new or amended charges are directed or determined by Ofcom or where otherwise provided in this Condition, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition EAA1 a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges, terms and conditions for new Network Access (an “**Access Charge Change Notice**”) not less than 28 days before any such amendment comes into effect.

EAA4.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the charges, terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “**effective date**”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub-paragraph (d) above with respect to that Network Access to which that paragraph applies.

EAA4.4 The Dominant Provider shall not apply any new charge, term or condition identified in an Access Charge Change Notice before the effective date.

EAA4.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
 - (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,
- in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs EAA4.3(a)-(e).

Condition EAA5 – Transparency as to quality of service

EAA5.1 The Dominant Provider shall publish all such information for the purposes of

securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider, in such manner and form as Ofcom may from time to time direct.

EAA5.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EAA6 – Requirement to notify technical information

EAA6.1 Except where Ofcom consents otherwise, where the Dominant Provider:

(a) proposes to provide Network Access covered by Condition EAA1, the terms and conditions for which comprise new:

- (i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);
- (ii) locations of the points of Network Access; or
- (iii) technical standards (including any usage restrictions and other security issues), or

(b) proposes to amend an existing Access Contract covered by Condition EAA1 by modifying the terms and conditions listed in paragraphs EAA6.1(a)(i) to (iii) on which the Network Access is provided, the Dominant Provider shall publish a written notice (the ‘**Notice**’) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect. This obligation for prior notification will not apply where new or amended terms and conditions are directed or determined by Ofcom or are required by a notification or an enforcement notification given by Ofcom under sections 94 or 95 of the Act.

EAA6.2 The Dominant Provider shall ensure that the Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions; and
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “**effective date**”).

EAA6.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

EAA6.4 Publication referred to in paragraph EAA6.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person’s written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition EAA1. The provision of such a copy of Notice may be subject to a reasonable charge.

Condition EAA7 – Basis of charges

EAA7.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every

charge offered, payable or proposed for Network Access covered by Condition EAA1 is reasonably derived from the costs of provision based on a forward looking long-run incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

EAA7.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by Condition EAA1 is for a service which is subject to a charge control, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirements of paragraph EAA7.1 above.

EAA7.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

SCHEDULE 2 – BT CONDITIONS IN MARKET 2

The SMP services conditions proposed to be imposed on BT under sections 45, 87 and 88 of the Communications Act 2003 as a result of the analysis of Market 2 in which it is proposed BT has significant market power (“SMP conditions”)

Part 1: Application, definitions and interpretation relating to the SMP conditions in Part 2

1. These conditions shall apply to the markets for wholesale broadband access in Market 2 (“**the Market**”).

2. In this Schedule:

“**Access Charge Change Notice**” has the meaning given to it in Condition EAA11;

“**Access Contract**” means:

(i) a contract for the provision by the Dominant Provider to another person of Network Access to the Dominant Provider’s Electronic Communications Network;

(ii) a contract under which Associated Facilities in relation to the Dominant Provider’s Public Electronic Communications Network are made available by the Dominant Provider to another person;

“**the Act**” means the Communications Act 2003 (c. 21);

“**Dominant Provider**” means British Telecommunications plc whose registered company number 1800000, and any British Telecommunications plc subsidiary or holding company, or any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

“**Ofcom**” means the Office of Communications as established pursuant to section 1(1) of the Office of Communications Act 2002;

“**Reference Offer**” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract.

“**Third Party**” means either:

(a) a person providing a Public Electronic Communications Network; or

(b) a person providing a Public Electronic Communications Service.

“**Transfer Charge**” means the charge or price that is applied, or deemed to be applied, by the Dominant Provider to itself for the use or provision of an activity or group of activities. For the avoidance of doubt such activities or group of activities include, amongst other things, products and services provided from, to or within the Market 2 and the use of Network Components in Market 2;

“**Usage Factor**” means the average usage by any Communications Provider (including the Dominant Provider itself) of each Network Component in using or providing a particular product or service or carrying out a particular activity.

3. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in the Notification and paragraph 2 above and otherwise any word or expression shall have the same meaning as it has in the Act.

4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.

5. Headings and titles shall be disregarded.

Part 2: The SMP conditions

Condition EAA8 – Requirement to provide Network Access on reasonable request

EAA8.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

EAA8.2 The provision of Network Access in accordance with paragraph EAA8.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions and charges and on such terms and conditions and charges as Ofcom may from time to time direct.

EAA8.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EAA9 – Requirement not to unduly discriminate

EAA9.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

EAA9.2 In this Condition the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition EAA10 – Requirement to publish a Reference Offer

EAA10.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

EAA10.2 Subject to paragraph EAA10.9 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of the network);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;
- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;

- (iv) a definition and limitation of liability and indemnity; and
- (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
 - (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location); and
- (n) the standard terms and conditions for the provision of Network Access.
- (o) the amount applied to:
 - (i) each Network Component used in providing Network Access with the relevant Usage Factors; and
 - (ii) the Transfer Charge for each Network Component or combination of Network Components described above,reconciled in each case to the charge payable by a Communications Provider other than the Dominant Provider.

EAA10.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraph EAA10.2(a)-(o).

EAA10.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date this Condition enters into force.

EAA10.5 The Dominant Provider shall update and publish in relation to any amendments or in relation to any further Network Access provided after the date this Condition enters into force.

EAA10.6 Publication referred to above shall be effected by:

- (a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and
- (b) sending a copy of the Reference Offer to Ofcom.

EAA10.7 The Dominant Provider shall give Ofcom at least ten days prior written notice of any amendment to the Reference Offer coming into effect, unless such amendment is directed or determined by Ofcom or is required by a notification or enforcement notification issued by Ofcom under sections 94 or 95 of the Act.

EAA10.8 The Dominant Provider shall send a copy of the current version of the Reference Offer to any Person at that Person's written request (or such parts which have been requested). The provision of such a copy of the Reference Offer may be subject to a reasonable charge.

EAA10.9 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

EAA10.10 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

EAA10.11 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EAA11 – Requirement to notify charges, terms and conditions

EAA11.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

EAA11.2 Except where new or amended charges are directed or determined by Ofcom or where otherwise provided in this Condition, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition EAA8 a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges, terms and conditions for new Network Access (an “**Access Charge Change Notice**”) not less than 28 days before any such amendment comes into effect.

EAA11.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the charges, terms and conditions associated with the provision of that Network Access;
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “**effective date**”);
- (d) the current and proposed new charge and the relevant Usage Factors applied to each Network Component comprised in that Network Access, reconciled in each case with the current or proposed new charge; and
- (e) the information specified in sub-paragraph (d) above with respect to that Network Access to which that paragraph applies.

EAA11.4 The Dominant Provider shall not apply any new charge, term or condition identified in an Access Charge Change Notice before the effective date.

EAA11.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
 - (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,
- in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraph EAA11.3(a)-(e).

Condition EAA12 – Transparency as to quality of service

EAA12.1 The Dominant Provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider, in such manner and form as Ofcom may from time to time direct.

EAA12.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EAA13 – Requirement to publish technical information

EAA13.1 Except where Ofcom consents otherwise, where the Dominant Provider:

- (a) proposes to provide Network Access covered by Condition EAA8, the terms and conditions for which comprise new:
- (i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);
 - (ii) locations of the points of Network Access; or
 - (iii) technical standards (including any usage restrictions and other security issues), or
- (b) proposes to amend an existing Access Contract covered by Condition EAA8 by modifying the terms and conditions listed in paragraph EAA13.1(a)(i) to (iii) on which the Network Access is provided, the Dominant Provider shall publish a written notice (the '**Notice**') of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect. This obligation for prior notification will not apply where new or amended terms and conditions are directed or determined by Ofcom or are required by a notification or an enforcement notification given by Ofcom under sections 94 or 95 of the Act.

EAA13.2 The Dominant Provider shall ensure that the Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider's Reference Offer of the relevant terms and conditions; and
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the "**effective date**").

EAA13.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

EAA13.4 Publication referred to in paragraph EAA13.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition EAA 8. The provision of such a copy of Notice may be subject to a reasonable charge.

Condition EAA14 – Basis of charges

EAA14.1 Unless Ofcom directs otherwise from time to time, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that each and every charge offered, payable or proposed for Network Access covered by Condition EAA8 is reasonably derived from the costs of provision based on a forward looking long-run

incremental cost approach and allowing an appropriate mark up for the recovery of common costs including an appropriate return on capital employed.

EAA14.2 For the avoidance of any doubt, where the charge offered, payable or proposed for Network Access covered by paragraph EAA8 is for a service which is subject to a charge control, the Dominant Provider shall secure, and shall be able to demonstrate to the satisfaction of Ofcom, that such a charge satisfies the requirements of paragraph EAA14.1 above.

EAA14.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Appendix 1 BT exchanges covering Market 1

3,578 BT exchanges

CMACK, CMALB, CMALDM, CMALL, CMARM, CMBARF, CMBKN, CMBOB, CMBRAU, CMBRE, CMBWN, CMCLA, CMCLAV, CMCRI, CMCUR, CMDIT, CMEARL, CMELMD, CMETT, CMFIL, CMFRA, CMFUR, CMGREA, CMHAMP, CMHARBU, CMHASN, CMHEN, CMHIG, CMKINE, CMLAP, CMMART, CMMER, CMMID, CMMOR, CMMORT, CMPAI, CMPAT, CMPEB, CMQUA, CMSFD, CMSHE, CMSMBK, CMSNI, CMSON, CMSOUC, CMSWI, CMTAN, CMWEE, CMWEL, CMWESH, CMWHY, CMWOR, CMWYT, CMYOX, EAABR, EAABY, EAACL, EAALB, EAARD, EAASD, EAASW, EABAC, EABAD, EABAW, EABBY, EABDC, EABDF, EABEY, EABFD, EABFN, EABGC, EABIL, EABIN, EABIR, EABKW, EABLA, EABLY, EABMF, EABMK, EABNC, EABNH, EABNM, EABNW, EABOT, EABRD, EABRI, EABRK, EABRP, EABRR, EABRT, EABSM, EABTF, EABTM, EABUR, EABUX, EABWL, EABYF, EACAA, EACAR, EACAX, EACDN, EACFD, EACHA, EACHR, EACHT, EACHY, EACLA, EACLE, EACLV, EACOD, EACOG, EACOM, EACOP, EACRO, EACST, EACTD, EACTP, EACTS, EACUL, EACWT, EADEB, EADED, EADIC, EADIS, EADNE, EADOC, EAEBG, EAEHL, EAELM, EAELS, EAELV, EAEMS, EAERD, EAERI, EAESW, EAETE, EAETK, EAFDM, EAFDF, EAFIN, EAFLE, EAFMT, EAFOR, EAFOW, EAFRP, EAFSD, EAFTH, EAFUN, EAFXD, EAFYF, EAGAR, EAGAY, EAGBF, EAGBN, EAGBT, EAGCR, EAGCT, EAGDE, EAGES, EAGHD, EAGHM, EAGHY, EAGLE, EAGMS, EAGOL, EAGRE, EAGRU, EAGRY, EAGSM, EAGST, EAGWH, EAGYD, EAHAT, EAHBK, EAHBO, EAHDM, EAHDN, EAHEA, EAHED, EAHEL, EAHM, EAHEN, EAHM, EAHET, EAHEV, EAHGM, EAHIC, EAHIL, EAHKD, EAHLM, EAHLT, EAHNF, EAHNG, EAHNS, EAHNT, EAHOH, EAHOL, EAHOM, EAHON, EAHOR, EAHOX, EAHRL, EAHRR, EAHST, EAHSW, EAHTM, EAHTT, EAHWO, EAILK, EAING, EAISL, EAKBC, EAKEL, EAKEN, EAKSH, EAKSL, EAKTN, EALAK, EALAV, EALAY, EALIN, EALIT, EALLN, EALOD, EALPT, EALST, EALTN, EALWT, EAMAD, EAMBN, EAMEN, EAMET, EAMFD, EAMHD, EAMHM, EAMID, EAMKT, EAMLK, EAMLS, EAMOR, EAMTC, EAMTS, EAMUL, EAMUN, EANAC, EANAR, EANAY, EANDL, EANEE, EANEW, EANPT, EAOC, EAOFF, EAORF, EAORM, EAORS, EAOUS, EAOVE, EAPEA, EAPEL, EAPLE, EAPOT, EAPRI, EAPUC, EAPUL, EAPUR, EAPYM, EAQUI, EARAD, EARAT, EARAV, EARDH, EARDN, EAREE, EAREN, EARID, EARMS, EAROO, EAROW, EAROX, EASAB, EASAL, EASAP, EASBM, EASBN, EASCK, EASCR, EASFR, EASGM, EASGN, EASHE, EASHI, EASHL, EASHM, EASHR, EASIC, EASIL, EASIX, EASMA, EASMD, EASMN, EASNA, EASOS, EASRM, EASRP, EASRY, EASST, EASTB, EASTK, EASTL, EASTN, EASTR, EASTT, EASTW, EASUR, EASUT, EASWD, EASWL, EASWM, EASWN, EASWT, EASXM, EASXP, EASYD, EATER, EATFD, EATHA, EATHU, EATIV, EATKL, EATLL, EATLW, EATNM, EATOL, EATSC, EATTS, EATWI, EAUBB, EAWAN, EAWBS, EAWCT, EAWEL, EAWEN, EAWFY, EAWIL, EAWIN, EAWIX, EAWKB, EAWLD, EAWLW, EAWLY, EAWMK, EAWMS, EAWOD, EAWOL, EAWOR, EAWRD, EAWRE, EAWRO, EAWRU, EAWSM, EAWSP, EAWST, EAWTL, EAWTN, EAWTS, EAWWR, EAYOX, EMABBOT, EMABRIP, EMALREW, EMALSTO, EMAMBER, EMANCAS, EMASFOR, EMBAIN, EMBAKEW, EMBELPE, EMBENEF, EMBENWI, EMBGWOR, EMBILLE, EMBILLI, EMBILST, EMBLAKE, EMBLEAS, EMBLISW, EMBLLTO, EMBOTTE, EMBOZEA, EMBRAIL, EMBREAD, EMBRIGS, EMBRIXW, EMBROUG, EMBUCKM, EMBULWI, EMBURGH, EMBURTJ, EMBUTTE, EMBYTHO, EMCABYT, EMCARSI, EMCASO, EMCHRIS, EMCHSTL, EMCLIFT, EMCLIPS, EMCLOPT, EMCNTON, EMCOPEN, EMCOLLI, EMCOTTE, EMCRAF, EMCRGLN, EMCROWL, EMCROXT, EMCRTON, EMCRWLL, EMCTSK, EMCULVE, EMCWRS, EMDARLE, EMDEEPI, EMDETHI, EMDFFIE, EMDINGL, EMDNGTN, EMDODDI, EMDOWSB, EMDUDDI, EMEASTB, EMEASTH, EMEASTS, EMEDENH, EMEKBY, EMELLAS, EMELTON, EMEMPIN, EMESSTL, EMEYEPE, EMFARNS, EMFENTO, EMFLECK, EMFOLKI, EMFOSDY, EMFRIDA, EMFRISK, EMFULBE,

LNTHB, LSBET, LSMOG, LSNUT, LSOTT, LSOXS, LVKIN, LVMAN, LVMOO, LVMPK, LVNCB, LVPADPK, LVWTW, LWWRA, MRALD, MRARL, MRBOL, MRBUC, MRCHI, MRCHL, MRCOM, MRHTN, MRLNR, MRLOW, MRMHE, MRMOB, MRNRD, MRPBY, MRPIC, MRRSP, MRSUT, MRTAD, MRTID, MRWHA, MRWNC, MYADD, MYAIR, MYALD, MYAMP, MYAPP, MYARN, MYART, MYBAG, MYBBY, MYBEE, MYBEN, MYBIL, MYBIR, MYBKA, MYBKE, MYBLU, MYBNS, MYBOL, MYBOR, MYBPI, MYBPM, MYBPW, MYBRE, MYBRN, MYBUB, MYBYP, MYCAM, MYCAW, MYCLO, MYCOL, MYCON, MYCOP, MYCOX, MYCRA, MYCTN, MYDAL, MYDAR, MYDUN, MYEAO, MYEAT, MYELV, MYESC, MYFIL, MYFLM, MYFLO, MYFLX, MYGAT, MYGIL, MYGRA, MYGRE, MYGRG, MYHAC, MYHIP, MYHIR, MYHLI, MYHLM, MYHLP, MYHMB, MYHOV, MYHOW, MYHRW, MYHSM, MYHUB, MYHUG, MYHUM, MYKET, MYKEY, MYKIL, MYKMP, MYKMS, MYKMZ, MYLAN, MYLAS, MYLEC, MYLEV, MYLIN, MYLOC, MYLON, MYMAR, MYMAS, MYMID, MYMLB, MYMMB, MYNCV, MYNGR, MYNND, MYNSY, MYNUN, MYPBG, MYPOC, MYPTN, MYRAM, MYREE, MYRIC, MYRIL, MYRUF, MYRWC, MYSAW, MYSBG, MYSDN, MYSET, MYSHF, MYSKR, MYSKS, MYSNN, MYSPO, MYSPU, MYSTI, MYSTO, MYSTR, MYSYK, MYTAD, MYTHR, MYTHT, MYTHW, MYTIB, MYTOC, MYTOL, MYWAT, MYWBG, MYWEN, MYWEW, MYWHE, MYWHL, MYWIL, MYWIT, MYWLT, MYWOH, NDALD, NDALL, NDAPP, NDASH, NDAYL, NDBAT, NDBEC, NDBEN, NDBET, NDBID, NDBOU, NDBRD, NDBRE, NDBRG, NDBRI, NDBRK, NDBUR, NDBUX, NDCAS, NDCGA, NDCHA, NDCHD, NDCHI, NDCHL, NDCHR, NDCOO, NDCOW, NDCRA, NDCRW, NDCST, NDDHI, NDDOD, NDDPA, NDEAS, NDECH, NDEGE, NDELH, NDELM, NDEPE, NDETC, NDFAI, NDFEL, NDFLI, NDFOR, NDFRA, NDFRI, NDFRM, NDFRO, NDGOD, NDGOU, NDGUE, NDHAD, NDHAK, NDHAL, NDHAR, NDHDO, NDHED, NDHGR, NDHHA, NDHOL, NDHRO, NDHST, NDHUN, NDIDE, NDIHI, NDISF, NDKNO, NDLAM, NDLAN, NDLEN, NDLEY, NDLIN, NDLYD, NDLYM, NDMAR, NDMAY, NDMIL, NDMTH, NDNEI, NDNEW, NDNIN, NDNOR, NDNUT, NDOTF, NDOTH, NDPEA, NDPEM, NDPEN, NDPET, NDPLA, NDPLU, NDRGR, NDROB, NDROT, NDRYE, NDSAH, NDSEA, NDSER, NDSEI, NDSER, NDSER, NDSGO, NDSHA, NDSHO, NDSHP, NDSMA, NDSMB, NDSMI, NDSML, NDSOU, NDSTA, NDSTP, NDSVA, NDTEN, NDTEY, NDTIC, NDWAD, NDWAT, NDWET, NDWIN, NDWIT, NDWKI, NDWOO, NDWOR, NDWYE, NEAC, NEAL, NEALD, NEALH, NEALS, NEAM, NEASG, NEAW, NEBC, NEBEA, NEBED, NEBEL, NEBGM, NEBHM, NEBLA, NEBLS, NEBML, NEBNG, NEBRT, NEBU, NEBW, NEBWS, NECAP, NECB, NECBN, NECFD, NECHA, NECI, NECOD, NECOT, NECOX, NECSN, NECST, NECTN, NEDN, NEDP, NEEB, NEEGT, NEEHL, NEELA, NEEN, NEES, NEFEL, NEFSL, NEFT, NEGLA, NEGMT, NEGND, NEGNFD, NEGRE, NEGS, NEGTD, NEGWT, NEHAR, NEHAS, NEHAY, NEHDL, NEHH, NEHID, NEHPL, NEHR, NEHSY, NEHTR, NEHWH, NEJV, NEKBW, NEKDR, NEKF, NEKP, NELEB, NELK, NELL, NELM, NELO, NELOF, NELT, NEMIL, NEMTD, NENB, NENCT, NENH, NENR, NEOM, NEON, NEPB, NEPG, NEPX, NERB, NERD, NEREH, NERFD, NERHB, NERM, NESBY, NESDP, NESEH, NESG, NESGT, NESHB, NESH, NESK, NESLN, NESLS, NESLY, NESNS, NESSDS, NESTA, NESUT, NETI, NETL, NETP, NETW, NEUL, NEULM, NEWAU, NEWF, NEWGM, NEWH, NEWHD, NEWLL, NEWLW, NEWSNS, NEWO, NEWOP, NEWOR, NEWR, NEWT, NEWU, NEWV, NEWYL, NIAA, NIAE, NIAFN, NIAGH, NIAH, NIAL, NIAN, NIAR, NIAY, NIBCO, NIBDY, NIBEK, NIBGL, NIBGY, NIBH, NIBK, NIBKB, NIBKR, NIBL, NIBMS, NIBN, NIBNA, NIBNB, NIBRA, NIBRN, NIBRS, NIBSB, NIBT, NIBW, NIBWR, NIBY, NICA, NICB, NICD, NICDN, NICE, NICG, NICGR, NICH, NICK, NICL, NICM, NICMG, NICRH, NICRS, NICSD, NICSI, NICUS, NICW, NIDBO, NIDK, NIDL, NIDM, NIDMA, NIDMR, NIDNM, NIDOD, NIDPT, NIDQ, NIDR, NIDRY, NIDY, NIDYN, NIEK, NIFCT, NIFH, NIFIN, NIFN, NIFY, NIGF, NIGFD, NIGM, NIGN, NIGT, NIGVA, NIGWY, NIGY, NIHB, NIIM, NIIT, NIJP, NIKA, NIKH, NIKI, NIKL, NIKN, NIKS, NIKTS, NIKVY, NIKY, NIKYL, NILA, NILGL, NILI, NILL, NIMA, NIME, NIMF, NIMFD, NIMH, NIMM, NIMO, NIMOY, NIMTN, NIMZ, NINB, NINE, NINH, NIPE, NIPP, NIPR, NIPS, NIPT, NIPVE, NIPY, NIRD, NIRL, NIRLN, NIRN, NIRS, NISD, NISEA, NISF, NISP, NISTF, NISTN, NISW, NITB, NITC, NITG, NITO, NITP, NITR, NIWD, NIWP, NIWT, NSABC, NSABL, NSABO, NSADV, NSAGR, NSAGY, NSALB, NSALF, NSALG, NSALR, NSALT, NSALV, NSANG, NSANS, NSAPP, NSARI, NSASC, NSASN, NSASR, NSASS, NSATB, NSATL, NSAVI,

NSAVR, NSBAC, NSBAD, NSBAY, NSBBN, NSBCS, NSBCY, NSBDI, NSBEA, NSBEN, NSBER, NSBET, NSBFD, NSBFR, NSBIG, NSBIR, NSBIX, NSBLD, NSBLL, NSBLT, NSBMC, NSBMD, NSBMR, NSBNF, NSBNS, NSBOG, NSBOW, NSBRA, NSBRK, NSBRN, NSBRR, NSBRV, NSBRY, NSBSY, NSBTS, NSBVO, NSBVS, NSCAB, NSCAL, NSCAN, NSCAR, NSCAT, NSCAW, NSCBK, NSCBS, NSCBY, NSCGM, NSCHL, NSCLN, NSCLO, NSCNI, NSCPC, NSCPY, NSCRB, NSCRN, NSCRR, NSCRU, NSCRY, NSCTI, NSCTN, NSCTS, NSCTW, NSCTY, NSCUM, NSCUN, NSCWY, NSDAV, NSDBG, NSDBL, NSDBT, NSDCH, NSDCR, NSDCT, NSDDL, NSDEE, NSDET, NSDGW, NSDIA, NSDIN, NSDLS, NSDLT, NSDMK, NSDMR, NSDNC, NSDNI, NSDNS, NSDOC, NSDPH, NSDRN, NSDRS, NSDTU, NSDUF, NSDUL, NSDVG, NSDWH, NSDYC, NSEDD, NSEDI, NSEDN, NSEDY, NSERI, NSEVA, NSEVI, NSFAG, NSFAR, NSFET, NSFEU, NSFIN, NSFIS, NSFOC, NSFOU, NSFRG, NSFRN, NSFSE, NSFSS, NSFTN, NSFYV, NSGAI, NSGBD, NSGBT, NSGDL, NSGFN, NSGIL, NSGKD, NSGLA, NSGLG, NSGLV, NSGMT, NSGMZ, NSGOL, NSGOR, NSGOS, NSGOT, NSGQT, NSGRE, NSGRN, NSGRO, NSGRV, NSGSL, NSGTN, NSGTY, NSGUT, NSGVR, NSHAM, NSHAT, NSHEL, NSHIL, NSHLD, NSHLK, NSHOL, NSHOP, NSHOY, NSHRS, NSHRY, NSHUN, NSICL, NSIGD, NSIGR, NSINS, NSISL, NSIVA, NSIVS, NSJOG, NSKBC, NSKCG, NSKCN, NSKDM, NSKDY, NSKED, NSKEM, NSKEN, NSKES, NSKGL, NSKGS, NSKHS, NSKIR, NSKIS, NSKLB, NSKLL, NSKLN, NSKLV, NSKLW, NSKNL, NSKNO, NSKON, NSKSS, NSKTH, NSKTR, NSKTY, NSKYL, NSLAG, NSLAI, NSLAT, NSLBD, NSLBM, NSLCN, NSLER, NSLEV, NSLHA, NSLHP, NSLLT, NSLMD, NSLMN, NSLMR, NSLMY, NSLPT, NSLSD, NSLSV, NSLUM, NSLVR, NSLYB, NSLYT, NSMAL, NSMAN, NSMAU, NSMDF, NSMEL, NSMEM, NSMER, NSMET, NSMID, NSMIN, NSMOF, NSMON, NSMOO, NSMOR, NSMUL, NSMUN, NSNAB, NSNAI, NSNBR, NSNBY, NSNDR, NSNER, NSNET, NSNHL, NSNIG, NSNMC, NSNMR, NSNPT, NSNRE, NSNRS, NSNST, NSNTT, NSOLL, NSOMD, NSONI, NSORN, NSORP, NSORT, NSOUT, NSPIT, NSPLO, NSPMH, NSPON, NSPOO, NSPOY, NSPPS, NSPPW, NSPSY, NSPTR, NSRAA, NSREY, NSRHL, NSRHT, NSRHY, NSRMY, NSRNM, NSROG, NSROU, NSRTS, NSRWK, NSSAL, NSSAU, NSSBY, NSSCH, NSSCN, NSSCO, NSSCP, NSSDN, NSSDS, NSSDY, NSSFR, NSSHA, NSSHI, NSSKB, NSSKD, NSSKL, NSSLI, NSSLW, NSSNS, NSSNV, NSSOL, NSSOR, NSSPB, NSSPF, NSSPY, NSSSH, NSSST, NSSSY, NSSTA, NSSTE, NSSTF, NSSTH, NSSTM, NSSTN, NSSTR, NSSTU, NSSUL, NSSUM, NSSUN, NSSWL, NSSWY, NSSYM, NSTAI, NSTAL, NSTAN, NSTCR, NSTDN, NSTHR, NSTHU, NSTIM, NSTKV, NSTLD, NSTON, NSTPH, NSTRD, NSTTL, NSTTN, NSTUL, NSTVS, NSUDN, NSUIG, NSULL, NSURR, NSUYE, NSVID, NSVOE, NSWAL, NSWAR, NSWDL, NSWEL, NSWFC, NSWHL, NSWIC, NSWNS, NSWRS, NSWRY, NSWSW, NSWTT, NSYTH, SDBLCMB, SDBLNY, SDBRCKL, SDBRCMB, SDBRDHM, SDBRGHS, SDBRY, SDCHLGR, SDCHLLR, SDCLBRN, SDCLHM, SDCMPTN, SDCWFLD, SDFNDN, SDFTTLW, SDFYGT, SDGDSHL, SDGLYND, SDGRFFH, SDGTWCK, SDHMBLD, SDHNDCR, SDHNFLD, SDHRSTM, SDHRSTP, SDHRTNG, SDHSSCK, SDHWKLY, SDKRDFR, SDLDSWR, SDLFRST, SDLNDFL, SDLSS, SDLWRBD, SDLXWD, SDNRWDH, SDNTN, SDPLBRG, SDPLMPT, SDPLSTW, SDPRTRD, SDPRVTT, SDPTCHN, SDPTWRT, SDPVNSM, SDPYNNG, SDRDGWC, SDRDNGL, SDRGT, SDRNDL, SDRNGMR, SDRP, SDRSPR, SDRWLND, SDSCYNS, SDSDLSH, SDSHNGT, SDSLNDN, SDSLNFL, SDSNGLT, SDSTDN, SDSTMN, SDSTMTRD, SDSTTN, SDWRNNG, SDWSBRG, SDWSTCH, SDWSTMN, SDWTTNB, SDWVLSF, SDYPTN, SDYRMTH, SLAF, SLASH, SLBAR, SLBAS, SLBB, SLBBY, SLBHY, SLBLY, SLBMB, SLBNB, SLBNN, SLBOB, SLBSM, SLBUS, SLBWH, SLCBY, SLCL, SLCLPL, SLCRM, SLCTR, SLDUA, SLED, SLEP, SLETF, SLFGY, SLFU, SLGD, SLGMN, SLHC, SLHD, SLHFT, SLHLY, SLHO, SLHS, SLHSN, SLHW, SLHX, SLKHE, SLKKB, SLKL, SLLAU, SLMC, SLMDH, SLMIM, SLMIS, SLMK, SLMLF, SLMT, SLMTN, SLNBS, SLNL, SLNSS, SLNTY, SLNVB, SLOMR, SLOWF, SLPKX, SLRAM, SLRK, SLRU, SLRXN, SLSAS, SLSAU, SLSAY, SLSCA, SLSCK, SLSGO, SLSPD, SLSPK, SLSRB, SLSTU, SLSTW, SLSU, SLSWB, SLSWL, SLSWY, SLSXB, SLTE, SLTF, SLTLB, SLTX, SLWCY, SLWEL, SLWG, SLWIT, SLWKY, SLWOO, SLWSP, SLXDS, SMAC, SMAD, SMAN, SMATL, SMAW, SMBD, SMBDG, SMBEN, SMBG, SMBH, SMBL, SMBNC, SMBRD, SMBRL, SMBRS, SMBTH,

SMBTN, SMBWY, SMBZ, SMCA, SMCD, SMCDU, SMCHH, SMCHO, SMCHY, SMCI,
 SMCNR, SMCR, SMCRP, SMCRT, SMCTN, SMCWD, SMDD, SMEB, SMEG, SMENS,
 SMEY, SMFB, SMFH, SMFI, SMFN, SMFW, SMGA, SMGB, SMGBL, SMGG, SMGMT,
 SMGN, SMGT, SMGUD, SMHA, SMHDM, SMHE, SMHN, SMHO, SMHPR, SMHS, SMHZ,
 SMICK, SMIMN, SMKH, SMKP, SMLC, SMLD, SMLF, SMLGN, SMLN, SMLR, SMLSN,
 SMLW, SMMC, SMMCM, SMMM, SMMS, SMMSY, SMMY, SMNCY, SMNHM, SMNL,
 SMNM, SMOL, SMOY, SMPT, SMRE, SMRGT, SMRMN, SMRSL, SMRVN, SMSAN,
 SMSAY, SMSA, SMSDM, SMSE, SMSG, SMSGN, SMSGT, SMSHP, SMSLK, SMSMV,
 SMSNB, SMSNC, SMSNF, SMSO, SMST, SMSTJ, SMSUB, SMSWD, SMSWF, SMSYR,
 SMTAK, SMTL, SMTN, SMTU, SMTY, SMTZ, SMUH, SMWAD, SMWB, SMWHY, SMWKN,
 SMWLS, SMWNG, SMWRB, SMWS, SMWSN, SMWSW, SMWTC, SMWTW, SMWX,
 SMWZ, SSABE, SSABS, SSADN, SSAFD, SSAHY, SSAMB, SSAVY, SSAXB, SSBAD,
 SSBAL, SSBGG, SSBY, SSBEC, SSBHN, SSBKE, SSBKL, SSBKY, SSBLA, SSBMN,
 SSBOW, SSBRK, SSBRN, SSBRO, SSBRT, SSBRU, SSBRW, SSBSY, SSCAN, SSCAS,
 SSCCM, SSCDN, SSCDO, SSCGE, SSCHA, SSCHT, SSCHU, SSCLL, SSCMA, SSCMB,
 SSCMP, SSCOB, SSCOD, SSCRA, SSCRU, SSDBK, SSDID, SSDIT, SSDYK, SSED,
 SSEVE, SSFAU, SSFBE, SSFFD, SSFIL, SSFRD, SSFTM, SSGBW, SSGPR, SSHAW,
 SSHGH, SSHIL, SSHPY, SSHUL, SSKEE, SSKEL, SSKFD, SSKLY, SSKMB, SSLAC,
 SSLAV, SSLBK, SSLHE, SSLIM, SSLKR, SSLOP, SSLTN, SSLUL, SSMAI, SSMAL,
 SSMAR, SSMBH, SSMEA, SSMIN, SSMLS, SSMSD, SSMWH, SSNAH, SSNCN, SSNLH,
 SSNRD, SSNTB, SSNUN, SSNWT, SSOAK, SSOGB, SSOVY, SSPEW, SSPLG, SSPLT,
 SSPOU, SSPRI, SSPTN, SSPWK, SSRAN, SSRBY, SSRMN, SSSAL, SSSBL, SSSEA,
 SSSEE, SSSFV, SSSHC, SSSHR, SSSHT, SSSOF, SSSRP, SSSTN, SSSUT, SSSWD,
 SSTBN, SSTEM, SSTIM, SSTRY, SSTTY, SSTWG, SSUFN, SSULY, SSUPT, SSWBT,
 SSWCE, SSWDH, SSWED, SSWHE, SSWHP, SSWIN, SSWNB, SSWOS, SSWRH,
 SSWRI, SSWTN, SSWUE, SSWWR, SSWYL, STABTAN, STABTSY, STALDBY, STALSFD,
 STASHST, STBBSTK, STBDWSR, STBERER, STBEULI, STBMSTR, STBORTN,
 STBRDCK, STBRFLD, STBRGTN, STBRMDN, STBRNGR, STBROCK, STBSETT,
 STBUCKH, STBUCKN, STBURLY, STCADNM, STCERNA, STCHBTN, STCHLDO,
 STCHOLD, STCHSTN, STCOLDC, STCOOMB, STCORFC, STCRANB, STDONHD,
 STDROXF, STDURLY, STEARLD, STEASTE, STEASTK, STEASTS, STFARLY,
 STFONTM, STFOVNT, STGRATY, STHANLY, STHAZEB, STHINDN, STHRSLY,
 STHRSTT, STHTHDN, STICHAB, STIDSTN, STKINGS, STLCKLY, STLNKHT, STLONGB,
 STLONGP, STLYNST, STMARNL, SMARTN, SMARTX, STMCHDV, STMDNTN,
 STMERE, STMIDWD, STMILAB, STMILSA, STMORDN, STNETBY, STNETHR,
 STOWSBY, STOXNWD, STPIDTH, STPUDTN, STPWRST, STROCKB, STROPLY,
 STSHRTN, STSPSLT, STSSCOT, STSTMBN, STSTOKB, STSTPFD, STSTUDL,
 STSTURM, STSTURN, STSWAY, STTEFFT, STTISBY, STTOLRY, STTRTHN, STUPAVN,
 STUPWEY, STWALOP, STWESTL, STWESTW, STWEYHL, STWHPSH, STWHTLY,
 STWINSL, STWITCH, STWLTON, STWRMWL, STWRTHM, SWAAI, SWAAV, SWAEN,
 SWAGL, SWAPO, SWBII, SWBIK, SWBJY, SWBNB, SWCG, SWCOO, SWCTE, SWCWN,
 SWDAQ, SWDCP, SWDRW, SWDWQ, SWFBZ, SWFCJ, SWGAR, SWGBG, SWGWN,
 SWGWR, SWHV, SWJOH, SWKW, SWLAK, SWLAS, SWLCA, SWLCY, SWLDR, SWLDV,
 SWLGC, SWLHY, SWLJV, SWLKB, SWLKD, SWLKX, SWLKY, SWLLF, SWLLM, SWLLP,
 SWLLU, SWLLW, SWLNN, SWLPI, SWLQW, SWLY, SWLYA, SWLYJ, SWLYW, SWMAD,
 SWMDX, SWMES, SWMF, SWMGX, SWMNF, SWMWY, SWMYE, SWMYG, SWMYU,
 SWNB, SWNDO, SWNDU, SWNEN, SWNES, SWNNA, SWNSN, SWNTD, SWPBL,
 SWPEC, SWPEV, SWPHX, SWPM, SWPMQ, SWPOM, SWPQS, SWPRU, SWPTM,
 SWPUN, SWPYH, SWQCT, SWQFJ, SWQH, SWQKL, SWQOB, SWQOE, SWRAG,
 SWRHA, SWRLS, SWRRY, SWRSO, SWRSV, SWSAS, SWSAW, SWSDV, SWSFJ,
 SWSMX, SWSNI, SWSSQ, SWSVB, SWTAF, SWTAJ, SWTAT, SWTB, SWTDE, SWTEK,
 SWTFS, SWTLL, SWTLU, SWTRH, SWTSA, SWTUC, SWUAH, SWUAZ, SWUCW,
 SWUGI, SWUGU, SWUHN, SWUTK, SWUWN, SWVLD, SWVW, SWWCP, SWWHT,
 SWWJK, SWXSX, SWXTP, SWXUU, SWYBL, SWYDU, SWYRO, SWZEN, SWZFR,
 SWZIU, SWZII, SWZKA, SWZLD, SWZMX, SWZNR, SWZNT, SWZWJ, SWZWM, SWZYY,

WSBRR, WSBUC, WSCAA, WSCAD, WSCAE, WSCAH, WSCAI, WSCAL, WSCAN, WSCAO, WSCAP, WSCAS, WSCAT, WSCHA, WSCHN, WSCLA, WSCLD, WSLCR, WSCMM, WSCOB, WSCOE, WSCOL, WSCOM, WSCON, WSCOR, WSCOS, WSCOU, WSCOV, WSCOE, WSCRC, WSCRE, WSCRG, WSCRH, WSCRI, WSCRJ, WSCR, WSCRN, WSCRS, WSCRU, WSCRW, WSCSS, WSDAE, WSDAI, WSDAK, WSDAL, WSDAM, WSDAS, WSDAV, WSDAY, WSDER, WSDOL, WSDOW, WSDRE, WSDRG, WSDRN, WSDRO, WSDRY, WSDUE, WSDUI, WSDUN, WSDUO, WSDUR, WSDUS, WSDUU, WSDUY, WSEAG, WSEAS, WSECC, WSELV, WSESK, WSFAI, WSFEN, WSFIN, WSFIO, WSFIV, WSFOR, WSFOT, WSFUR, WSGAE, WSGAI, WSGAL, WSGAR, WSGAT, WSGIG, WSGLC, WSGLE, WSGLG, WSGLL, WSGLU, WSGRS, WSHAU, WSINN, WSINS, WSINV, WSJOB, WSJOP, WSJUR, WSKET, WSKGE, WSKIA, WSKIB, WSKIC, WSKID, WSKIF, WSKIG, WSKII, WSKIK, WSKIM, WSKIN, WSKIO, WSKIP, WSKIU, WSKKC, WSKKD, WSKKE, WSKKF, WSKKL, WSKKN, WSKKO, WSKKR, WSKKT, WSKKZ, WSKLM, WSKLN, WSKRK, WSLAB, WSLAH, WSLAL, WSLAM, WSLAU, WSLEA, WSLED, WSLEN, WSLEW, WSLID, WSLIS, WSLOA, WSLOC, WSLOD, WSLOE, WSLOG, WSLOH, WSLOI, WSLON, WSLOS, WSLOT, WSLUI, WSLUS, WSMAB, WSMAC, WSMAH, WSMAN, WSMAY, WSMIN, WSMIT, WSMOC, WSMOD, WSMOF, WSMON, WSMOS, WSMOU, WSMUI, WSNEA, WSNEB, WSNEC, WSNEG, WSNEL, WSNES, WSOBA, WSOCH, WSOLD, WSORM, WSPAL, WSPAN, WSPAR, WSPAT, WSPEN, WSPIN, WSPIR, WSPOA, WSPOC, WSPOE, WSPOP, WSPOR, WSPOW, WSRHU, WSRIN, WSROC, WSROT, WSSAL, WSSAN, WSSAQ, WSSCA, WSSHI, WSSKI, WSSKL, WSSLI, WSSOE, WSSOK, WSSOR, WSSTD, WSSTO, WSSTR, WSSTT, WSSTU, WSSYM, WSTAB, WSTAH, WSTAR, WSTAT, WSTAY, WSTHL, WSTIG, WSTIN, WSTIR, WSTOB, WSTOD, WSTOR, WSTOW, WSTUR, WSTWE, WSTWY, WSTYN, WSULV, WSUPL, WSWAT, WSWEK, WSWEM, WSWHB, WSWHH, WSWHI, WSWIG, WWANST, WWASHB, WWASHC, WWASHR, WWASHW, WWAXMI, WWBAMP, WWBAWT, WWBCAU, WWBCKL, WWBCKN, WWBCLY, WWBDON, WWBEAF, WWBEAW, WWBERE, WWBFAS, WWBIGB, WWBKNO, WWBLAG, WWBNYM, WWBOSC, WWBOW, WWBRAN, WWBRAY, WWBRDY, WWBREA, WWBROA, WWBROM, WWBRUL, WWBSTM, WWBSTW, WWBTON, WWBTOR, WWBURR, WWCALL, WWCAME, WWCANW, WWCARD, WWCARY, WWCBS, WWCCKW, WWCFFIT, WWCHAG, WWCHID, WWCHIS, WWCHIT, WWCHIV, WWCHLL, WWCHRI, WWCHRM, WWCHUL, WWCLAY, WWCLOV, WWCMAC, WWCMAR, WWCOAD, WWCOLY, WWCONS, WWCOPP, WWCORN, WWCORS, WWCORT, WWCPOL, WWCRAD, WWCRAL, WWCRAN, WWCROY, WWCRWC, WWCSTN, WWCWIC, WWDITT, WWDOWB, WWDOLT, WWDOWN, WWDREW, WWDULV, WWDUNS, WWEALL, WWEVER, WWEXBO, WWEXFO, WWEXMN, WWFARW, WWFENI, WWFILL, WWFOWE, WWFRAD, WWFROG, WWGARA, WWGERM, WWGHAM, WWGRAM, WWGUNN, WWHARB, WWHART, WWHATH, WWHAWK, WWHBC, WWHBCM, WWHCRX, WWHELE, WWHEMY, WWHENL, WWHOLB, WWHOLN, WWHOLS, WWHTOR, WWILCH, WWINST, WWIPPL, WWISLE, WWKENN, WWKENT, WWKGWR, WWKILK, WWKSTM, WWLAND, WWLANR, WWLAPF, WWLDOW, WWLEED, WWLIFT, WWLLAW, WWLODD, WWLOOE, WWLOST, WWLSTL, WWLSUT, WWLTRE, WWLUPP, WWLVET, WWLWDN, WWLYDF, WWLYME, WWLYNT, WWMABT, WWMARA, WWMARK, WWMAWG, WWMBSH, WWMCAN, WWMDAM, WWMEVA, WWMILV, WWMITC, WWMLBK, WWMMAG, WWMODY, WWMORT, WWMORW, WWMOUS, WWMPRT, WWMSMT, WWMTON, WWMTVY, WWMULL, WWNCAD, WWNCUR, WWNCYR, WWNETH, WWNFER, WWNMOL, WWNPTN, WWNPWI, WWNTAM, WWNTAW, WWNTCY, WWOAKF, WWOSTN, WWPADS, WWPCMB, WWPIPE, WWPISA, WWPLRN, WWPOLP, WWPORL, WWPOST, WWPOUN, WWPRAZ, WWPREA, WWPRIN, WWPSCO, WWPTRE, WWPTWN, WWPURI, WWRACK, WWRILL, WWROCH, WWRUMF, WWSAGN, WWSALC, WWSAMP, WWSBNT, WWSBUR, WWSKAN, WWSCHD, WWSCIL, WWSCLM, WWSCOL, WWSDAY, WWSDOM, WWSSEAT, WWSENN, WWSFLM, WWSGAB, WWSGEN, WWSGER, WWSHAL, WWSHAU, WWSHEB, WWSHER, WWSHIR, WWSIDB, WWSILV, WWSJUS, WWSKEV, WWSMAB, WWSMER, WWSMOL, WWSMWG, WWSMWS, WWSOME, WWSOWT, WWSPAX,

WWSTAL, WWSTAR, WWSTAV, WWSTEN, WWSTIC, WWSTIT, WWSTOC, WWSTOG,
WWSTUD, WWSUTT, WWSWIM, WWTEDB, WWTEMP, WWTHRE, WWTIMB, WWTINT,
WWTLIZ, WWTORX, WWTREB, WWTREG, WWTRES, WWUPOT, WWVERY, WWWASH,
WWWBAY, WWWCKR, WWWDGT, WWWDWN, WWWEEK, WWWEMB, WWWFRD,
WWWHEA, WWWHIM, WWWILM, WWWINC, WWWITH, WWWIVE, WWWKLH,
WWWMON, WWWMOR, WWWOOD, WWWOOL, WWWSHM, WWWZOY, WWYEAL,
WWYETM, WWZELA

Appendix 2 BT exchanges covering Market 2

722 BT exchanges

CLFLE, CLWOO, CMALC, CMBER, CMBIDF, CMBRI, CMCHEY, CMCOD, CMCOLE, CMFIN, CMJAM, CMKVR, CMTOL, CMWOL, CMWOM, EAARR, EAATT, EAAYL, EABEC, EABGY, EABLU, EABMD, EABND, EABRU, EACAI, EACFH, EACHF, EACHU, EACLY, EACOS, EACOX, EACTM, EADAN, EADER, EADNM, EADRA, EADSM, EAELC, EAEXN, EAFAK, EAFEL, EAFME, EAFRN, EAFUL, EAGBD, EAGDM, EAGIR, EAGWK, EAGYT, EAHAE, EAHAS, EAHAV, EAHIS, EAHSD, EAHUL, EAHWH, EAKLN, EAKSG, EALAT, EALNT, EAMAN, EAMIL, EANWD, EANWS, EAONG, EAPAK, EASBW, EASCI, EASFM, EASFT, EASOH, EASTD, EASTM, EASUD, EASWO, EASWV, EATEV, EATHB, EATHE, EATIP, EATRU, EAWAS, EAWDB, EAWDF, EAWIV, EAWLM, EAWRI, EAWTB, EAWYM, EMASBOU, EMASHBB, EMBARTO, EMBINGH, EMBOSTO, EMBRLAT, EMBUCKD, EMBYFIE, EMCHATT, EMCOTGR, EMDESBO, EMDRAYC, EMDSSFO, EMEARLS, EMEDWIN, EMESTLE, EMETWLL, EMFINED, EMHLBCH, EMHORSL, EMHURLE, EMIBSTO, EMIRTHL, EMKIMBE, EMKRBYM, EMLSUTT, EMLUTTE, EMMATLO, EMMESHM, EMMKDEE, EMMKFIE, EMNEWOL, EMOAKHA, EMOVERS, EMQURRN, EMRADCL, EMRANND, EMRMSEY, EMROTHW, EMRPLEY, EMRPTON, EMSHIRE, EMSKGN, EMSLEBY, EMSLFRD, EMSOSH, EMSOUTH, EMSPCOT, EMSTTEL, EMTBSHE, EMTHRAP, EMTOWCE, EMTUTBU, EMWARSO, EMWEDDO, EMYXLEY, ESALL, ESARM, ESBK, ESBON, ESBUC, ESBUR, ESBYB, ESCOC, ESCUP, ESDEN, ESDUR, ESDYS, ESGAL, ESGLN, ESGLS, ESGRB, ESIKG, ESIKR, ESKEL, ESKIN, ESKNW, ESLOA, ESLOC, ESMID, ESMNF, ESMON, ESNML, ESPEB, ESQUE, ESSCN, ESSHO, ESSTA, ESTAY, ESTNT, ESWHI, ESWIN, LCADL, LCAIN, LCAPB, LCASL, LCASP, LCBAN, LCBAR, LCBRN, LCBUS, LCCAF, LCCLE, LCCOC, LCCOL, LCCOP, LCDTF, LCEAR, LCECC, LCEGR, LCFRE, LCHAM, LCHAR, LCHBK, LCHET, LCHEY, LCKES, LCKHA, LCKNO, LCLON, LCMAR, LCPAD, LCPAR, LCPLB, LCTOD, LCULV, LCWAL, LCWGT, LCWIL, LCWIN, LNBGN, LNCNW, LNCUF, LNPFT, LNPKS, LSBKM, LSCOB, LSFARN, LSGRNH, LSTAD, LSUWAR, LSWOL, LVAUG, LVBIL, LVCUL, LVFRO, LVHAL, LVHEL, LVHIG, LVHOY, LVNOR, LVRAI, LWCHO, LWDEN, LWHARE, LWRAD, MRCHA, MRDIS, MRKNU, MRMOT, MRNEW, MRSAD, MRSAN, MRWEA, MYBNN, MYBOS, MYBRW, MYCAL, MYCAY, MYCRF, MYCSH, MYCUL, MYDFF, MYDLT, MYGOO, MYGRF, MYHEB, MYHNS, MYHON, MYILL, MYKNA, MYMAL, MYMTH, MYOAT, MYPIC, MYRPN, MYRPP, MYSML, MYSNH, MYSOW, MYTHN, MYWAY, MYWEH, NDACO, NDAGR, NDBAL, NDBAR, NDBEA, NDBGR, NDBHI, NDBIR, NDCDO, NDCHE, NDCHS, NDCLI, NDCOP, NDDYM, NDEDE, NDHAW, NDHEA, NDHIL, NDHOO, NDHYT, NDLO, NDLOO, NDMEO, NDNON, NDNRO, NDOXT, NDPWO, NDSAN, NDSTU, NDWES, NEBDL, NEBRO, NEBUR, NECC, NECR, NEDUDL, NEE, NEFN, NEGA, NEGM, NEHHL, NEHYL, NELC, NEMEA, NENA, NEOC, NERE, NERG, NERN, NESAC, NESFE, NESH, NESLB, NESTK, NESTO, NETMN, NEWAS, NEWHY, NEWLF, NEWN, NIBNH, NIBO, NIBRH, NICDY, NICF, NICI, NICLK, NICMN, NICN, NICR, NIDD, NIDG, NIDO, NIDP, NIDV, NIEG, NIHO, NIHW, NILD, NILDW, NILE, NILY, NIMAL, NIMR, NINS, NINY, NIOM, NIRI, NIRT, NISE, NISM, NISTM, NSBDS, NSBKI, NSBLG, NSCTR, NSELG, NSFRA, NSFRS, NSFWM, NSIMD, NSIUR, NSLOS, NSPET, NSPRT, NSSVN, NSTUR, SDBLLNG, SDBMBRD, SDBSHM, SDFRSHW, SDLSLNT, SDMDDLT, SDMDHRS, SDNWPRT, SDPGHM, SDPLGT, SDSHNL, SDSLSY, SDSNDWN, SDSTRGT, SDSTRRN, SDVNTNR, SDWCKHM, SLARM, SLASC, SLASK, SLBAW, SLBCC, SLBEN, SLBLR, SLBOI, SLBWD, SLCLS, SLCLY, SLCUD, SLCX, SLEK, SLGB, SLGL, SLGY, SLHBE, SLHLG, SLHTW, SLHYG, SLIMM, SLKIV, SLLH, SLNCU, SLOB, SLOLD, SLRSN, SLRY, SLSC, SLSKT, SLTHY, SLTKL, SLWAD, SLWBO, SLWHT, SLWKT, SLWM, SLWS, SLWTH, SMAM, SMAP, SMBC, SMBWD, SMCAR, SMCBY, SMCHN, SMCN, SMFK, SMFRD, SMGM, SMHGN, SMHXT, SMKBN, SMKO, SMLA, SMNPL, SMOA, SMPEN, SMPRB, SMRDB, SMROW, SMSA, SMSFD, SMSH, SMSTF, SMTA, SMWC, SMWEP, SMWI, SMWLY,

SMWTD, SMWW, SMYG, SSALM, SSBAN, SSBAT, SSBCL, SSBLE, SSBOA, SSBOX, SSBRI, SSCDR, SSCIN, SSCOL, SSCOR, SSCRD, SSFGN, SSFLA, SSGLA, SSKEY, SSDLY, SSLON, SSPIL, SSSF, SSSHE, SSSHM, SSSHN, SSSTT, SSWEL, SSWG, SSWTC, SSWWS, SSYAT, STAMSBY, STBINAB, STBLFRD, STBLNFD, STBRDPT, STBURN, STCANCL, STDORCH, STDOWTN, STDURRW, STFORDB, STGILGM, STHRSTK, STLGSHL, STLYTMN, STMILOS, STPORTL, STPRSTN, STRINGW, STSHABY, STSTHBN, STSWANG, STTDWTH, STTWYFD, STVERWD, STWARHM, STWEYMH, SWABT, SWADW, SWAG, SWAVY, SWBPG, SWBSE, SWBUD, SWCAA, SWCJW, SWCNE, SWCT, SWCXX, SWCYX, SWDPW, SWFBX, SWGC, SWGLN, SWHJL, SWLJ, SWLLG, SWLLR, SWMGR, SWMMV, SWMU, SWMYS, SWOAG, SWPDW, SWPEK, SWPND, SWPTY, SWQTI, SWRDA, SWRDX, SWRHR, SWSKU, SWTEZ, SWTFA, SWTR, SWXNH, SWYYN, SWZKS, THBW, THCDN, THCK, THCLY, THDC, THEY, THH, THHH, THIP, THLG, THLP, THSPD, THTAD, THTF, THWL, THWP, THWR, THWY, WMASH, WMBEW, WMEV, WMHAG, WMHCH, WMLIT, WMMFD, WMPER, WMPKR, WMUTT, WNABC, WNAGE, WNBC, WNBG, WNBH, WNBRS, WNCA, WNCHK, WNCHR, WNCKO, WNDAW, WNDEN, WNDON, WNGRE, WNHAT, WNHW, WNLDD, WNLED, WNLEO, WNLUD, WNMD, WNNP, WNOSW, WNPRS, WNRE, WNROW, WNRUA, WNRUT, WNRWX, WNSA, WNSHI, WNWCH, WNWEM, WNWXXN, WSANN, WSBEI, WSBIN, WSBRE, WSBRW, WSBUS, WSCLE, WSCMN, WSDAR, WSDMS, WSGIR, WSGOU, WSGRE, WSGRT, WSHL, WSIRS, WSIRV, WSKBN, WSKIE, WSLAK, WSLAR, WSLES, WSLEX, WSPOS, WSPRO, WSPTH, WSPTN, WSSTE, WSSTN, WSSTW, WSTRO, WWBARN, WWBIDE, WWBLYD, WWBRAU, WWBTRA, WWBUDE, WWBUDL, WWCHEL, WWCHRD, WWCHRS, WWCHUD, WWCREC, WWCREW, WWCULL, WWDART, WWDRAWL, WWDRAN, WWHAYL, WWHOLF, WWHONI, WWILFR, WWILMI, WWKKWL, WWKNGB, WWLAUN, WWLISK, WWLPRT, WWMART, WWMINE, WWNANP, WWOKEH, WWOSMY, WWPAR, WWPERR, WWPINH, WWPRYN, WWROBO, WWSHIP, WWSIDM, WWSIVE, WWSPET, WWTAVI, WWTOPS, WWTORR, WWTOTN, WWTPTN, WWWADE, WWWELL, WWWILL, WWYELV, WWYEOV

SSTHL, SSTHO, SSTRO, SSTXY, SSWAR, SSWES, SSWHI, SSWIB, SSWOB, SSWOR,
 SSWOT, SSWSM, STANDVR, STBDSTN, STBISHW, STBNMTH, STBOSMB, STBOTLY,
 STCFORD, STCHRCH, STEASTL, STFAIRO, STFAWLY, STFERND, STHAMBL, STHICLF,
 STHMPTN, STHYTHE, STLOCKH, STLYMTN, STMRHLL, STNEWMN, STNTHBN,
 STPOOLE, STPRKST, STROMSY, STRWNMS, STSALIS, STSHRLY, STSOTON,
 STTOTTN, STWIMBN, STWINCH, STWINTN, STWLSTN, STWSTBN, SWAA, SWAAZ,
 SWABD, SWBIG, SWBNP, SWCAB, SWCFATE, SWCFK, SWCIT, SWCJ, SWCRS,
 SWCUV, SWEBY, SWGBY, SWHXM, SWKGH, SWLJZ, SWLLD, SWLLO, SWLNI, SWMAL,
 SWMDE, SWMLZ, SWMMN, SWMT/EX, SWNBI, SWNE/CH, SWNE/EX, SWNM, SWNVW,
 SWPBM, SWPDU, SWPEU, SWPN, SWPP, SWPTB, SWPTH, SWQJA, SWRTH, SWRVH,
 SWRWI, SWSKJ, SWSX, SWSZX, SWTDU, SWTRF, SWWXC, THAD, THAS, THATN,
 THBA, THBEN, THBK, THBN, THBO, THBR, THBZ, THC, THCN, THCV, THCW, THDK,
 THEAR, THFB, THFC, THFJ, THFT, THGG, THGI, THGX, THHM, THHT, THLL, THM,
 THML, THNU, THRG, THS, THSL, THT, THTT, THWDY, THWK, THWM, THWO, THY,
 WEWBAY, WEWBLO, WEWHAM, WEWLO, WEWMAI, WEWMAR, WEWMAY,
 WEWNPN, WEWPAD, WEWPRI, WEWSOH, WMALS, WMBID, WMBLY, WMBPZ,
 WMBUR, WMCHD, WMCIT, WMDIM, WMDRO, WMFER, WMHAS, WMHX, WMIPS,
 WMKD, WMKDG, WMLER, WMLON, WMMAL, WMMTL, WMNAN, WMNEW, WMRJ,
 WMRUG, WMSBH, WMSPA, WMSTJ, WMSTK, WMSTO, WMSTP, WMTRE, WMWLN,
 WMWR, WNBUC, WNCSC, WNCNS, WNCSS, WNDEE, WNFL, WNHAW, WNHR, WNM,
 WNOAK, WNSTI, WNSY, WNWEL, WNWX, WRBATT, WRBEL, WRBRIX, WRCEL,
 WRECT, WRFULM, WRKGDN, WRNELMS, WRPGRN, WRPIM, WRSKEN, WRSLO,
 WRSTHBK, WRVAUX, WRWHI, WRWKEN, WRWMIN, WSAIR, WSALE, WSARD, WSAYR,
 WSBAI, WSBAR, WSBEA, WSBEH, WSBEL, WSBS, WSBLA, WSBR, WSCAB, WSCAM,
 WSCAR, WSCEN, WSCLY, WSCOA, WSCRA, WSCRO, WSCUM, WSDOU, WSDRU,
 WSDUM, WSDUT, WSEKI, WSERS, WSGIF, WSGOV, WSHAL, WSHAM, WSHOL,
 WSIBR, WSJOH, WSKIL, WSKIR, WSKIW, WSKIY, WSLAA, WSLAN, WSMAR, WSMER,
 WSMIL, WSMOT, WSNEW, WSPAI, WSPOL, WSPRE, WSREN, WSRUT, WSSCO,
 WSSHE, WSSOU, WSSPR, WSTHO, WSUDD, WSWES, WSWIS, WWBODM, WWBRIX,
 WWBURN, WWBWAT, WWCAMB, WWCRWN, WWDPRT, WWEXMO, WWEXTR,
 WWFALM, WWHEL, WWIVYB, WWNABB, WWNEWQ, WWPAIG, WWPENZ, WWPSTK,
 WWPTON, WWPYTH, WWREDR, WWSALT, WWSAUS, WWSBUD, WWSMAR,
 WWTAUN, WWTEIG, WWTIVE, WWTORQ, WWTRUR

Appendix 4

BT exchanges moving from Market 2 to Market 3

114 BT exchanges

CLMOO, CMKER, CMKNO, CMMLD, EADOW, EAEP, EAHAW, EAROC, EASAF, EASBY, EMALFRE, EMATTHE, EMBIRSS, EMBOURN, EMCHELL, EMHARDI, EMRTHLY, EMSHEPS, ESARB, ESBAX, ESCAU, ESFFR, ESGRG, ESLNW, ESMAI, LCBAC, LCBIR, LCKEN, LCLYT, LCPEN, LCPL, LCWHI, LCWOR, LSMERS, LVEAS, LVUPH, MRARD, MYDUD, MYGUI, MYHAW, MYILK, MYKKB, MYSCA, MYSKE, MYSLA, MYSTE, NDMSH, NDSHE, NDSNO, NEBL, NEFH, NEHZ, NEP, NEPH, NIAM, NIBB, NIBC, NIDLD, NIFWM, NSASH, NSDEN, NSELL, NSKGW, NSKNC, NSLNG, NSNTH, NSWES, SDHYLNG, SDPCHVN, SDPTRSF, SDSTBBN, SDSTHWC, SDSTHWT, SDSTYNN, SDDTCHF, SLPN, SMBU, SMC, SMKI, SMKT, SMWE, SSCBD, SSCHN, SSDSY, SSHWK, SSTHO, SSWIB, SSWOB, STBISHW, STHAMBL, STHICLF, SWCIT, SWEBY, SWNE/CH, SWPDU, SWRWI, THCN, THFC, WMTRE, WNBUC, WNFL, WNHAW, WNHR, WNM, WNSY, WSARD, WSAYR, WSCAB, WSKIW, WSPRE, WWBRIX, WWSALT, WWTEIG, WWTIVE

SCHEDULE 3 – KCOM CONDITIONS IN THE HULL AREA

The SMP services conditions proposed to be imposed on KCOM under sections 45 and 87 of the Communications Act 2003 as a result of the analysis of the Hull area in which it is proposed KCOM has significant market power (“SMP conditions”)

Part 1: Application, definitions and interpretation relating to the SMP conditions in Part 2

1. These conditions shall apply to the market for wholesale broadband access in the Hull area by the Dominant Provider (“**the Market**”).

2. In this Schedule:

“**Access Charge Change Notice**” has the meaning given to it in Condition EBB4;

“**Access Contract**” means:

(i) a contract for the provision by the Dominant Provider to another person of Network Access to the Dominant Provider’s Electronic Communications Network;

(ii) a contract under which Associated Facilities in relation to the Dominant Provider’s Public Electronic Communications Network are made available by the Dominant Provider to another person;

“**the Act**” means the Communications Act 2003 (c. 21);

“**Dominant Provider**” means KCOM Group plc whose registered company number 2150618, and including any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

“**Hull area**” means the area defined as the ‘Licensed Area’ in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and Kingston Communications (Hull) plc (now known as KCOM);

“**Ofcom**” means the Office of Communications as established pursuant to section 1(1) of the Office of Communications Act 2002;

“**Reference Offer**” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract.

“**Third Party**” means either:

(a) a person providing a Public Electronic Communications Network; or

(b) a person providing a Public Electronic Communications Service.

3. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in the Notification and paragraph 2 above and otherwise any word or expression shall have the same meaning as it has in the Act.

4. The Interpretation Act 1978 shall apply as if each of the conditions were an Act of Parliament.

5. Headings and titles shall be disregarded.

Part 2: The SMP conditions

Condition EBB1 – Requirement to provide Network Access on reasonable request

EBB1.1 Where a Third Party reasonably requests in writing Network Access, the Dominant Provider shall provide that Network Access. The Dominant Provider shall also provide such Network Access as Ofcom may from time to time direct.

EBB1.2 The provision of Network Access in accordance with paragraph EBB1.1 shall occur as soon as reasonably practicable and shall be provided on fair and reasonable terms and conditions (not including charges) and on such terms and conditions as Ofcom may from time to time direct.

EBB1.3 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EBB2 – Requirement not to unduly discriminate

EBB2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters connected with Network Access.

EBB2.2 In this Condition the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place at a competitive disadvantage persons competing with the Dominant Provider.

Condition EBB3 – Requirement to publish a Reference Offer

EBB3.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer and act in the manner set out below.

EBB3.2 Subject to paragraph EBB3.9 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of Network Access includes at least the following:

- (a) a description of the Network Access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of the network);
- (b) the locations of the points of Network Access;
- (c) the technical standards for Network Access (including any usage restrictions and other security issues);
- (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
- (e) any ordering and provisioning procedures;
- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
- (iv) a definition and limitation of liability and indemnity; and

- (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (i) details of any relevant intellectual property rights;
- (j) a dispute resolution procedure to be used between the parties;
- (k) details of duration and renegotiation of agreements;
- (l) provisions regarding confidentiality of non-public parts of the agreements;
- (m) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location); and
- (n) the standard terms and conditions for the provision of Network Access.

EBB3.3 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in paragraphs EBB3.2(a)-(n).

EBB3.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any Network Access that it is providing as at the date this Condition enters into force.

EBB3.5 The Dominant Provider shall update and publish in relation to any amendments or in relation to any further Network Access provided after the date this Condition enters into force.

EBB3.6 Publication referred to above shall be effected by:

- (a) placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider; and
- (b) sending a copy of the Reference Offer to Ofcom.

EAA3.7 The Dominant Provider shall give Ofcom at least ten days prior written notice of any amendment to the Reference Offer coming into effect, unless such amendment is directed or determined by Ofcom or is required by a notification or enforcement notification issued by Ofcom under sections 94 or 95 of the Act.

EBB3.8 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts which have been requested). The provision of such a copy of the Reference Offer may be subject to a reasonable charge.

EBB3.9 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

EBB3.10 The Dominant Provider shall provide Network Access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.

EBB3.11 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EBB4 – Requirement to notify charges, terms and conditions

EBB4.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges, terms and conditions and act in the manner set out below.

EBB4.2 Except where new or amended charges are directed or determined by Ofcom or where otherwise provided in this Condition, the Dominant Provider shall send to Ofcom and to every person with which it has entered into an Access Contract covered by Condition EBB1 a written notice of any amendment to the charges, terms and conditions on which it provides Network Access or in relation to any charges, terms and conditions for new Network Access (an “**Access Charge Change Notice**”) not less than 28 days before any such amendment comes into effect.

EBB4.3 The Dominant Provider shall ensure that an Access Charge Change Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s current Reference Offer of the charges, terms and conditions associated with the provision of that Network Access; and
- (c) the date on which or the period for which any amendments to charges, terms and conditions will take effect (the “**effective date**”).

EBB4.4 The Dominant Provider shall not apply any new charge, term or condition identified in an Access Charge Change Notice before the effective date.

EBB4.5 To the extent that the Dominant Provider provides to itself Network Access that:

- (i) is the same, similar or equivalent to that provided to any other person; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to Network Access provided to any other person, the Dominant Provider shall ensure that it sends to Ofcom an Access Charge Change Notice in relation to the Network Access that it provides to itself which includes, where relevant, at least those matters detailed in Conditions EBB4.3(a)-(c).

Condition EBB5 – Transparency as to quality of service

EBB5.1 The Dominant Provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to Network Access provided by the Dominant Provider, in such manner and form as Ofcom may from time to time direct.

EBB5.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EBB6 – Requirement to notify technical information

EBB6.1 Except where Ofcom consents otherwise, where the Dominant Provider:

- (a) proposes to provide Network Access covered by Condition EBB1, the terms and conditions for which comprise new:
 - (i) technical characteristics (including information on network configuration where necessary to make effective use of the Network Access);
 - (ii) locations of the points of Network Access; or
 - (iii) technical standards (including any usage restrictions and other security issues), or
- (b) proposes to amend an existing Access Contract covered by Condition EBB1 by modifying the terms and conditions listed in paragraph EBB6.1(a)(i) to (iii) on which the Network Access is provided,

the Dominant Provider shall publish a written notice (the ‘**Notice**’) of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Contract to provide the new Network Access or the amended terms and conditions of the existing Access Contract come into effect. This obligation for prior notification shall not apply where new or amended terms and conditions are directed or determined by Ofcom or are required by a notification or an enforcement notification given by Ofcom under sections 94 or 95 of the Act.

EBB6.2 The Dominant Provider shall ensure that the Notice includes:

- (a) a description of the Network Access in question;
- (b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions; and
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Contract to provide the new Network Access or any amendments to the relevant terms and conditions will take effect (the “**effective date**”).

EBB6.3 The Dominant Provider shall not enter into an Access Contract containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

EBB6.4 Publication referred to in paragraph EBB6.1 shall be effected by:

- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider;
- (b) sending a copy of the Notice to Ofcom; and
- (c) sending a copy of the Notice to any person at that person’s written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Contract covered by Condition EBB1. The provision of such a copy of Notice may be subject to a reasonable charge.

Annex 6

Market review process

- A6.1 This Annex provides an overview of the market review process to give some additional context and understanding of the matters discussed in the main body of this document and the legal instrument (statutory notification) published at Annex 5.
- A6.2 Market review regulation is technical and complex, including the legislation and the recommendations and guidelines that we need to consider as part of the process. There may be many relevant documents depending on the market and/or issues in question. This overview does not purport to give a full and exhaustive account of all such materials that we have considered in reaching our preliminary views on this market. Key aspects of materials relevant to this market review are, however, discussed in this document.

Market review concept

- A6.3 The concept of a market review refers to procedures under which we at regular intervals identify relevant markets appropriate to national circumstances, carry out analyses of these markets to determine whether they are effectively competitive and then decide on appropriate remedies (known as SMP obligations or conditions). We explain the concept of SMP (significant market power) below.
- A6.4 In carrying out this work, we act in our capacity as the sector-specific regulator for the UK communications industries, particularly relating to our role as the regulator for telecommunications. Our functions in this regard are to be found in Part 2 of the Communications Act 2003 (the “Act”). We exercise those functions within the framework harmonised across the European Union for the regulation of electronic communications by the Member States (known as the “Common Regulatory Framework” or the “CRF”), as transposed by the Act. The applicable rules⁹² are contained in a package of five EC Directives, of which two Directives are immediately relevant for these purposes, namely:
- Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (the “Framework Directive”); and
 - Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (the “Access Directive”).
- A6.5 The Directives require that National Regulatory Authorities (“NRAs”) (such as Ofcom) carry out reviews of competition in communications markets to ensure that SMP regulation remains appropriate and proportionate in the light of changing market conditions.
- A6.6 Each market review normally has three stages, namely:
- the procedure for the identification and definition of the relevant markets (the market definition procedure);

⁹² The Directives have recently been reviewed and amendments were adopted on 19 December 2009. The amendments will need to be transposed into the national legislation by 25 May 2011, and then apply with effect from 26 May 2011.

- the procedure for the assessment of competition in each market, in particular whether the relevant market is effectively competitive (the market analysis procedure); and
- the procedure for the assessment of appropriate regulatory obligations (the remedies procedure).

A6.7 These stages are normally carried out together.

Market definition procedure

A6.8 The Act provides that, before making a market power determination⁹³, we must identify the market, which is, in our opinion, the one which, in the circumstances of the UK, is the market in relation to which it is appropriate to consider making such a determination and to analyse that market.

A6.9 The Framework Directive requires that NRAs shall, taking the utmost account of the Recommendation on Relevant Product and Service Markets⁹⁴ and SMP Guidelines⁹⁵ published by the European Commission, define the relevant markets appropriate to national circumstances, in particular relevant geographic markets within their territory, in accordance with the principles of competition law.

A6.10 The Recommendation identifies a set of product and service markets within the electronic communications sector in which *ex ante* regulation may be warranted. Its purpose is twofold. First, seeking to achieve harmonisation across the single market by ensuring that the same markets will be subject to a market analysis in all Member States. Secondly, providing legal certainty by making market players aware in advance of the markets to be analysed. However, NRAs are able to regulate markets that differ from those identified in the Recommendation where this is justified by national circumstances taking account of the three cumulative criteria referred to in the Recommendation⁹⁶ (the “three-criteria test”) and where the European Commission does not raise any objections.

A6.11 The fact that an NRA identifies the product and service markets listed in the Recommendation or identifies other product and service markets that meet the three-criteria test does not mean that regulation is warranted. Market definition is not an end in itself but is a means of assessing effective competition. The three-criteria test is also different from the SMP assessment because the test’s focus is on the general structure and market characteristics.

⁹³ The market power determination concept is used in the Act to refer to a determination that a person has SMP in an identified services market.

⁹⁴ Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services.

⁹⁵ Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03).

⁹⁶ The Recommendation states that, “[w]hen identifying markets other than those set out in the Annex, national regulatory authorities should ensure that the following three criteria are cumulatively met: (a) the presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature; (b) a market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of competition behind the barriers to entry; (c) the insufficiency of competition law alone to adequately address the market failure(s) concerned.”

- A6.12 The relationship between the market definition identified in this review and the ones listed in the Recommendation is discussed in Section 3 of this document.
- A6.13 The SMP Guidelines make clear that market definition is not a mechanical or abstract process. It requires an analysis of any available evidence of past market behaviour and an overall understanding of the mechanics of a given sector. As market analyses have to be forward-looking, the Guidelines state that NRAs should determine whether the market is prospectively competitive, and thus whether any lack of effective competition is durable, by taking into account expected or foreseeable market developments over the course of a reasonable period. They clarify that NRAs enjoy discretionary powers which reflect the complexity of all the relevant factors that must be assessed (economic, factual and legal) when identifying the relevant market and assessing whether an undertaking has SMP.
- A6.14 The SMP Guidelines also describe how competition law methodologies may be used by NRAs in their analyses. In particular, there are two dimensions to the definition of a relevant market: the relevant products to be included in the same market and the geographic extent of the market. Ofcom's approach to market definition follows that used by the UK competition authorities, which is in line with the approaches adopted by the European Commission.
- A6.15 While such methodologies are being used in identifying the *ex ante* markets, they will not necessarily be identical to markets defined in individual competition law cases. This may be the case, especially as the former is based on an overall forward-looking assessment of the structure and the functioning of the market under examination. Accordingly, the economic analysis carried out for the purpose of this review, including the identified markets, is without prejudice to any analysis that may be carried out in relation to any investigation pursuant to the Competition Act 1998 (relating to the application of the Chapter I or II prohibitions or Article 81 or 82 of the EC Treaty) or the Enterprise Act 2002.

Market analysis procedure

Effective competition

- A6.16 The Act requires that, at such intervals as we consider appropriate, we carry out market analyses of identified markets for the purpose of making or reviewing market power determinations. In any event, such analyses are to be carried out as soon as reasonably practicable after recommendations are made by the European Commission that affect matters that were taken into account, or could have been taken into account, in the case of our last analysis of that market.
- A6.17 In carrying out a market analysis, the key issue for an NRA is to determine whether the market in question is *effectively competitive*. The 27th recital to the Framework Directive clarifies the meaning of that concept. Namely, “[it] is essential that *ex ante* regulatory obligations should only be imposed where there is not effective competition, i.e. in markets where there are one or more undertakings with significant market power, and where national and Community competition law remedies are not sufficient to address the problem”.
- A6.18 The definition of SMP is equivalent to the concept of dominance as defined in competition law. The Framework Directive requires, however, that NRAs must carry out market analysis taking the utmost account of the SMP Guidelines. The latter emphasise that NRAs should undertake a thorough and overall analysis of the

economic characteristics of the relevant market before coming to a conclusion as to the existence of significant market power.

- A6.19 In that regard, the SMP Guidelines set out, additionally to market shares, a number of criteria that can be used by NRAs to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers, including (a) overall size of the undertaking; (b) control of infrastructure not easily duplicated; (c) technological advantages or superiority; (d) absence of or low countervailing buying power; (e) easy or privileged access to capital markets/financial; (f) resources; (g) product/services diversification (e.g. bundled products or services); (h) economies of scale; (i) economies of scope; (j) vertical integration; (k) highly developed distribution and sales network; (l) absence of potential competition; and (m) barriers to expansion. A dominant position can derive from a combination of these criteria, which taken separately may not necessarily be determinative.

Sufficiency of competition law

- A6.20 As part of our overall forward-looking analysis, we also assess whether competition law by itself (without *ex ante* regulation) is sufficient to address the competition problems identified. Aside from the need to address this issue as part of the three-criteria test, we normally also conclude on this matter in dealing with the appropriate remedies which, as explained below, are based on the nature of the specific competition problems we identify. We always consider the option of no *ex ante* regulation, while noting that the SMP Guidelines clarify that, if NRAs designate undertakings as having SMP, they must impose on them one or more regulatory obligations.
- A6.21 In considering this matter, we bear in mind the specific characteristics of communications markets. Generally, the case for *ex-ante* regulation in communications markets is based on the existence of market failures, which, by themselves or in combination, mean that competition might not be able to become established, if the regulator relied solely on its *ex-post* competition law powers that are established for dealing with more conventional sectors of the economy. Therefore, it is appropriate for *ex-ante* regulation to be used to address these market failures and any entry barriers that might otherwise prevent effective competition from becoming established. By imposing *ex-ante* regulation that promotes competition, it may be possible to reduce such regulation over time, as markets become more competitive, and instead place greater reliance on *ex-post* competition law.
- A6.22 *Ex-post* competition law is also unlikely in itself to bring about effective competition, as it prohibits the abuse of dominance rather than the holding of a dominant position. In contrast, *ex-ante* regulation is normally needed to promote actively the development of competition. *Ex ante* regulation attempts to reduce the level of market power in a market, thereby encouraging effective competition to become established. This is particularly the case when addressing the effects of network externalities, because the network externality effect generally re-enforces a dominant position and, as noted above, under general competition law there is no prohibition on the holding of a position of dominance in itself. Therefore, it is more appropriate to address the impact of network externality through *ex-ante* obligations.
- A6.23 Additionally, unless we consider otherwise in relation to a specific obligation in this review, we generally take the view that *ex ante* regulation is needed to create legal

certainty for the market under review. Linked to that certainty is the fact that the SMP obligations we have proposed are necessary to enable us to intervene in a timely manner. For some other specific obligations, we generally consider that they are needed as competition law would not remedy the particular market failure, or we believe that specific clarity and detail of the obligation is required to achieve a particular result.

Remedies procedure

Powers and legal tests

- A6.24 The Framework Directive prescribes what regulatory action NRAs must take depending upon whether or not the market in question has been found effectively competitive. Where a market has been found effectively competitive, NRAs are not allowed to impose SMP obligations and must withdraw such obligations where they already exist. On the other hand, where the market is found not effectively competitive, the NRAs must identify the undertakings with SMP on that market and then impose appropriate obligations.
- A6.25 NRAs have a suite of regulatory tools at their disposal, as reflected in the Act. Specifically, the Access Directive specifies a number of SMP obligations, including transparency, non-discrimination, accounting separation, access to and use of specific network elements and facilities, price control and cost accounting. When imposing a specific obligation, the NRA will need to demonstrate that the obligation in question is based on the nature of the problem identified, proportionate and justified in the light of the policy objectives as set out in Article 8 of the Framework Directive, as implemented by national law.
- A6.26 Specifically, for each and every proposed SMP obligation we explain why it satisfies the test that the obligation is: (a) *objectively justifiable* in relation to the networks, services, facilities, apparatus or directories to which it relates; (b) *not such as to discriminate unduly* against particular persons or against a particular description of persons; (c) *proportionate* to what the condition or modification is intended to achieve; and (d) in relation to what it is intended to achieve, *transparent*.
- A6.27 Additional legal requirements may also need to be satisfied depending on the SMP obligation in question, for example, for price controls where the NRA's market analysis must indicate that the lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users. In that instance, NRAs must take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved, as well as ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits. Where an obligation to provide third parties with network access is considered appropriate, NRAs must take into account factors including the feasibility of the proposed network access, the technical and economic viability of creating networks that would make the network access unnecessary and the investment of the network operator who is required to provide access.
- A6.28 To the extent relevant to this review, we demonstrate the application of these requirements to the SMP obligations in question at Section 5 of this document. In doing so, we also set our assessment of how, in our opinion, the performance of our general duties under section 3 of the Act is secured or furthered by our regulatory intervention, and that it is in accordance with the six Community requirements in

section 4 of the Act. This assessment is also *relevant to our assessment* of the likely impact of implementing our proposals. A number of specific points should be noted in *this regard*.

Ofcom's general duties – section 3 of the Act

- A6.29 Under the Act, our principal duty in carrying out functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition.
- A6.30 In so doing, we are required to secure a number of specific objectives and to have regard to a number of matters set out in section 3 of the Act. As to the prescribed specific statutory objectives in section 3(2), we consider that the objective of securing the availability throughout the UK of a wide range of electronic communications services as particularly relevant to this review.
- A6.31 In performing our duties, we are also required to have regard to a range of other considerations, as appear to us to be relevant in the circumstances. In this context, we consider that a number of such considerations are relevant, namely:
- the desirability of promoting competition in relevant markets;
 - the desirability of encouraging investment and innovation in relevant markets; and
 - the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.
- A6.32 We have also had regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, as well as the interest of consumers in respect of choice, price, quality of service and value for money.
- A6.33 Ofcom has, however, a wide measure of discretion in balancing its statutory duties and objectives. In so doing, we have taken account of all relevant considerations, including responses received during our consultation process, in reaching our conclusions.

European Community requirements for regulation – section 4 of the Act

- A6.34 As noted above, our functions exercised in this review fall under the CRF. As such, section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation.
- A6.35 In summary, these six requirements are:
- to promote competition in the provision of electronic communications networks and services, associated facilities and the supply of directories;
 - to contribute to the development of the European internal market;
 - to promote the interests of all persons who are citizens of the European Union;
 - to take account of the desirability of Ofcom's carrying out of its functions in a manner which, so far as practicable, does not favour one form of or means of

providing electronic communications networks, services or associated facilities over another, i.e. to be technologically neutral;

- to encourage, to such extent as Ofcom considers appropriate for certain prescribed purposes, the provision of network access and service interoperability, namely securing efficient and sustainable competition and the maximum benefit for customers of communications providers;
- to encourage compliance with certain standards in order to facilitate service interoperability and secure freedom of choice for the customers of communications providers.

A6.36 We consider that the first, third, fourth and fifth of those requirements are of particular relevance to the matters under review and that no conflict arises in this regard with those specific objectives in section 3 that we consider are particularly relevant in this context.

Impact assessment – section 7 of the Act

A6.37 The analysis presented in the whole of this document represents an impact assessment, as defined in section 7 of the Act.

A6.38 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that generally Ofcom has to carry out impact assessments where its proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of its policy decisions. For further information about Ofcom's approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which are on the Ofcom website: http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf

A6.39 Specifically, pursuant to section 7, an impact assessment must set out how, in our opinion, the performance of our general duties (within the meaning of section 3 of the Act) is secured or furthered by or in relation to what we propose.

A6.40 Ofcom is separately required by statute to assess the potential impact of all our functions, policies, projects and practices on race, disability and gender equality. Equality impact assessments (EIAs) also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity. Unless we otherwise state in this document, it is not apparent to us that the outcome of our review is likely to have any particular impact on race, disability and gender equality. Specifically, we do not envisage the impact of any outcome to be to the detriment of any group of society.

A6.41 Nor are we envisaging any need to carry out separate EIAs in relation to race or gender equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will affect all industry stakeholders equally and therefore not have a differential impact in relation to people of different gender or ethnicity, on consumers in Northern Ireland or on disabled consumers compared to consumers in general. Similarly, we are not envisaging making a distinction between consumers in different parts of the

UK or between consumers on low incomes. Again, we believe that our intervention will not have a particular effect on one group of consumers over another.

Regulated entity

- A6.42 The power in the Act to impose an SMP obligation by means of an SMP services condition provides that it is to be applied only to a 'person' whom we have determined to be a 'person' having SMP in a specific market for electronic communications networks, electronic communications services or associated facilities (i.e. the 'services market').
- A6.43 The Framework Directive requires that, where an NRA determines that a relevant market is not effectively competitive, it shall identify 'undertakings' with SMP on that market and impose appropriate specific regulatory obligations. For the purposes of EC competition law, 'undertaking' includes companies within the same corporate group (*Vihov Commission Case C-73/95 P [1996] ECR I-5447*), for example, where a company within that group is not independent in its decision making.
- A6.44 We consider it appropriate to prevent a dominant provider to whom a SMP service condition is applied, which is part of a group of companies, exploiting the principle of corporate separation. The dominant provider should not use another member of its group to carry out activities or to fail to comply with a condition, which would otherwise render the dominant provider in breach of its obligations.
- A6.45 Accordingly, we are seeking to apply the proposed SMP conditions as relevant to BT and KCOM and we have defined each company as including any of its subsidiaries or holding companies, or any subsidiary of such holding companies (as defined by section of 1159 of the Companies Act 2006).

Annex 7

Alternative broadband technologies

Introduction

A7.1 At the present time cable modem and xDSL (in particular ADSL, ADSL2 and ADSL2+) are the dominant technologies used in the provision of fixed broadband access in the UK. Together these two technologies account for the vast majority of all broadband connections. However, there are alternative technologies that are constantly under review and development. This Annex describes some of the main alternative technologies.

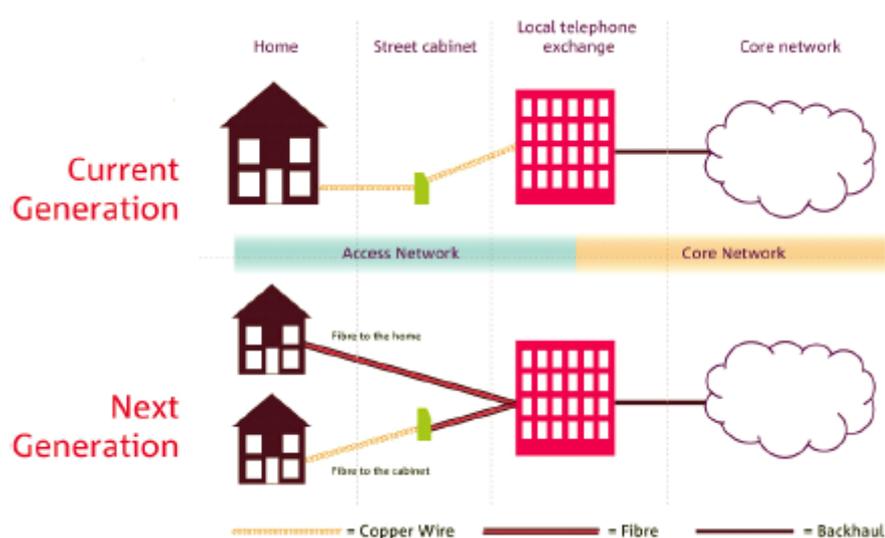
Fibre-based broadband access (FTTx)

A7.2 There are two main types of fibre access, depending on how far down the network fibre is deployed. Fibre to the cabinet is an access network structure in which optical fibre extends from the cabinet to the cabinet. The street cabinets are usually located only a few hundred metres from the subscriber's premises. The remaining part of the access network from the cabinet to the customer is usually copper wire, but could use another technology, such as wireless.

A7.3 Fibre to the home (FTTH) or to the premise (FTTP), on the other hand, is an access network structure in which the optical fibre runs from the exchange to the end user's living or office space.

A7.4 The term "next generation access" (NGA) describes new or upgraded access networks that will allow substantial improvements in broadband speeds and the quality of service compared to today's services. This can be based on a number of access technologies including cable, fixed wireless and mobile. However, it is most often used to refer to networks using fibre optic technology.

Figure A7.1: Ways of delivering next generation access



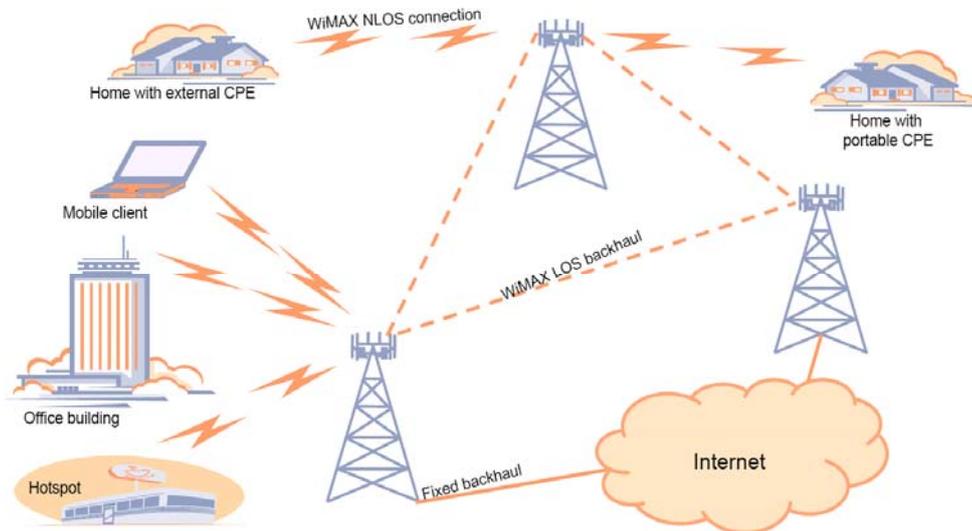
Fixed wireless access (FWA)

A7.5 Fixed wireless access is the use of wireless technology enabling the deliver of last mile wireless access to connect subscribers to the telephone network. Like the use

of copper and coaxial cable, this can deliver a complete range of electronic traffic, including telephony, high speed data, television and multimedia services.

- A7.6 Worldwide Interoperability for Microwave Access (“WiMAX”) is a wireless technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable and fully mobile internet access.

Figure A7.2: Fixed wireless access network structure using WiMax



- A7.7 According to the industry forum WiMax Forum, many technologies currently available for fixed wireless access can only provide line of sight (LOS) coverage, the technology behind WiMAX has been optimised to provide non line of sight (NLOS) coverage as well. WiMAX’s advanced technology can cover distances of up to 50 kilometers under LOS conditions and typical cell radii of up to 5 miles under NLOS conditions.
- A7.8 Wireless broadband access is set up like cellular systems, using base stations that service a radius of several miles. A customer premise unit, similar to a satellite TV setup, provides the interface between the network base station and the customer equipment. The indoor signal is then routed via standard Ethernet cable either directly to a single computer, or to a wireless router. WiMax can provide up to 10 Mbit/s broadband speeds without the need for network access cables and therefore can be considered as an alternative to cable and DSL.
- A7.9 This technology has been available for several years, and whilst it has continued to be developed it has not yet become a mainstream alternative to cable or xDSL. Instead it is more generally considered to be an ‘in-fill’ technology that could be used to provide service to areas where cable and xDSL technologies cannot address due to technical and/or economic reasons.
- A7.10 For example, in February 2010 VFast⁹⁷ rolled-out its WiMax-based fixed wireless solution in Barham, a small village in Kent with an estimated population of 1,100. Barham is around 4 to 5km from its nearest local exchange, meaning ADSL speeds are likely to be in the 1 to 2Mbps range and the small size of the exchange also meant that no cheap unbundled services are available.

⁹⁷ <http://www.vfast.co.uk/barham/>

- A7.11 Other fixed wireless commercial roll-out to date has been limited. For example, Freedom4's WiMax network currently covers Manchester, Warwick and Milton Keynes and although it has additional plans for further roll-out.⁹⁸ Urban Wimax provides business broadband in London area.⁹⁹ Metranet is a wireless internet service provider for business operating in and around the city of Brighton & Hove.¹⁰⁰
- A7.12 At the moment these services are currently priced and positioned as a cheaper alternative to SDSL and therefore targeted primarily at SMEs. Urban Wimax advertise their service as a guaranteed "fast, stable, reliable broadband where 10Mbps means 10Mbps for both upload and download - with no data limits". At launch, their services were priced at "50 - 70 percent of BT's SDSL prices at wholesale levels"¹⁰¹.
- A7.13 Similarly, Metranet state that the "ongoing costs of running a Metranet connection are significantly lower than comparative services such as leased lines or SDSL from BT or NTL." Its 2Mbit/s symmetric broadband service is priced at £275 a month, with an installation charge of £2,850. In comparison, BT's SDSL services are priced at £345 a month, with a connection charge of £595. Both services offer contention ratios of 10:1. In addition, Metranet also offer 5Mbit/s and 10Mbit/s symmetric fixed wireless access services.

Broadband via satellite

- A7.14 Satellite broadband is similar in the way it works to Sky digital TV, i.e. it utilises a satellite to transmit the data and a receiver to receive the data. Coverage is available anywhere in the UK including the Channel Isles and the Scottish Islands. There are different types of satellite broadband that users can get. There is:
- 1 Way Satellite broadband, where users receive data through the satellite for faster speeds, and to upload they do so via a dial up account; and
 - 2 Way Satellite broadband, where both uploads and downloads are done via satellite so that high speeds can be achieved in both directions.

Figure A7.3: Satellite broadband access



- A7.15 It is now possible to get small business systems that closely emulate ADSL, along with more dynamic low latency systems that support advanced broadband applications like VPN, VoIP and video conferencing.

⁹⁸ <http://www.freedom4.com/pg.asp?p=coverage>

⁹⁹ http://www.urbanwimax.co.uk/wireless_technology_explained

¹⁰⁰ <http://www.metranet.co.uk/>

¹⁰¹ <http://news.techworld.com/mobile-wireless/5599/london-gets-free-wimax-service/>

- A7.16 Typical satellite broadband access is available at up to 3.6Mbit/s download and 384kbit/s upload speeds, with prices varying depending on data usage. For example, Broadband Wherever¹⁰² offers 4 residential packages, the cheapest at £30 a month with 2.4GB a month data usage and the most expensive at £100 a month with a cap of 12GB. This compares with BT's cheapest package of £15.99 a month providing up to 20Mbit/s download speed and a 10GB monthly usage cap. For businesses satellite broadband prices start at £55 a month for 512kbit/s download and 128kbit/s upload speeds, up to £299 a month for 3Mbit/s download and 768kbit/s upload speeds. This compares against BT's Option 1 package for businesses at £12.50 excluding VAT for a "up to 20Mbit/s" service with a 10GB data cap.
- A7.17 Since satellite broadband requires users to have a satellite dish, the installation costs are typically higher than fixed line broadband access. They would include a satellite antenna, the satellite indoor unit and the wiring in between. For most users this would either require planning permission or consent from the freeholder of the land. In addition, whereas cable and ADSL operators tend to provide users with free wireless routers, satellite broadband installation costs £599 for the Broadband Wherever residential packages and £999 for business packages.

Powerline technology

- A7.18 Powerline technology uses the electricity supply network to provide two-way broadband connections. Each substation is connected to a broadband network, and the substation sends the signal to the end user of the electricity network where a filtering and conditioning unit separates the electricity supply from the communications signals.
- A7.19 Ofcom is not aware of anyone running such commercial service in the UK. The technology has, however, advanced in some other countries where it is seen as a potentially viable alternative to ADSL or cable services.

Free space optics

- A7.20 Free space optics are wireless laser point-to-point or point-to-multipoint line-of-sight broadband services which can provide capacity far in excess of traditional methods of broadband delivery. However, it provides for a last mile presence only, and is therefore likely to be used as an add-on to a local or wide area network. This would provide greater capacity between points or to multipoints at the edge of the network. Quite often, such systems are used as a back up to existing fixed links rather than as a direct replacement for them.

Wireless Fidelity (Wifi)

- A7.21 WiFi is not considered as an access technology, it is instead a standard that supports the inter-working of personal computers and other consumer devices that are not physically connected. It is a wireless local area network (WLAN) standard. The WiFi standard can also be used to provide so-called 'hotspots' which are local access points in which anyone within close proximity (usually less than 300m) to the WiFi antenna could use their WiFi enabled handsets/laptops to access email or the internet. Such hotspots are becoming common in places such as coffee shops,

¹⁰² <http://www.broadbandwherever.net/products.htm>

hotel lobbies and airport lounges. Recently, BT announced that it had reached its one millionth WiFi hotspot.¹⁰³

A7.22 WiFi thus allows wireless local area networking and provides some limited local mobility at the end of an access connection. WiFi technology is therefore more likely to be used on the end of a broadband access connection rather than being a replacement for it.

¹⁰³ <http://www.btplc.com/News/Articles/Showarticle.cfm?ArticleID=F8943CDC-38A1-434F-B924-409DCA94F1FA>

Annex 8

Retail broadband pricing information

A8.1 This Annex sets out some retail marketing information for fixed wired broadband services as of February 2010 from a selection of the main broadband providers in the UK.

AOL

A8.2 AOL UK is owned by TalkTalk following an acquisition in December 2006. AOL offers two standalone broadband packages: Wireless Flexi and Wireless.

Table A8.1: AOL's retail broadband offering

	Wireless Flexi	Wireless
Price	£4.99 for first three months £14.99 thereafter £29.99 one-off set up fee	£4.99 for first three months £14.99 thereafter
Outside service area ¹⁰⁴	£19.99 per month	
Contract length	1 month	18 months
Speed	Up to 8Mbit/s	
Monthly usage	10GB	
Router	Wireless router included	
Security		Full wireless security included
Additional services	Monthly charge reduced if customer takes up AOL talk packages (calls only or calls and line rental)	

Be Broadband

A8.3 Be Unlimited was bought by O2 in 2006 and provides ADSL2+-based broadband packages using local loop unbundling (LLU).

¹⁰⁴ This package relates to service eoutside the AOL footprint area.

Table A8.2: Be's retail broadband offering

	Be Value	Be Unlimited	BE Pro
Price	£7.50	£17.88	£21.97
Contract length	12 months		
Short length contracts	N/a	£20.43 for a 3 month contract, with £24 connection fee	£24.52 for a 3 month contract, with £24 connection fee
Download speed	up to 8Mbit/s	up to 24Mbit/s	up to 24Mbit/s:
Upload speed	up to 1.3Mbit/s	up to 1.3Mbit/s	up to 2.5Mbit/s
Monthly usage	40GB	Unlimited	Unlimited
Router	Wireless router included		

BT

- A8.4 BT offers three standalone broadband packages: Option 1 for users aiming for a “fast and reliable” service, Option 2 aimed at heavy users and Option 3 for unlimited data downloads.

Table A8.3: BT's retail broadband offering

	Option 1	Option 2	Option 3
Price	£7.99 for first 3 months £15.99 thereafter	£13.99 for first 3 months £20.99 thereafter	£18.99 for first 3 months £24.99 thereafter
Contract length	18 months; 12 month contract available without initial discount		
Download speed	Up to 20Mbit/s		
Monthly usage	10GB	20GB	Unlimited
Router	BT Home Hub wireless router included		
Security	Basic	Advanced McAfee security	Advanced McAfee security
Additional services	5GB secure online storage with BT Digital Vault		
		350 Wi-Fi minutes for BT Fon and BT Openzone hotspots	Unlimited access to BT Fon Wi-Fi network; 500 Wi-Fi minutes for BT Openzone hotspots

- A8.5 BT introduced its Infinity retail packages in January 2010¹⁰⁵, and advertises them as their “new fibre optic broadband” with their “most powerful connection to the Internet”. Customers in Muswell Hill, Whitchurch and Glasgow Halfway have been enjoying the faster speeds through a BT trial. According to BT, this service will be made available to 4 million homes and businesses by the end of December 2010, following the roll out of the technology by Openreach. The packages are priced as follows:

¹⁰⁵ <http://www.btplc.com/news/articles/showarticle.cfm?articleid=%7Bf9f6f1ad-c4f6-442d-bf7e-ffcc7847631c%7D>

Table A8.4: BT's Infinity retail broadband offering

	Infinity Option 1	Infinity Option 2
Price	£19.99 £50 activation fee	£24.99
Contract length	18 months	
Download speed	Up to 40Mbit/s	Up to 40Mbit/s
Upload speed	Up to 2Mbit/s	Up to 10Mbit/s
Monthly usage	20GB	Unlimited
Router	BT Infinity Home Hub wireless router included	
Security	Basic security	Advanced McAfee security
Additional services	Free engineer installation 5GB secure online storage with BT Digital Vault	
	240 Wi-Fi minutes for BT Fon and BT Openzone hotspots	Unlimited access to BT Fon network and 500 Wi-Fi minutes for BT Openzone hotspots

- A8.6 BT has priced the Infinity packages very competitively compared to its ADSL2+ packages, so for those customers in its fibre-enabled exchanges the Infinity packages provide good value for money.
- A8.7 In our 2009 retail narrowband market review we concluded that BT no longer has significant market power in the provision of retail fixed narrowband analogue access and retail calls markets in either the residential or business sectors. As a result BT was able to start offering bundled services, and currently have three calls and broadband packages, and two calls, broadband and TV packages.

O2

- A8.8 O2 launched their broadband product on the back of the Be network in autumn 2007, offering 3 broadband packages for customers within its LLU network and an Access product for those outside. There is a £5 per month discount to O2 customers, including those on pay as you go as long as they top up a minimum of £10 every 3 months.

Table A8.5: O2's retail broadband offering

	Standard	Premium	Pro	Access (outside LLU)
Price	Free for first 2 months			
O2 customers	£7.50	£10	£17.50	£17.50
Non O2 customers	£12.50	£15	£22.50	£22.50
Contract length	12 months			
Download speed	Up to 8Mbit/s	Up to 20Mbit/s	Up to 20Mbit/s	Up to 8Mbit/s
Upload speed	Up to 1.3Mbit/s	Up to 1.3Mbit/s	Up to 2.5Mbit/s	Up to 448kbit/s
Monthly usage	Unlimited			
Router	Wireless router included			
Security (McAfee)	1 licence	3 licences	10 licences	10 licences

Orange

A8.9 Orange's parent company France Telecom bought UK ISP Freeserve in 2000, renaming it Wanadoo. Wanadoo began deploying an LLU network in late 2005 to offer 8Mbit/s ADSL ahead of BT Wholesale's IPStream Max launch in February 2006. Wanadoo became part of the Orange brand in June 2006. In early 2008, Orange announced differential pricing for on-net (LLU, covering around 65% of UK homes) and off-net (IPStream) areas. In March 2009, Orange announced it was trialling 20Mbit/s home broadband priced at the same level as its 8Mb offerings. Since October, Orange has made "up to 20Mbit/s" download speeds a standard across all its home broadband packages.

Table A8.6: Orange's retail broadband offering

	Starter	Max	Ultra	Select
Price	£7	£6.50	£10.50	£9
Orange customers		First 3 months free		
Non Orange customers	£10	£9.50	£13.50	£12
Outside LLU area	£10 extra a month			
Contract length	18 months			
Download speed	Up to 20Mbit/s (up to 8Mbit/s in non-Orange broadband areas)			
Monthly usage	Unlimited			
Router	Wireless router included			
Security	Internet security software included			
Other benefits	Evening and weekend landline calls	Requires take up of Orange line rental Evening and weekend landline calls	Requires take up of Orange line rental Anytime landline calls Calls to landlines in 30 countries using Livebox	

Plus.net

A8.10 Plus.net offers three different types of packages depending on usage, and offers lower prices in areas where there is competition in an exchange, defined as those exchanges in Markets 3 areas.¹⁰⁶ Plus.net also offer broadband and home phone packages which requires customers to take up both calls and line rental

¹⁰⁶ If a customer moves property from a Market 3 Area their broadband subscription payments won't increase.

Table A8.7: Plus.net's retail broadband offering

	Value	Premium	Pro
Price First 3 months	£5.99	£11.99	£19.99
"Low cost area"	£5.99	£15.99	£19.99
Outside "low cost area"	£11.99	£19.99	£19.99
Contract length	12 months		
Download speed	Up to 8Mbit/s	Up to 20Mbit/s	Up to 20Mbit/s
Monthly usage	10GB	80GB	20GB
	Usage limit do not apply between midnight to 8am; £2 per 2GB charged if limit exceeded		
Router	Wireless router included		
Security	Firewall & spam protection		
Additional services			Prioritised traffic Access to gaming servers 240 minutes VoIP calls

Sky

- A8.11 Sky/Easynet provides broadband services through its LLU network. Subscribers to Sky's broadband packages must be active Sky TV subscribers at all times during the contract. Sky offers a selection of broadband, phone and digital TV bundles.

Table A8.8: Sky's retail broadband offering

	Base	Everyday	Unlimited	Connect (outside LLU)
Price	£5	£10	£15	£17
Connection charge (existing customers only)	£60	£30	£0	£30
With Sky Talk	£0	£5	£10	
Contract length	12 months			
Download speed	Up to 2Mbit/s	Up to 10Mbit/s	Up to 20Mbit/s	Up to 8Mbit/s
Upload speed	Up to 400kbit/s	Up to 600kbit/s	Up to 1.3Mbit/s	Up to 448kbit/s
Monthly usage	2GB	10GB	Unlimited	40GB
Router	Wireless router included			
Security (McAfee online protection)	3 months free	3 months free	12 months free	

TalkTalk

A8.12 TalkTalk's two broadband services are only available with a bundled fixed line service.

Table A8.9: TalkTalk's retail broadband offering

	Essentials	Pro
Price	£6.99	£14.99
Connection	Free, normally £29.99	
Outside LLU area	£21.49	
Contract length	18 months	
Download speed	Up to 8Mbit/s	Up to 24Mbit/s
Monthly usage	40GB	Unlimited
Router	Wireless router included	
Security	Available at £2 a month, first 30 days free	
Additional services	Unlimited UK evening and weekend landline calls	Unlimited UK evening and weekend landline calls Discounted international calls

Virgin Media

A8.13 Virgin Media is the only quad-play service provider in the UK, offering a mix of broadband, TV, mobile and fixed phone services. These services are available in Virgin Media cabled streets only.

Table A8.10: Virgin Media's retail broadband offering

	L	XL	XXL
Price Standalone	£15 for first 3 months, £20 thereafter	£25 for first 3 months, £30 thereafter	£33 for first 3 months, £38 thereafter
With Virgin phone	Free for first 2 months, £12.50 thereafter	Free for first 2 months, £20 thereafter	Free for first 2 months, £28 thereafter
Connection charge	£15 for self-install	£15 for self-install	£20 activation fee
Contract length	12 months		
Download speed	Up to 10Mbit/s	Up to 20Mbit/s	Up to 50Mbit/s
Monthly usage	Unlimited		
Router	Wireless router included		
Security	Internet security software included		
Additional services	5GB online storage	10GB online storage	Unlimited online storage
Free photo prints	25	50	100

Annex 9

Further evidence on product market definition

Introduction

- A9.1 This Annex contains further information and analysis used to inform our definition of the relevant product markets as set out in section 3 and it is consistent with the conclusions that we make there, under a range of reasonable assumptions
- A9.2 The first part of this Annex provides an overview of the consumer research that we conducted for this review and the methodology that we have adopted . The second sets out our consideration of the hypothetical monopolist test (HMT) including how the critical loss formula is derived. Finally, using the information available we compare the results of the consumer surveys against estimates of the critical loss thresholds, and consider what the implications are for the retail product market definitions.

Consumer survey overview

- A9.3 For the current market review, we commissioned a consumer survey into the use of fixed and mobile internet by both business and residential customers. The interview process was carried out between September and November 2009, and was conducted amongst the decision makers responsible for purchasing telecom and internet connections. There were two objectives to the survey:
- To understand consumer attitudes towards fixed and mobile broadband services; and
 - To assess predicted switching behaviour, in particular the likely response to a small but significant and non-transitory increase in price (SSNIP) of 10% and the type of products that consumers would anticipate switching to.
- A9.4 For issues considered by the first objective, we have referred to the results of the consumer survey in the main sections of this document. We have also published the consumer research results alongside this consultation document.
- A9.5 This Annex primarily focuses on the results of the responses to the SSNIP questions contained in the consumer surveys and the relevant assumptions and calculations used. In particular, we have used the survey results to inform two key aspects of the product market definition as set out in Section 3:
- Switching between different speed services; and
 - Switching between fixed and mobile broadband access.
- A9.6 For the 2008 WBA market review we examined in detail switching behaviour amongst business and residential customers between ADSL- and cable-based broadband internet access in response to a price rise by a hypothetical monopolist. We concluded then that the survey evidence was supportive of ADSL and cable being in the same market. In addition, the available evidence did not suggest that

the market definition should be widened to include narrowband internet access. These results were robust to different weightings used to account for the relative number of business and residential customers.

- A9.7 For the purposes of this market review, we have not sought to repeat the consumer research on switching behaviour between cable and ADSL broadband technologies. This is because both types of broadband internet access services continue to have the same intended use, have similar characteristics, are priced at similar levels and ISPs providing ADSL-based broadband services and Virgin Media also market their products against one another. Additional advice and information sources such as price comparison websites do not draw a distinction between cable-based and ADSL-based broadband insofar as the underlying service is concerned. These reasons combined suggest that where cable-based broadband access is available consumers continue to consider cable-based and ADSL-based services to be substitutes and therefore part of the same relevant market.
- A9.8 Although these survey results have been used to inform our market definitions, the customer survey results used to conduct the SSNIP tests in this Annex are suggestive rather than definitive. In addition to providing only limited forward-looking analysis, the consumer survey results are also subject to important caveats of being based on claimed behaviour as opposed to observed customer behaviour. Therefore despite being based on relatively robust sample sizes, they are still subject to error margins.

The SSNIP test

- A9.9 The important question underlying the SSNIP test is the impact that a price increase would have on the profitability of a hypothetical monopolist supplier of the focal product. The change in profitability takes into account losses in revenue from customers who switch to an alternative product in response to the price increase, offset by the marginal costs of provision saved and the increase in revenue from those who do not switch. If a SSNIP were unprofitable, this indicates that the market is wider than the focal product in question, and the next closest substitute to that product should be included within the market definition.
- A9.10 In the context of consumer surveys it is helpful to consider the SSNIP test based on a critical loss calculation. This calculation measures the percentage reduction in demand to a given SSNIP that would leave profits unaffected and provides a benchmark to which these survey results can be compared against. If the reduction in demand from a SSNIP is greater than the critical loss factor, then the SSNIP will be unprofitable, and vice versa.
- A9.11 In order to calculate the critical loss it is necessary to look at the change in profits following a SSNIP. The change in profits equals the change in revenue minus the marginal costs saved (assuming constant marginal costs), i.e.

$$\pi_1 - \pi_0 = (p_1 q_1 - p_0 q_0) - c(q_1 - q_0) \quad (1)$$

Where

π is profit and c is the marginal cost

$p_1 \equiv p_0(1 + s)$ where s is the size of the SSNIP

$q_1 \equiv q_0(1 + L)$ where $L < 0$ is the percentage loss of demand

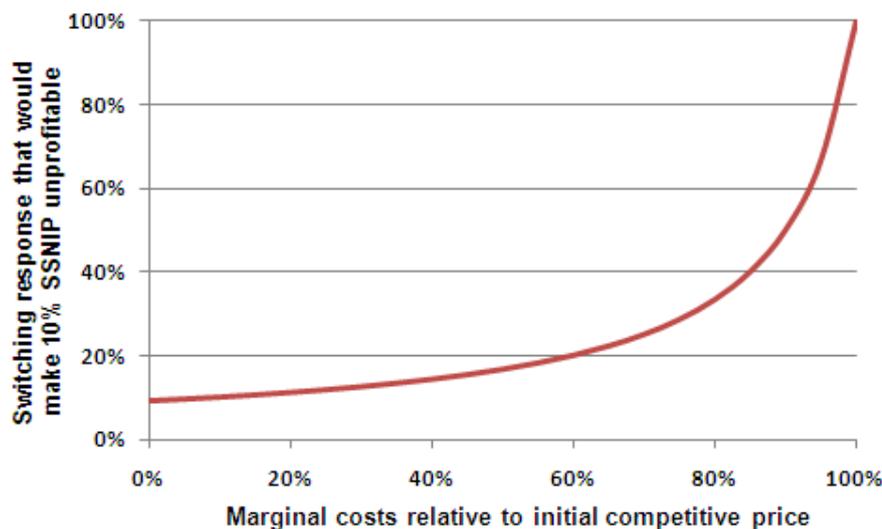
$c \equiv \alpha p_0$ where α is the ratio of marginal cost to initial price

- A9.12 By substituting these equations into Equation (1), the critical loss percentage can be expressed as a function of the SSNIP and α , the ratio between marginal cost to the current price (i.e. the price before the SSNIP). In addition, specifying that $\pi_1 - \pi_0 < 0$ gives:

$$L < -\frac{s}{1 + s - \alpha} \quad (2)$$

- A9.13 The figure below provides values for critical loss based on a 10 per cent SSNIP and different marginal cost assumptions. For example, if the marginal costs of serving a customer is equal to the retail price charged (i.e. $\alpha = 100\%$), then the revenue lost from those who switch would be exactly offset by the costs saved from not supplying those customers. Profits from this strategy would therefore be the additional retail price multiplied by the number of customers who don't switch. So, unless all customers switch, a hypothetical monopolist would stand to gain from the 10% SSNIP.
- A9.14 At the other end of the scale, if marginal costs are negligible, e.g. $\alpha = 0\%$, then a SSNIP of 10 per cent would result in a loss of revenue from those who switch with no associated cost savings. This reduction in revenue would be greater than the increase in revenue from those who don't switch if demand falls by more than 9.1 per cent. As the marginal cost ratio increases, the threshold at which the original SSNIP becomes unprofitable gradually increases.

Figure A9.1: Critical loss factor at 10% SSNIP



Critical loss estimation

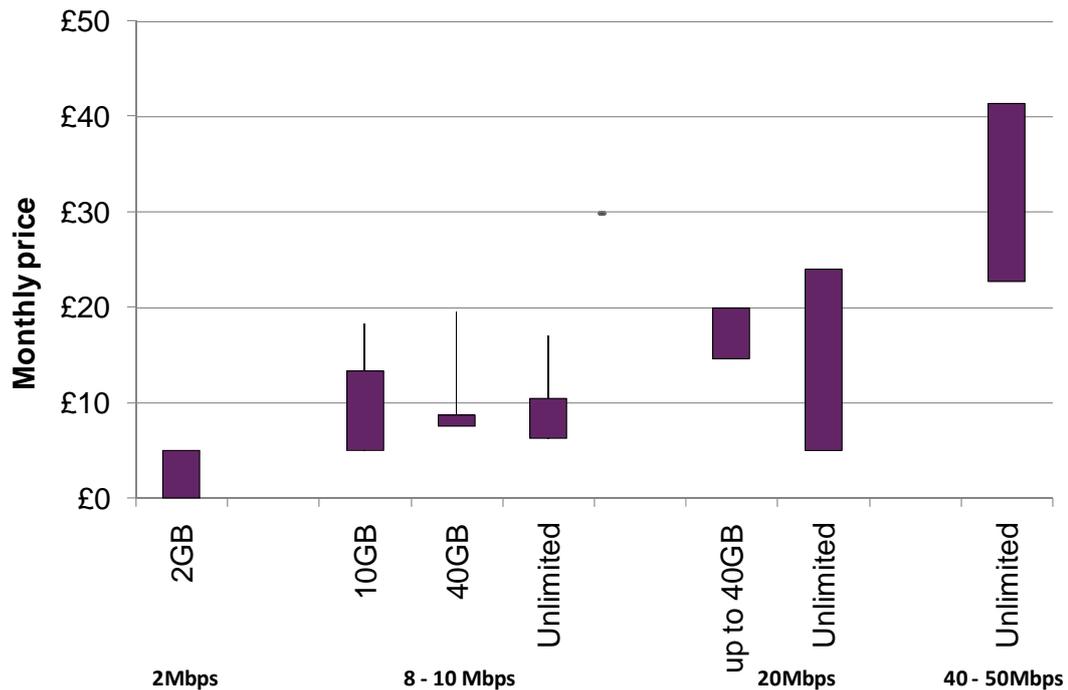
- A9.15 In order to assess this change in profitability, it is also necessary to estimate costs and the impact on revenue, which in turn depend on current retail broadband prices and costs as set out below.
- A9.16 As explained in section 3, we consider there to be one market for residential and business customers of broadband internet access, and therefore it would be appropriate to conduct the SSNIP test on an aggregated basis across business and residential customers. However, due to the nature of the consumer research, which

had to be conducted for business and residential consumers separately, the results are presented in this Annex for both consumer types separately. The results have also been presented in this Annex on a combined basis using relative weightings to account for current volume of residential and business broadband customers.

Estimates of retail broadband prices

- A9.17 In relation to current prices, we have considered the prices of broadband packages currently available from the main providers in Annex 8.
- A9.18 At the lowest end of the speed range, Sky offers a 2Mbit/s service with a monthly download limit of 2GB. This is aimed at customers who access the internet occasionally¹⁰⁷. This package costs £5 a month, and is available to Sky TV customers only. For customers taking up Sky Talk, this service is free.
- A9.19 Most broadband packages are now advertised as “up to 8Mbit/s”, and there is a wide range of offers available depending on the monthly download limit, geographical location (e.g. within LLU footprint), other bundled products (e.g. mobile or TV), set up costs and initial discounts. For example, O2 broadband packages are available to its mobile customers at a £5 a month discount, and are all provided with unlimited monthly downloads. Similarly, a number of ISPs charge around £10 per month higher for customers outside its broadband network area.
- A9.20 For the “up to 20Mbit/s” packages, the range of prices also reflect discounts associated if one or more products are selected and higher prices for customers outside the LLU operator’s footprint.
- A9.21 Finally, the highest speed services currently available are BT’s Infinity packages, providing up to 40Mbit/s download speeds and Virgin Media’s 50Mbit/s XL package. The higher end of the price range reflects Virgin Media’s pricing for customers who only take its broadband service.

¹⁰⁷ According to consumer information online, current estimates suggest that a 1GB allowance is roughly the equivalent of spending between 1 and 2 hours online a day. A 30 minute programme on BBC’s iPlayer is around 150MB.

Figure A9.2: Typical monthly broadband prices, January 2010¹⁰⁸

A9.22 Based on the information above, it is likely that most people pay around £15 month for their broadband service if they are with an LLU operator, and £22 a month with an operator using IPStream. This reflects a mix of customers who take broadband as part of a bundled product at different speeds. This is consistent with Ofcom's survey evidence where half of those who were aware of the price of their broadband package quoted a monthly charge of £15 to £24.99, with an average of £18.95 including VAT.

Estimates of costs of provision

A9.23 In order to estimate in detail the marginal cost of supplying an asymmetric broadband internet access retail customer, we would need to consider the underlying telecommunications and ISP components used to serve a customer and the likely change in costs of serving an additional customer. These are likely to be different depending on:

- The underlying network infrastructure (i.e. Virgin Media's cable network versus BT's copper loop),
- ISP type (i.e. network operator versus ISPs using BT's wholesale products), and
- ISP business model for ADSL broadband (i.e. using full or shared Local Loop Unbundling, IPStream or Wholesale Broadband Connect).

A9.24 For each of these dimensions, there would be different costs associated with access (or local loop), backhaul, broadband conveyance, IP conveyance, aggregate link (ISP delivery) and internet connection costs; ISP service and marketing costs. These costs are then disaggregated further to identify those that could be

¹⁰⁸ Note that some LLU operators have higher prices for customers outside their LLU footprint. This is represented as vertical lines where the prices vary significantly from the range of prices offered for each speed/limit category.

considered as “marginal” in the short term, which can therefore be avoided when a customer terminates their service.

A9.25 For the purpose of this exercise we have not looked to model each of these cost components explicitly. Instead, using broad cost categories we have considered the likely range of savings an ISP using BT’s wholesale products would face when a customer switches to an alternative provider. The costs estimates fall into four broad categories: access, backhaul, core and customer services. LLU operators and operators who use BT’s bitstream products will have different marginal costs for access and backhaul. On the other hand, marginal customer service costs are likely to be at similar levels for all ISPs.

LLU-based service providers

A9.26 At the lower end, the marginal local access cost of supplying broadband to an additional customer would be zero. This would correspond to a situation where voice and broadband services were initially provided on a fully unbundled local loop (i.e. using MPF¹⁰⁹). When such customers migrate to an alternative provider, the LLU operator would continue to pay the MPF rental even if it is only providing voice services.

A9.27 Where an LLU operator uses SMPF¹¹⁰, the potential cost saving from a customer switching away is the reduction in SMPF rental charge of £1.30 per month excluding VAT.¹¹¹ Other operating and capital costs such as accommodation, network infrastructure (e.g. installing DSLAMs), surveying and provisioning are likely to remain unchanged with respect to small changes in the customer numbers served at each exchange.

A9.28 An LLU operator would also need to lease backhaul capacity from Openreach, which is determined by expected customer numbers, estimates of usage and customer experience that the ISP wishes to offer.

A9.29 IN November 2008 we asked Analysys Mason to estimate the network costs to service providers for delivering high quality video services using broadband.¹¹² Analysys Mason estimated that total backhaul costs for an LLU operator is just under £2 per line per month in 2008.

A9.30 The BBC Trust commissioned Value Partners to estimate the impact of Project Canvas on ISP costs in 2009.¹¹³ The estimate of total backhaul costs for an LLU operator in 2009 is between 91p to £1.89, and takes into account significant reductions in BES connection and rental prices in February 2009.

¹⁰⁹ MPF stands for Metallic Path Facility, where the local loop is used by a single CP to provide both broadband and voice services which are carried over the CP’s network. The CP has full responsibility for the relationship with the end user. Openreach provides maintenance for the local loop by responding to fault reports raised by the CP.

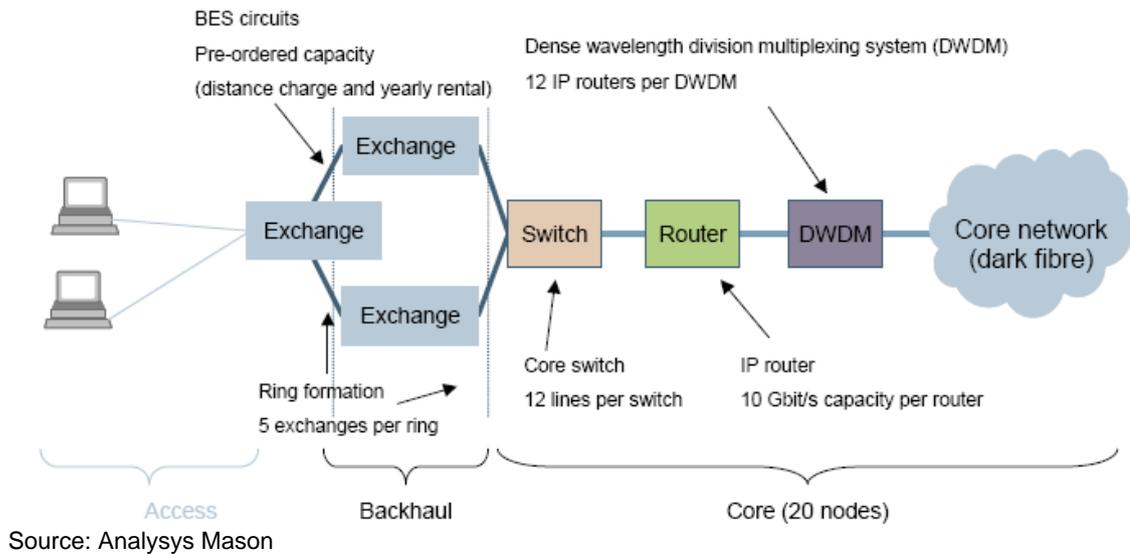
¹¹⁰ SMPF stands for Shared Metallic Path Facility, and is a ‘shared’ local loop where the broadband service is carried over the CP’s network and voice services are carried via an alternative CP’s network over the same metallic pair. To enable this service, ‘splitters’ are fitted at each end of the metallic path to separate the broadband and voice services. Each of the CPs has a contract to provide its service to the end user. Openreach provides maintenance for the local loop.

¹¹¹ Openreach Shared MPF pricing as of 1 April 2010, <http://www.openreach.co.uk/orpg/pricing/loadPricing.do>

¹¹² Analysys Mason, *Delivering high-quality video services online*, November 2008. http://www.ofcom.org.uk/research/technology/research/emer_tech/hqvs/analysyshqvs.pdf

¹¹³ Value Partners, Report to assess impact of Canvas on ISP costs, December 2009.

http://www.bbc.co.uk/bbctrust/our_work/television/canvas_provisional_conclusions.shtml

Figure A9.3: Typical LLU set up and cost structure

- A9.31 A typical residential 20Mbit/s service will have a contention ratio of 50:1. If this was a guaranteed 20Mbit/s service, at peak hours the effective speed could be reduced to 400kbit/s. However, a recent article by Analysys Mason¹¹⁴ reported that typical customer traffic is around 50kbit/s in the busy hour, but is gradually increasing to around 170kbit/s by 2012/13.
- A9.32 ISPs are likely to have purchased sufficient capacity to meet peak traffic (i.e. high usage by subscribers is typically between 8pm and 10pm) in order to meet a minimum quality of service. Therefore, if a 100Mbit/s BES circuit is used to meet the 2012/13 demand, it would be able to support 590 customers. From 9 April 2010, the annual rental price of such a circuit would cost £3,476 excluding VAT per year. This equates to around 49p per line per month. The costs of providing backhaul capacity is characterised by large economies of scale. So, a 1000Mbit/s BES circuit would be able to support 5,900 customers at £7,493 per year, or 11p per customer per month. Assuming current peak traffic of 50kbit/s would reduce these cost estimates by a factor of 3.4.
- A9.33 It is therefore unlikely that the demand reduction from marginal customers will shift the ISPs' demand for backhaul bandwidth. Nevertheless, based on the cost estimates above the maximum marginal backhaul cost is unlikely to be more than 49p per line per month excluding VAT. However, it is likely that even in the short term (e.g. 12 months) this capacity continues to be used elsewhere (i.e. by the ISP's customers). We therefore consider a more realistic high-end estimate for marginal cost would be half of the per line cost per customer using a 100Mbit/s BES circuit, i.e. 24.5p.
- A9.34 For all ISP business models, there are associated core and internet connectivity costs. These would include equipment associated with the ISP's main aggregation nodes such as routers and switches, connections between these core nodes, as well as operational costs such as utilities and security. This means that the core network costs are relatively fixed.

¹¹⁴ Analysys Mason, "Exploding the myth of a backhaul time-bomb" 15 December 2009.
<http://www.analysismason.com/About-Us/News/Newsletter/Exploding-the-myth-of-a-backhaul-time-bomb/>

- A9.35 Estimates provided to the BBC Trust on the impact of Project Canvas on ISP costs suggested that total core costs per subscriber ranged between 22p and 43p for an LLU operator. Again, at the margin, it is unlikely that ISPs would reconfigure their network in response to small changes in subscriber numbers. As in the case of backhaul costs, marginal core costs of 21.5p per subscriber per month, is likely to be towards the high end.

ISP using bitstream products

- A9.36 There are two types of bitstream products currently available. IPStream is BT's legacy bitstream product which is being superseded by the new 21CN-based Wholesale Broadband Connect (WBC) product. WBC supports for ADSL2+ which delivers a theoretical maximum throughput of 24Mbit/s rather than the 8Mbit/s offered by IPStream (based on the ADSL1 standard). IPStream is currently used by BT Wholesale and LLU operators to meet demand outside their coverage area. These bitstream products cover the access circuits (i.e. end user ADSL connection to the exchange) and "Central Pipes" which carry all of the ISP's users' traffic between the BT network and the ISP network.
- A9.37 IPStream products are available at different download speeds: 250kbit/s, 500kbit/s, 1Mbit/s, 2Mbit/s and 8Mbps (also called IPStream Max and most widely used). Current prices for IPStream Max and WBC are £6.43 and £5.88 per line per month respectively, excluding VAT.
- A9.38 Along with the IPStream products, ISPs also purchase Centrals (or backhaul) products to accommodate peak capacity requirements. Similar to LLU backhaul costs it is unlikely that these would change significantly as a result of small fluctuations in demand. The only cost an ISP would save is the end user bandwidth rental of 86.5p per month.
- A9.39 Since WBC is based on the same fibre-based inputs as LLU, marginal costs of backhaul for ISPs using WBC should be similar to those of LLU operators, i.e. between 0 and 24.5p per line per month.
- A9.40 Similar to LLU operators, core and internet connectivity costs for bitstream-based ISPs are relatively fixed. Estimates provided to the BBC Trust on the impact of Project Canvas on ISP costs suggested that total core costs per subscriber ranged between 21p to £2.46 per month for IPStream and 21p to £2.33 for WBC. The higher end of the range reflecting smaller ISPs. Again, at the margin, it is unlikely that ISPs would reconfigure their network in response to small changes in subscriber numbers. Nonetheless, at the high end half of these costs could be saved, i.e. £1.23 and £1.17 per subscriber per month for IPStream and WBC respectively.

Customer service costs

- A9.41 Finally, the marginal marketing and customer service costs of not supplying a customer is likely to be small, and may involve a telephone call with the customer followed up by one or two letters confirming the migration and cancellation of service.
- For small changes in customer numbers, it is unlikely that an operator would change customer service staffing numbers. On the other hand, if sufficient customers do switch away as a result of the SSNIP, the operator might reduce its temporary call centre staff contracts. Assuming these workers are paid the

national minimum wage at £5.80 an hour, and that an average call lasts 5 minutes, this translates to a one-off 48p per customer. Spread over a 12-month period, this equates to 4p per customer per month.

- Royal Mail's first and second class stamps cost 39p and 30p respectively. The potential range of cost savings would be a one-off saving of 30p at the lower end and 78p at the upper end for two letters. Over a 12-month period, this translates to a range of 2.5p to 6.5p.

Summary

Table A9.4: Estimates of monthly marginal costs avoided

	Full LLU	Shared LLU	IPStream	WBC
Access	0	£1.30	£6.43	£5.88
Backhaul	0 – 24.5p	0 – 24.5p	86.5p	0 – 24.5p
Core and internet connectivity	0 – 21.5p	0 – 21.5p	0 – £1.23	0 – £1.17
Total (excluding VAT)	0 – 46p	£1.30 – £1.76	£7.30 – £8.53	£5.88 – £7.29
Customer service	2.5p to 6.5p	2.5p to 6.5p	2.5p to 6.5p	2.5p to 6.5p
Total (including VAT)	£0.03 – £0.61	£1.55 – £2.13	£8.60 – £10.08	£6.93 – £8.63

A9.42 For the purposes of this exercise we have not looked to model each of these cost components. Nevertheless, based on the estimates above we have assumed that marginal costs for an LLU operator are likely to fall within the range of £1.50 to £2.50 per customer per month for costs saved by ceasing to supply an individual customer. For an ISP using IPStream or WBC, the marginal costs are more likely to be in the range of £7 to £10 per line per month.

Estimates of the critical loss range

A9.43 Comparing the average price of retail broadband services and the estimated range of marginal costs, our estimates of the ratio between marginal costs and current prices would be between 24 and 35 per cent. The critical loss factor is therefore between 12 and 13 per cent as shown in Figure A9.1.

Table A9.5: Critical loss for 10% SSNIP based on different cost assumptions

	LLU	IPStream / WBC	Combined ¹¹⁵
Retail prices	£15	£22	£18.75
Marginal costs	£0.50 – £2.50	£7 – £10	£3.98 – £6.52
Ratio between costs and prices,			21% – 35%
Critical loss			11.3% – 13.3%

A9.44 We recognise that this estimate is based on residential broadband packages only, and that the costs of serving an average business customer relative to an average

¹¹⁵ Weighted average using volumes of total LLU and IPStream broadband connections of around 6.5 million and 7.5 million respectively.

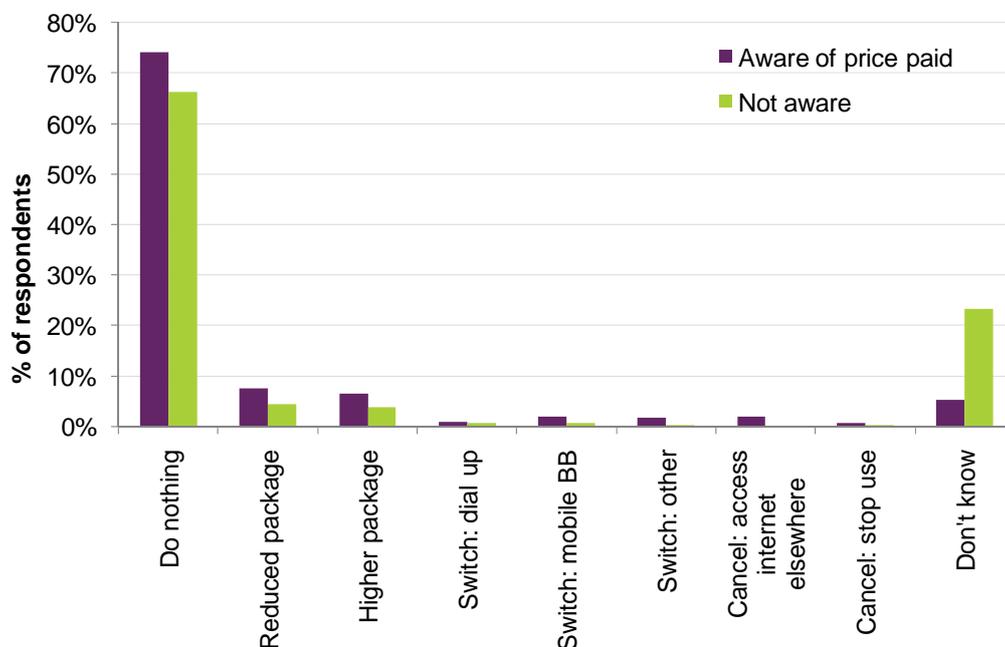
residential customer will be different. The more bespoke nature of the business broadband internet access services means that the identification of a representative business service price is difficult. The same difficulties hold when estimating a marginal cost for asymmetric retail provision to SMEs.

- A9.45 For the critical loss calculation, the relevant input is cost/price ratio for residential and business packages, rather than the absolute difference between the prices or costs of business and residential services. As with the 2008 WBA market review, we have assumed that the marginal cost to price ratio is not significantly different between business and residential customers.
- A9.46 In the absence of more disaggregated information in terms of exact consumer packages, coupled with the assumption made in the present analysis that current prices are competitively set, we consider the best estimate of the critical loss range for business and residential customers is 11 to 13 per cent.

Evidence of speed boundary

- A9.47 Consumers were asked about the residential broadband package they current pay, and the likelihood that they would substitute their fixed broadband service for a mobile broadband service in the next six months. Those who are likely to continue using a fixed broadband service were asked what their response would be if the price of all fixed broadband packages of similar quality to their existing package went up by 10 per cent. For consumers who were unaware of their broadband package price, the question was framed as a £2 per month increase in their broadband package.

Figure A9.6: Residential response to a 10% SSNIP, by monthly spend on fixed internet access

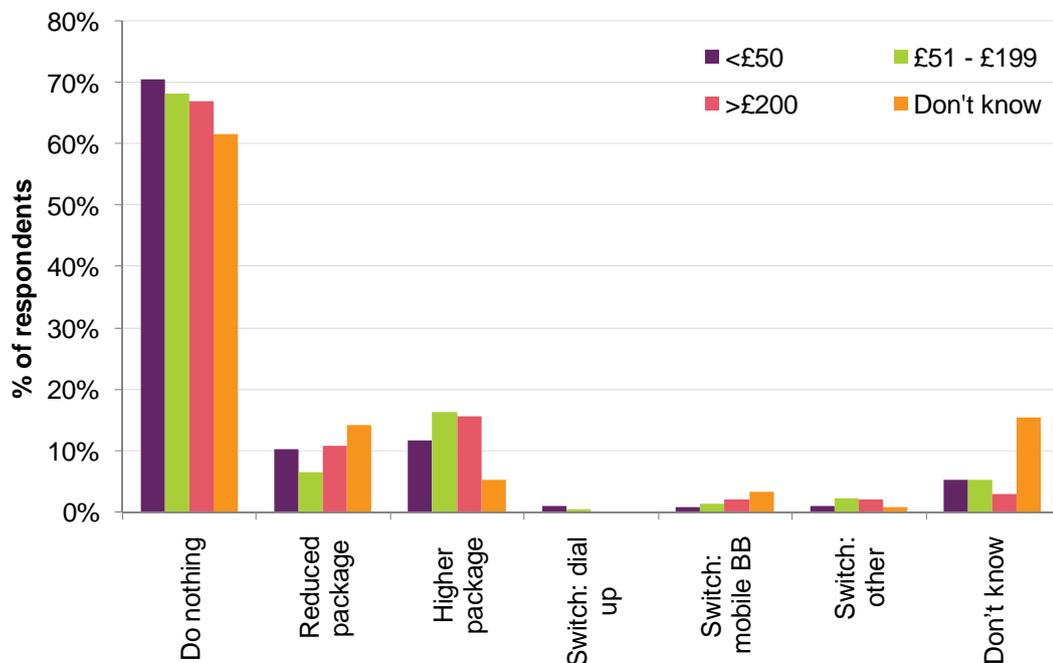


- A9.48 In relation to residential customers who are aware of how much they are paying for the service, the survey evidence suggests that 74 per cent of residential fixed broadband customers would continue to use their current internet access

connection. A total of 14 per cent would switch to either a higher quality (i.e. in terms of speed and download limit) or a lower quality service.

- A9.49 For those who were unaware of the price of their existing package, a total of 8 per cent would switch to a different quality service, with a large proportion answered “don’t know”. This might be because if respondents are unaware of what they are currently paying for broadband it would be difficult to put the £2 extra a month into context. In addition, the results showed that over half of those who said “don’t know” are in the 15-24 age group who are less likely to be bill payers.
- A9.50 Of all residential respondents, 66 per cent were aware of their broadband price and 34 per cent not. Using these as weights, the average percentage of those who would switch to a different speed/quality broadband service is 12 per cent.
- A9.51 Business customers were asked the same SSNIP question, i.e. what they would do if the price of all fixed internet connection package of similar quality to their existing service increased by 10 per cent. The interview targeted respondents who were responsible for making purchasing decisions relating to internet and data services.
- A9.52 In aggregate, 23 per cent of business respondents who were aware of the business spend on fixed internet access said that they would switch in response to a SSNIP. There was little variation between the responses with respect to the reported monthly spend. For those who were unaware of what the business spent, 19 per cent would switch. The average response across the two types was 22 per cent. As with residential customers, a larger proportion of respondents answered “don’t know” if they were unaware of the business spend in the first place.

Figure A9.7: Business response to a 10% SSNIP, by monthly spend on fixed internet access



- A9.53 The consumer survey results indicate that likely switching behaviour in relation to a SSNIP would be 12 to 14 per cent for residential customers and 22 to 23 per cent

for business customers. For the basis of this analysis, we have weighted the results in the ratio of 80:20, which is reflective of the relative volume of residential and business consumers. If the claimed switching is higher than the critical loss value, this would suggest that the SSNIP is unprofitable, indicating that the market could be wider than the focal product under consideration.

Table A9.8. Comparison of customers' demand responses to critical loss

	Residential	Business	Total
Critical loss percentage	11 – 13%	11 – 13%	11 – 13%
% would switch	12 – 14%	22 – 23%	14 – 16%
SSNIP profitable?	Maybe	No	No

- A9.54 We considered alternative weighting of current residential and business volumes. Even with no business broadband lines, the proportion of those who would switch in response to a SSNIP is still higher than the lower end of the critical loss range. Clearly this is unlikely, and even if business lines only account for 10 per cent of the total market, the proportion of customers who would switch is between 13 and 15 per cent.
- A9.55 The combined results above suggest that a wide product market definition covering all the broadband speeds currently available in the market is appropriate.
- A9.56 In addition, the survey asked residential consumers how much more they would be willing to pay to double their existing download speed (and download limit if their existing service has one). The results showed that the average is around £4 to £6 extra per month, and there is no real difference by current speed of the consumers' broadband package.

Mobile broadband

- A9.57 Using the same critical loss range, we have also considered whether a SSNIP would be profitable based on the proportion of consumers who switched to mobile broadband services. Both the residential and business results showed that only around 1 per cent of respondents would choose to do so. Compared against the 11 to 13 per cent critical loss range, the evidence so far does not seem to support a wider market that includes mobile broadband.
- A9.58 The survey also questioned fixed broadband why they are unlikely to switch to a mobile only broadband service. The majority were satisfied with their existing connection and saw no reason to change (28 per cent), whilst others thought the connection would not be reliable enough (25 per cent). Others said that they had no need for mobile internet on the move (17 per cent), mobile broadband did not provide fast enough connection (14 per cent); too much hassle to change (12 per cent), and mobile broadband was too expensive for occasional use (10 per cent).
- A9.59 Nonetheless for those who have chosen to only have mobile broadband access, the most popular reason for choosing a mobile-only broadband access was that it meets all the users' requirements (32 per cent). Other reasons included: only requiring one internet connection (18 per cent), cheaper than fixed broadband (17 per cent), choosing not to have a fixed line (13 per cent) and getting a good deal such as a free laptop (12 per cent).

- A9.60 Interestingly, 72 per cent of residential consumers who would switch to mobile broadband only service said that they would still keep their landline phone, i.e. continue to pay a fixed line rental for voice services. Comparing the fixed and mobile broadband access currently in the market, both are available for similar prices on a pay as you go as well as a contract basis. However, fixed broadband packages tend to have higher actual speeds and download limits. Therefore consumers' choice to maintain the fixed line as well as switching to mobile only broadband does not appear likely to be based on minimising telecommunications services costs alone.
- A9.61 The consumer surveys carried out for the 2009 narrowband market reviews found that demand for landlines was primarily driven by non-price factors such as feeling of security. In addition, the survey also found that transient (e.g. students) and lower income groups are most likely to have mobile-only access for both voice and data services. This is enhanced by the advent of pay as you go tariffs, which allows consumers to control their expenditure without committing to a monthly line rental.
- A9.62 Businesses were also questioned about why they do not solely rely on mobile broadband. Again, connection reliability (30 per cent) and no requirement for broadband access on the move (21 per cent) were the main reasons. Other reasons included: not knowing enough about mobile broadband (17 per cent), not fast enough connection (10 per cent) and not feasible for size of company (10 per cent).
- A9.63 Generally, the survey evidence so far has tended to suggest that for residential and business consumers the majority of mobile broadband access is taken up as a complementary service to fixed broadband access.

Annex 10

Geographic analysis

Introduction

- A10.1 We have analysed the data provided by communications providers (CPs) as a key part of the process to define the geographic scope of the wholesale broadband access market(s). The analysis has been carried out taking into consideration the economic analysis carried out for the 2008 market review and the Common Practice for geographic market analysis defined by ERG¹¹⁶. This Annex describes the results related to the geographic analysis that Ofcom undertook for this consultation document.
- A10.2 The principal purpose of this Annex is to evaluate the criteria of the geographic markets, as defined in Section 4, against the latest data provided by the CPs and to carry out some sensitivity analyses.
- A10.3 KCOM is the only fixed network provider in the Hull area and, based on information provided by CPs, currently no other operator is using or plans to use LLU in that area. Accordingly, the geographic data analysis is centred on the UK excluding the Hull area.
- A10.4 We have used data at three points in time to inform our geographic market definition: actual data from September 2009 and forecast data for January and June 2010.

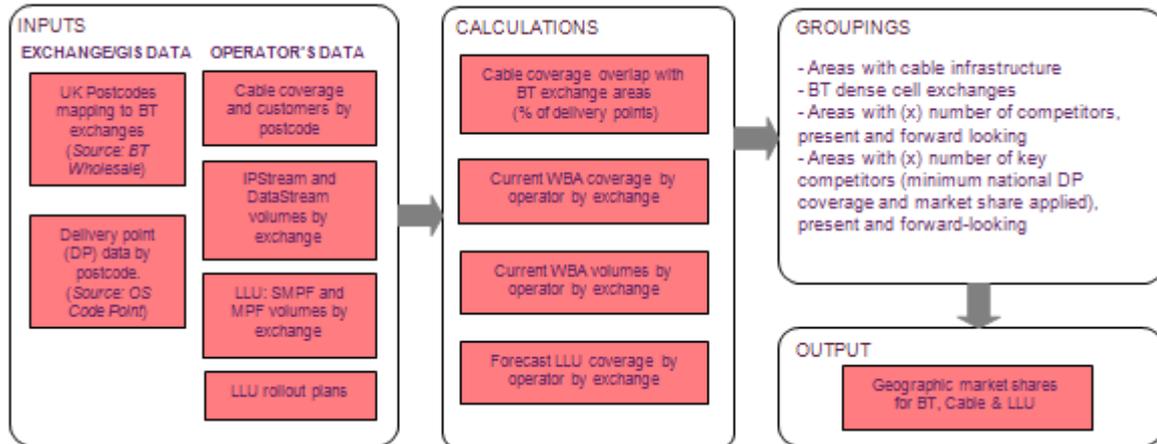
Geographic unit

- A10.5 As described in Section 4 and similar to the last market review, we are proposing to use individual local exchange footprints as the base geographic unit when identifying the geographic extent of the market. There are 5,587 local exchanges in BT's network and 14 in KCOM's network.

¹¹⁶ <http://www.irg.eu/template20.jsp?categoryId=260346&contentId=545376>

Overview of the model structure

Figure A10.1: Model structure



A10.6 Figure 10.1 describes the model structure that we have used (inputs, procedures, and outputs) for the purposes of the UK (excluding the Hull area) geographic market analysis. Similar data relating to the Hull area was collected from operators.

Data provided by BT and Virgin Media

A10.7 The data provided by BT and Virgin Media is summarised in Table 10.2 below:

Table A10.2: Data provided by BT and Virgin Media

Operator	Wholesale product	Data provided
BT (Wholesale)	Broadband access services – asymmetric	<ul style="list-style-type: none"> IPStream take-up: Working System Size (WSS) by exchange DataStream take-up: WSS by exchange
BT (Openreach)	LLU inputs	<ul style="list-style-type: none"> SMPF installed base (live circuits) per LLU operator by exchange MPF installed base (live circuits) per LLU operator by exchange
Virgin Media	Broadband cable	<ul style="list-style-type: none"> Broadband coverage by postcode Broadband customers by postcode

Data provided by LLU operators

A10.8 In September 2009 LLU operators were asked to identify which exchanges they had enabled and provide their most recent roll-out plans, identifying exchanges which

they intended to enable and the date by which they planned to be in a position to offer services from these exchanges.

- A10.9 Specifically, the request was sent to the LLU operators classified as “Principal LLU Operators”. These are LLU operators that introduce competition constraints in the WBA market, as described in Section 3. These LLU operators are Cable & Wireless Access, O2, Orange, Sky, and TalkTalk.

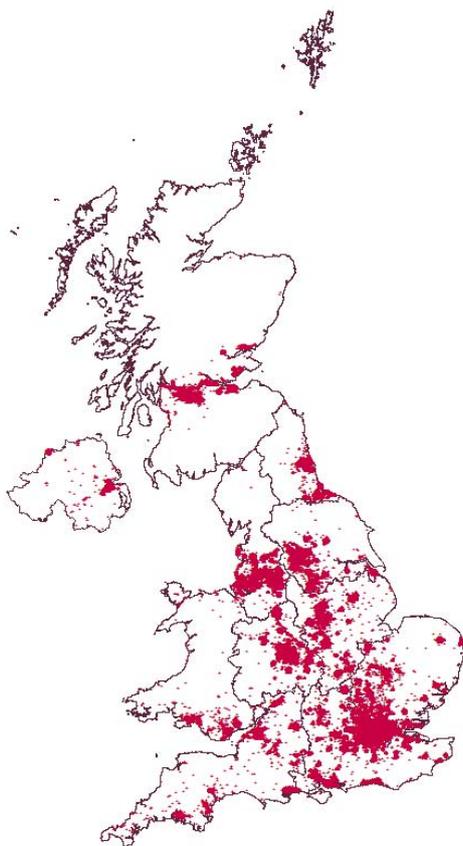
Exchange size calculations

- A10.10 The first step in our analysis was to map every delivery point in the UK, as provided in the Ordnance Survey data, to the local exchange that serves it. This resulted in us estimating the size of each individual exchange in terms of the total number of residential and business delivery points served.

- A10.11 Ordnance Survey delivery point data for UK postcodes was combined with the incumbent’s data that maps UK postcodes to each exchange. The small degree of data loss resulting from this exercise was compensated by uplifting the delivery points by a factor determined by the number of postcodes ‘dropped’ on an exchange-by-exchange basis. Overall, 99.4% of the exchange postcodes were matched successfully and the median postcode loss per exchange was 0.8%.

Cable overlap calculations

- A10.12 Virgin Media provided data on their broadband cable coverage by specifying the number of premises it can offer service to for each postcode. . Our methodology maps this directly to the delivery point data for the UK postcodes. Figure A10.3 below shows the data provided by Virgin Media at the end of September 2009.

Figure A10.3: Virgin Media's broadband cable network coverage

- A10.13 As the basic geographic unit for our geographic market analysis is the footprint of BT's exchanges, we mapped Virgin Media's premises coverage information by postcode onto the BT exchanges footprint.
- A10.14 The cable network is, however, independent of BT's local exchanges and thus the two do not align. The overlap between the two networks in a local exchange area may vary from a few premises (delivery points – DPs) to complete overlap. As described in Section 3, the overlap ratio has to be considered in the assessment of the competitive constraint that the cable network provides in a given exchange footprint. We propose that Virgin Media is considered to be present within an exchange footprint if the number of premises it covers is at least 65% of the total number of premises covered by the BT exchange.
- A10.15 At the end of September 2009 there were 842 exchanges in which Virgin Media is considered to be present, based on the 65% coverage threshold. These 842 exchanges serve 45.8% of the delivery point in the UK. Figure A10.4 below shows broadband cable coverage when overlaid onto BT's exchange areas, with different colours identifying different levels of overlap. Figure A10.5 highlights the exchange areas where Virgin Media is considered to be present.

Figure A10.4: Broadband-cable overlap with BT exchanges

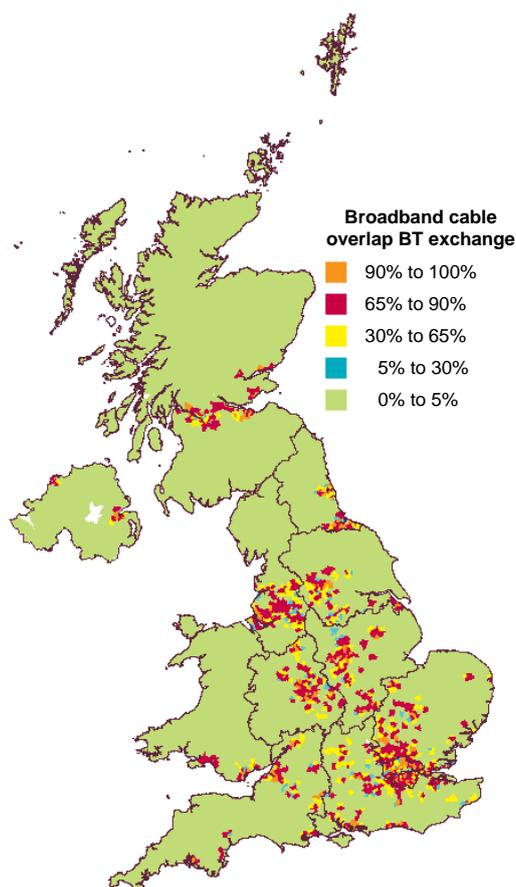
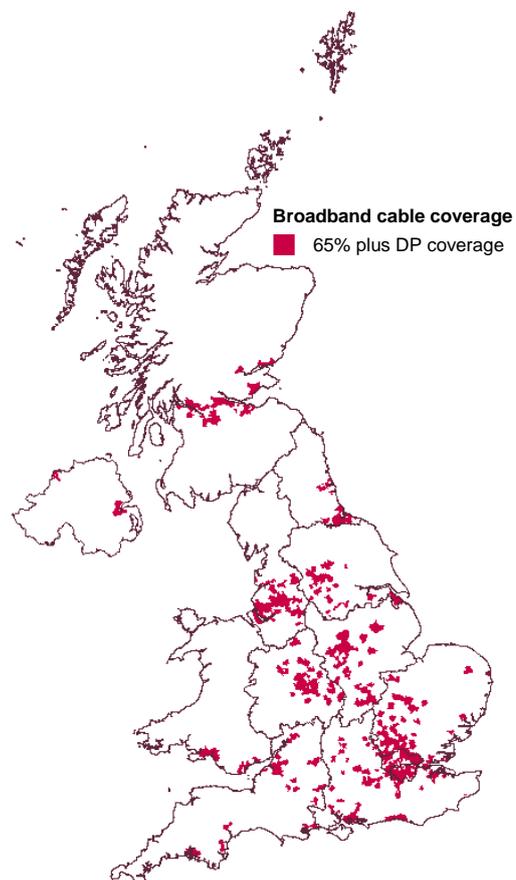


Figure A10.5: Exchange areas with cable coverage



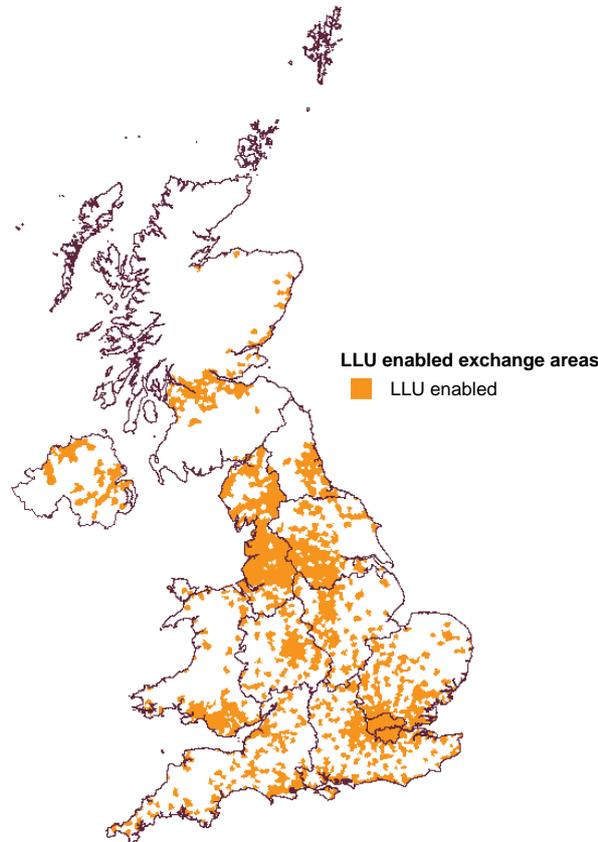
LLU coverage

A10.16 Analysis of the September 2009 LLU data indicates that there are 23 active (non-BT) LLU operators¹¹⁷.

A10.17 Specifically, 1,989 BT exchanges (84.4% of UK delivery points) are enabled by at least one LLU operator, and the maximum number of operators active in any one exchange is 10. Figure A10.6 below shows the location of these exchange areas¹¹⁸.

¹¹⁷ This figure excludes LLU test beds

¹¹⁸ These figures refer to all the 23 active LLU operators, including those with less than 10% coverage.

Figure A10.6: September 2009 LLU enabled exchange areas

A10.18 As outlined in Table A10.7 below, the coverage of individual LLU operators varies with many operators focusing on narrow areas representing less than 10% coverage. There are currently 6 LLU operators exceeding this threshold, while 5 of them have coverage values ranging between 50% and 90% of the UK premises, based on both the actual (September 2009) data and the June 2010 forecast data. These 5 LLU operators are referred to as the “Principal LLU Operators”, while the LLU operator that has marginally exceeded the 10% coverage threshold is Updata Infrastructure.

Table A10.7: Breakdown of all non-BT operators by their planned coverage over time

Coverage	Sept 09	Jan-10	Jun-10
Up to 10%	23	23	23
Over 10%	6	6	6
Over 20%	5	5	5
Over 30%	5	5	5
Over 40%	5	5	5
Over 50%	5	5	5
Over 60%	3	4	4
Over 70%	1	1	1
Over 80%	1	1	1
Over 90%	0	0	0

The Principal LLU operators

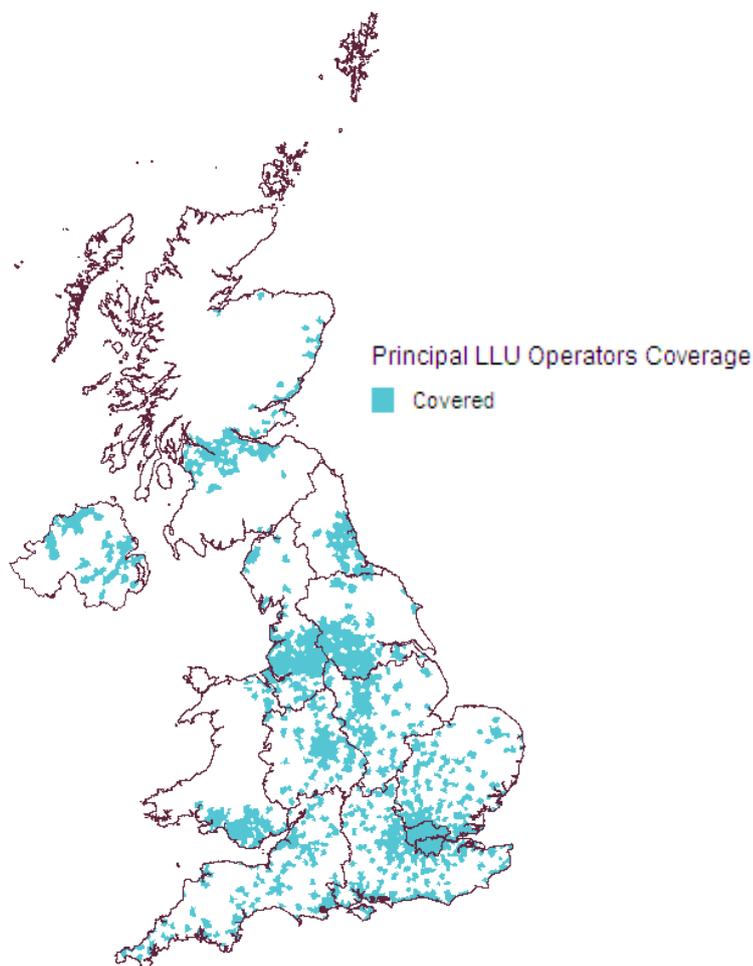
- A10.19 Our approach is to include only Principal LLU Operators for the purpose of our geographic market assessment. These are operators that will provide a material competitive constraint in the market.
- A10.20 In the last review we said that there were 20 (non-BT) operators providing services based on LLU. Some of these had business plans based on serving the mass market for broadband services, whilst others focused on narrowly-defined customer groups. Our view was that only the former of these two types of operator would provide sufficient constraint. Based on data provided to us at the time, the break between these two types of operators could be based on a proxy of planned coverage. Operators with a planned coverage of over 40% would provide sufficient constraint, whilst operators with planned coverage below 5% would not. We noted that setting the criterion at any level between 5% and 40% would have the same result and so we chose a break point of 10%.
- A10.21 Based on our analysis for this review, if we use a threshold of 10% again, Udata Infrastructure would become a PO, having coverage of 10.6%. However, the threshold of 10% was selected as a proxy for the breakpoint between those operators that could provide a national constraint and those that would not, based on their business model being focused narrowly. Udata Infrastructure focuses on supplying public sector organisations only. This is evidenced by the fact that even though it is present in exchanges covering 10.6% of DPs, its customer base consists of well below 0.1% market share. Other than Udata, all the operators previously defined as POs have at least 50% coverage.
- A10.22 We propose that all the POs defined in the last review should continue to be considered as POs but that Udata Infrastructure should not. We discuss in paragraphs 3.245 to 3.251 of this Consultation why we do not consider Udata Infrastructure to be a PO. The principal LLU operators considered in this review are therefore five: TalkTalk, Sky, Orange, O2, and Cable & Wireless Access.
- A10.23 Table A10.8 below outlines the increase in coverage expected to June 2010 by the Principal LLU Operators. This represents the combined coverage of these operators. Ofcom analysis predicts minor increases in coverage for the Principal LLU operators during the first four months of its forecast time period, with Principal LLU operators being present in 1,806 exchanges, covering 83% of the UK premises. The forecasted LLU roll out remains low, between January and June 2010, with Principal LLU operators offering services in another 125 of BT's exchanges, increasing the combined coverage to 85% of UK premises.

Table A10.8: Current and forecast delivery point coverage for the Principal LLU operators

	Sep-09	Jan-10	Jun-10
Coverage	83%	83%	85%
No. exchanges	1,796	1,806	1,931

- A10.24 Figure A10.9 below shows the 1,931 exchange areas where Principal LLU operators are forecast to be present at the end of June 2010.

Figure A10.9: Exchange areas enabled by Principal LLU operators (based on forecast data up to January 2010)



The Principal Operators

A10.25 If BT and Virgin Media are added to the Principal LLU Operators then there is a total of 7 Principal Operators (POs) upon which our geographic market assessment is based.

A10.26 Table A10.10 provides a breakdown of the number of exchanges (and the percentage of home/business they cover) by the number of the POs within each exchange footprint. As mentioned before, Ofcom has used data at three points in time to inform its geographic market definition: actual data from September 2009 and forecast data for January and June 2010.

Table A10.10: Exchange breakdown by number of operators in exchange footprint

Number of POs	Sep 09		Jan 10		Jun 10	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
BT only	3,710	16.4%	3,701	16.1%	3,578	14.3%
2	386	6.6%	378	6.1%	479	7.5%
3	228	6.5%	224	6.1%	243	6.5%
4	250	8.5%	253	8.7%	256	8.8%
5	283	12.4%	296	12.9%	296	12.9%
6	340	20.7%	343	21.0%	343	21.0%
7	390	28.9%	392	29.1%	392	29.1%

Grouping exchanges

A10.27 As discussed in Section 4, we have created three groupings of exchanges using the number of POs providing services from the exchange: BT only, 2 or 3 operators, 4 or more operators. The size of these groups and their respective UK delivery point coverage, based on the current data (September 2009) and forecast data from operators at January 2010 and June 2010, are provided in Table A10.11.

Table A10.11: Three exchange groups using the number of POs within each exchange footprint

Number of POs	Sep 09		Jan 10		Jun 10	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
BT only	3,710	16.4%	3,701	16.1%	3,578	14.3%
2 or 3	614	13.1%	602	12.1%	722	13.9%
4 or more	1263	70.6%	1284	71.7%	1287	71.8%

A10.28 Based on the forward looking part of the analysis we consider it necessary to use the number of POs forecast to be present by June 2010. We identify the geographic markets shown in Table A10.12.

Table A10.12: Geographic market definition (excluding the Hull area)

Market	No. Exchs	Coverage ¹¹⁹

¹¹⁹ Coverage figures are referred to the UK Delivery points (excluding Hull)

BT only exchanges	3,578	14.3%
Exchanges with 2 or 3 POs (June 2010 forecast)	722	13.9%
Exchanges with 4 or more POs (June 2010 forecast)	1,287	71.8%

Wholesale broadband access markets

A10.29 We can now include the Hull area to establish a complete list of the markets as shown in Table A10.13 below, taking into account the rollout forecast for June 2010.

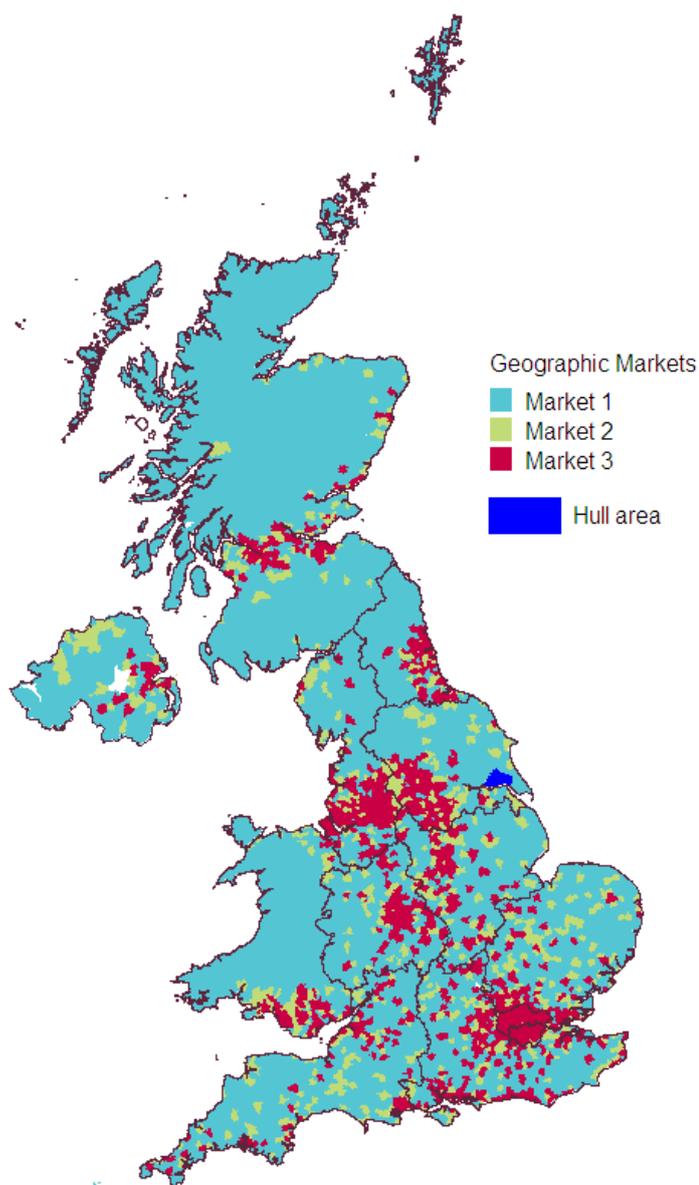
Table A10.13: WBA proposed geographic market definition (including the Hull area)

Market	No. Exchs	Coverage ¹²⁰
KCOM only exchanges	14	0.7%
BT only exchanges	3,578	14.2%
Exchanges with 2 or 3 POs (June 2010 forecast)	722	13.8%
Exchanges with 4 or more POs (June 2010 forecast)	1,287	71.3%

A10.30 Figure A10.14 shows the geographic markets on a map.

¹²⁰ Coverage figures are referred to the UK Delivery points

Figure A10.14: Exchange areas in the Market 1, Market 2, Market 3 and Hull area



Sensitivity analysis

A10.31 In order to identify the geographic markets it has been necessary for us to make a number of judgements in identifying clear and unambiguous criteria for delineating the proposed market boundaries. In particular, the number of POs in an exchange (either 1, 2 and 3, or 4 and more), the amount of cable overlap required within an exchange footprint (65% or more) and whether the exchange size factor (10,000) used in the previous market review remains relevant. The tables below show how sensitive the geographic market definition is to changes in these parameters. The market coverage percentages are calculated using the number of delivery points in the UK (excluding the Hull area).

Table A10.15: Sensitivity to changes in the minimum number of suppliers required in an exchange footprint

	min POs = 3		min POs = 4		min POs = 5		min POs = 6	
	No. Exchs	% DPs						
Market 1	3,578	14.2%	3,578	14.2%	3,578	14.2%	3,578	14.2%
Market 2	479	7.4%	722	13.8%	978	22.5%	1,274	35.4%
Market 3	1,530	77.7%	1,287	71.3%	1,031	62.6%	735	49.8%

A10.32 Changes in the minimum number of POs required being present in Market 3 only affects Market 2 and Market 3. As the number of POs required increases, Market 3 becomes smaller, with exchanges moving to Market 2, and vice versa. Between values of 3 and 6, the largest variation in the size of any one market is 28%.

Table A10.16: Sensitivity to changes in the minimum cable delivery points coverage required in an exchange area

	Overlap > 55%		Overlap > 65%		Overlap > 75%		Overlap > 85%	
	No. Exchs	% DPs						
Market 1	3,555	13.9%	3,578	14.2%	3,604	14.5%	3,634	14.8%
Market 2	724	13.6%	722	13.8%	727	14.3%	722	15.0%
Market 3	1,308	71.9%	1,287	71.3%	1,256	70.5%	1,231	69.6%

A10.33 Change in the minimum cable overlap value has an effect on all the three markets. Particularly, a lower overlap threshold will shift more exchanges from Market 1 to Market 2 and Market 3, and vice versa. Between minimum overlap values of 55% and 85%, the largest variation in the size of any one market is about 2.3%.

A10.34 In the last market review we included a DP coverage criterion for exchanges where the forecast data suggested that the number of POs present would exceed the upper limit of Market 2 (being 3 POs). In particular we suggested that exchanges where 4 or more POs were expected to roll out service would be part of Market 3 only if they covered more than 10,000 premises.

A10.35 We have now considered the impact of not including the exchange size in our analysis. By removing the criterion that exchanges with four or more POs forecasted but that are less than 10,000 DPs are classified as Market 2, only eight exchanges are impacted (these exchanges have now moved to Market 3). These eight exchanges cover 61,816 DPs, or 0.22% of the UK, while the median exchange coverage is 7,899 premises.

Table A10.17: Impact of the exchange size criterion on the sizes of the geographic markets

	No min exchange size		min exchange size = 10,000 DPs	
	No. Exchs	% DPs	No. Exchs	% DPs
Market 1	3,578	14.2%	3,578	14.2%
Market 2	722	13.8%	730	14.1%
Market 3	1,287	71.3%	1,279	71.1%

A10.36 We included this criterion in the last review because rollout was less mature at that time. Forecasts from POs constituted a significant element of the LLU presence we took into account in defining the market boundaries. However, there was the possibility that an operator may not implement that forecast due to the rollout of other operators. An operator may have forecasted deployment in an exchange but if, prior to its commitment, other operators had rolled out in that exchange, the economics may become unfavourable. It was our view that the smaller exchanges were particularly sensitive to this effect and, as such, we introduced the exchange size as a factor in the forecasted data.

A10.37 Now however, forecasted rollout is much more limited. The LLU Operators that have provided forecasts to us show a very limited rollout only until June 2010. There is, in our view, a much reduced likelihood that these forecasted deployments do not occur.

A10.38 Taking this into account, and the very limited number of exchanges that would be affected, we propose to remove the criteria related to exchange size in defining the geographic market boundaries.

Comparison between current (May 2008) and proposed market definitions

A10.39 Table A10.18 gives a comparison of the market definitions (expressed in number of exchanges and percentage of delivery points) between the current geographic markets (as defined in the May 2008 WBA statement) and the markets proposed in this consultation. The table shows that the coverage of Market 1 is reduced by 2.6%, while Market 3 has increased its coverage by almost the same UK DP percentage (2.5%). With the proposed market definition, Market 2 is covering 52 more exchanges, but this accounts for a marginal 0.1% increase in DP coverage.

Table A10.18: Comparison between current (May 2008) and proposed market definitions

	Current (May 2008) markets		Proposed markets	
	Exchanges	Coverage ¹²¹	Exchanges	Coverage
Market 1	3,720	16.9%	3,578	14.3%
Market 2	670	13.8%	722	13.9%
Market 3	1,197	69.3%	1,287	71.8%

A10.40 Table A10.19 shows how these changes materialise at the exchange level. Overall, a total of 5,283 exchanges remain in the same markets. They cover 92.55% of the total UK delivery points (excluding the Hull area).

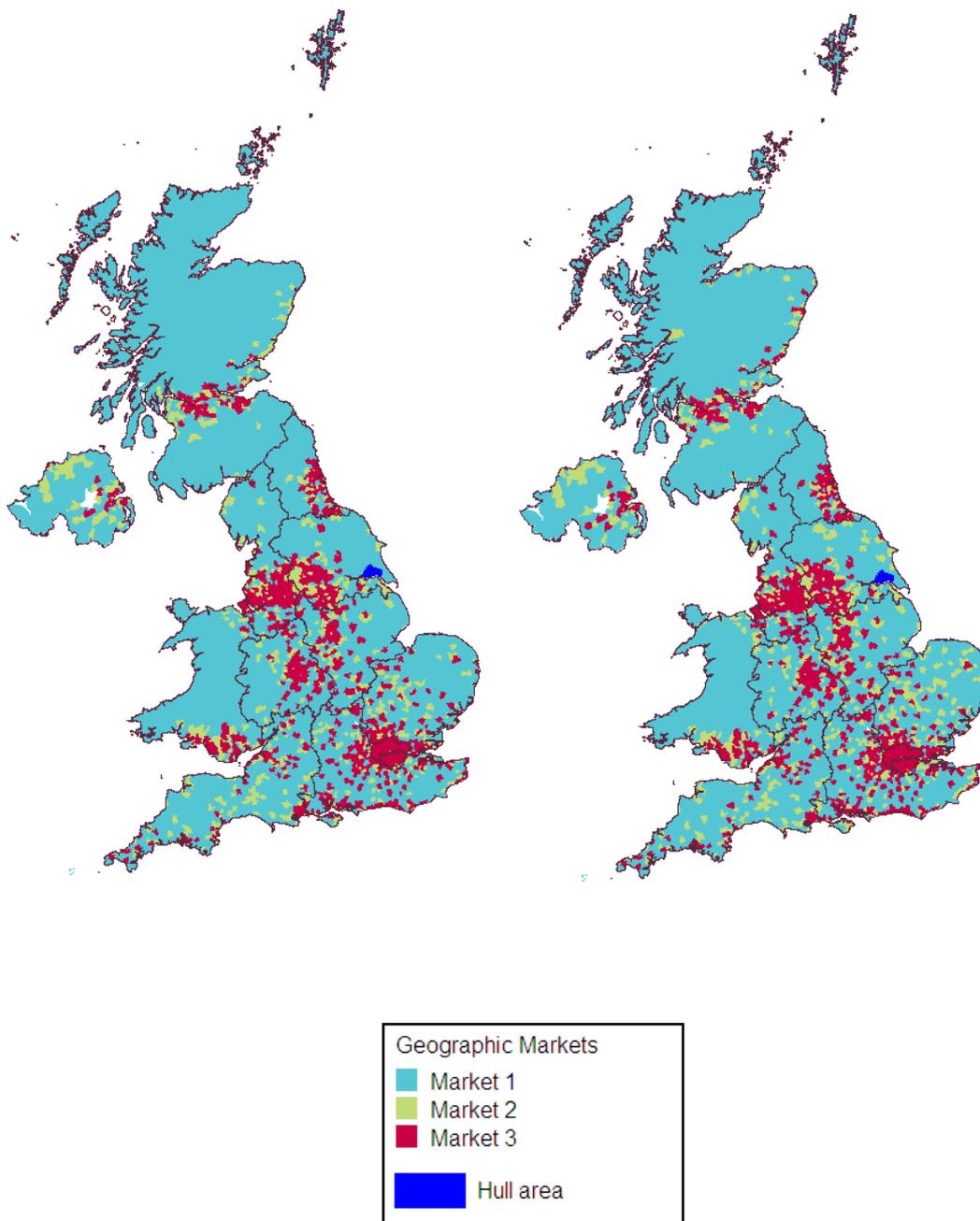
¹²¹ Any variation from information presented in the 2008 WBA review are due to updates in the underlying OS data we have used to plot the markets.

Table A10.19: Variation of market definition at the exchange level

	No. Exchanges	% DPs
No change in market	5,283	92.55%
Market 1 unchanged	3,566	14.08%
Market 2 unchanged	544	10.15%
Market 3 unchanged	1,173	68.32%
Market 1 to Market 2	154	2.87%
Market 1 to Market 3	-	0.00%
Market 2 to Market 1	12	0.19%
Market 2 to Market 3	114	3.48%
Market 3 to Market 1	-	0.00%
Market 3 to Market 2	24	0.92%
Total	5,587	100%

- A10.41 The few cases where exchanges have moved to a less competitive market (from Market 2 to Market 1 or from Market 3 to Market 2) are explained by two main factors. First, the definitions in the last review included forecast rollout. Where this has not occurred, the number of POs present in an exchange will be smaller than it was forecast at the time of the last review. The second factor would be the acquisition of Tiscali by TalkTalk which could have resulted in exchanges where there were four present or forecast POs, and two of these were TalkTalk and Tiscali, having only three POs. We note that both of these effects, when taken together, result in a very minor shift of exchanges into less competitive markets.
- A10.42 Figure A10.20 makes a visual comparison between the market areas as presently defined and the ones proposed in this consultation. From this figure it becomes evident that rollout of broadband services has now matured, leading to limited changes in the markets.

Figure A10.20: Geographic markets comparison between current and proposed market definitions



Annex 11

Distribution and evolution of service shares

A11.1 In the 2008 WBA market review statement, we included data on BT's share of WBA services in Market 2 and Market 3 at the exchange level, including how this had evolved between February 2007 and February 2008. The February 2008 information included both planned and forecast exchanges. This data was presented in response to the Commission's comments letter on our Notification of our geographic market definition. As well as the letter the Commission provided some general guidance for all NRAs when conducting this type of assessment. In particular, the Commission made the following statement:

"As regards the definition of sub-national markets, the Commission considers that a geographic delineation which is primarily based on the number of operators present in a local exchange is not by itself sufficiently detailed or robust to identify real differences in competitive conditions for the purposes of market definition. In assessing whether conditions of competition within a geographic area are similar or sufficiently homogenous, additional structural and behavioural evidences is necessary.

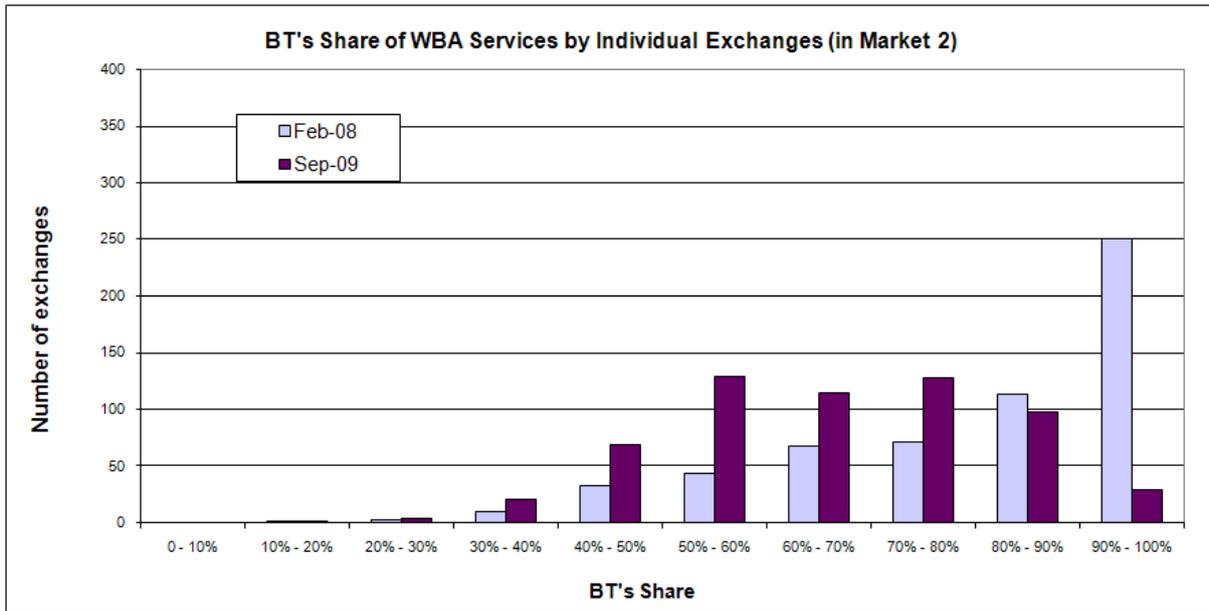
Relevant evidence would include information on the distribution of market shares and the evolution of shares over time. In addition, evidence of differential retail or wholesale pricing which might apply could help indicate different regional or local competitive pressure. It is also considered appropriate to look at the pricing of both the incumbent and alternative operators as well as its evolution over time in the relevant areas."¹²²

A11.2 In this Annex we present market share distribution information, based on information provide to us in September 2009. We also highlight changes since the last market review statement in February 2008.

A11.3 As of February 2008, there were 590 exchanges, of the 722 exchanges in Market 2 which already had two or three POs present. The evolution of BT's shares in these exchanges is shown in Figure A11.1 below.

¹²² Page 7

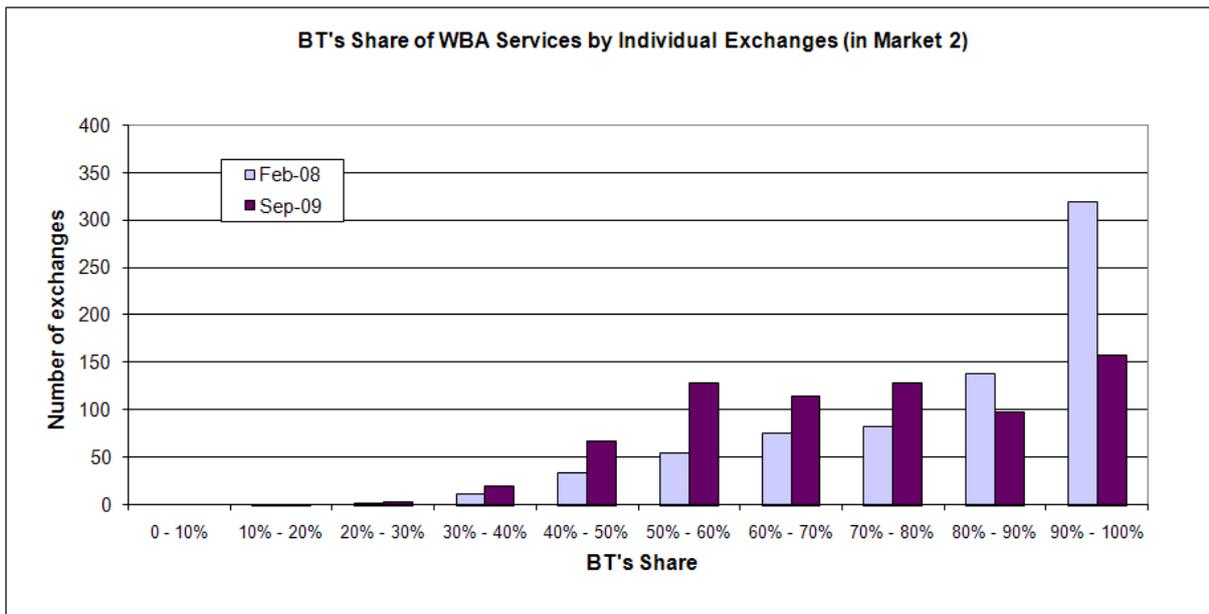
Figure A11.1: BT's share of WBA services at each of the 590 exchanges in Market 2 which had 2 or 3 POs present at the end of February 2008



A11.4 This shows BT's share reducing, on average. In particular, there is a reduction in exchanges where BT's share is over 90%. The other key feature shown in Figure A11.1 above is that in the vast majority of exchanges, BT's market share remains above 50% at the two points in time.

A11.5 In this review, taking account of additional deployments not forecasted at the time of the last review, and planned future deployments, we propose there are 722 exchanges in Market 2. Figure A11.2 below shows market share data in these 722 exchanges.

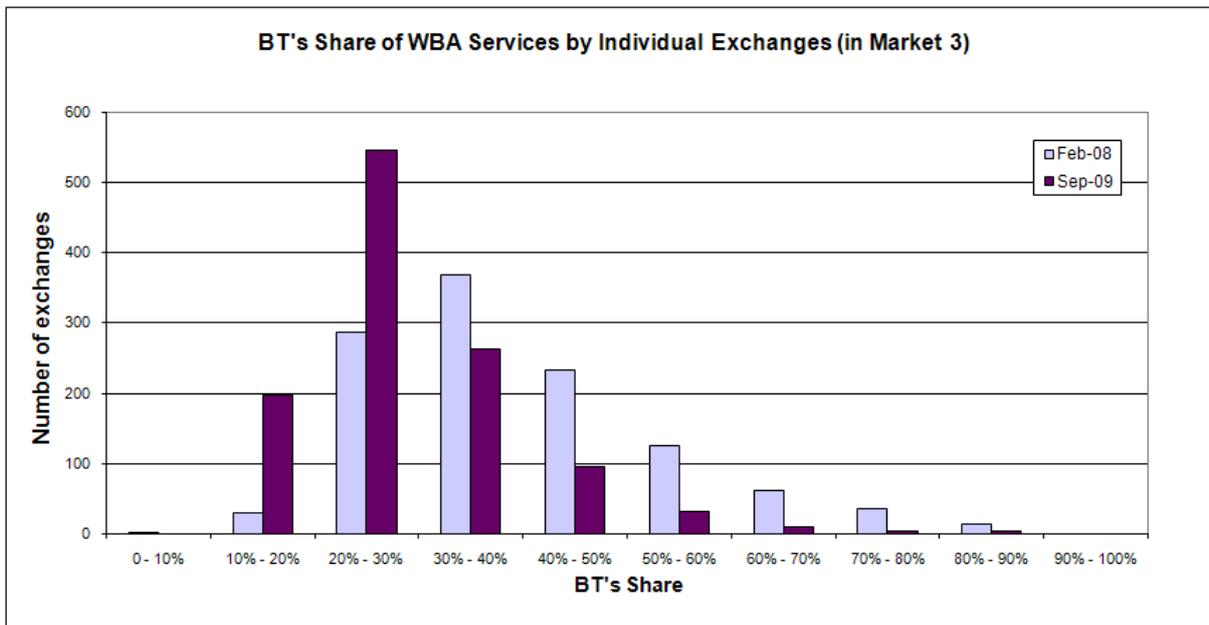
Figure A11.2: BT's share of WBA services at each of the 722 exchanges in Market 2



A11.6 This shows BT with a large number of exchanges where it has a market share of over 90% as per September 2009. This is due to forecast deployment in exchanges where BT is currently the only provider. We would therefore expect, as and when that deployment occurs, that the market shares would develop to be more reflective of those exchanges shown in Figure A11.1 for September 09 where LLU deployment had taken place earlier on (at least 18 months before).

A11.7 As of February 2008, there were 1151 exchanges, of the 1287 exchanges in the Market 3, which had four or more POs already present. The evolution of BT's shares in these exchanges is shown in Figure A11.3 below

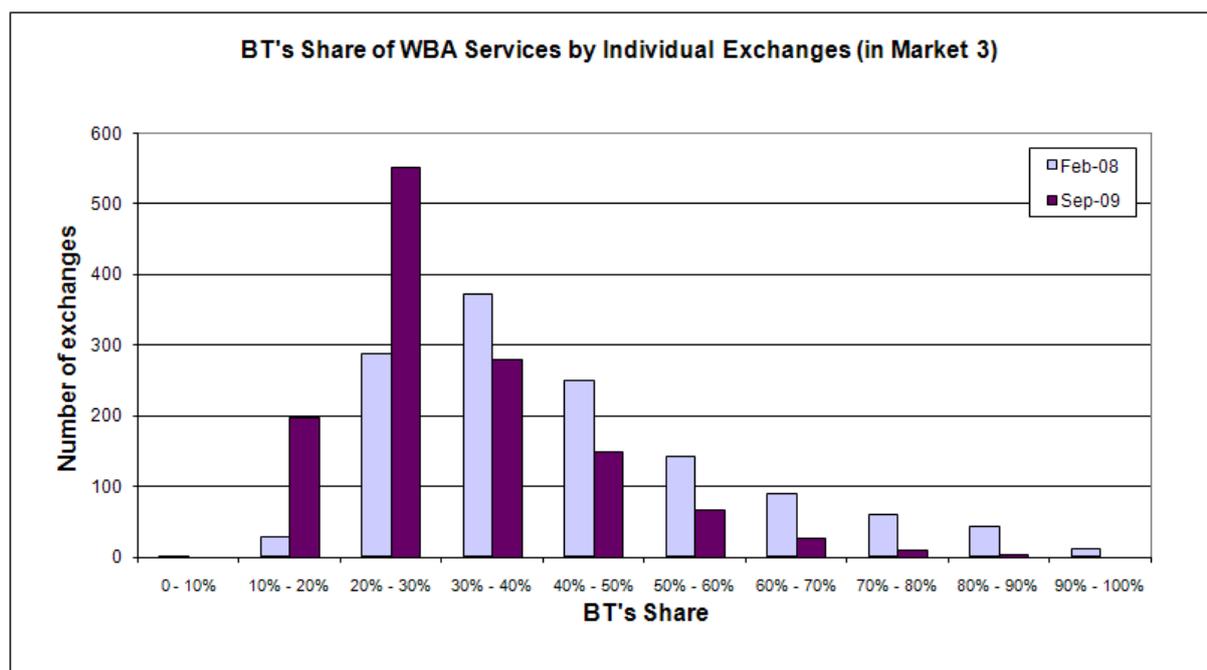
Figure A11.3: BT's share of WBA services at each of the 1151 exchanges in Market 3 which had 4 or more POs present at the end of February 2008



A11.8 This shows that in the majority of these exchanges, BT's share is less than 30% and there are very few exchanges where BT's share is over 50%.

A11.9 In this review, taking account of additional deployments not forecasted at the time of the last review, and planned future deployments, we propose there are 1287 exchanges in Market 3. Figure A11.4 below shows BT's share in these 1287 exchanges

Figure A11.4 BT's share of WBA services at each of the 1287 exchanges in Market 3



A11.10 This shows that the increase in exchanges in Market 3 does not materially affect the overall market share distribution, although there are a few more exchanges where BT's share is higher. This is because deployment in these exchanges is forecast or may have been relatively recent and the full effects are still developing.

A11.11 It is clear from Figures A11.1 to A11.4 that there are significant differences in market shares between where there are two and three operators (Market 2) and where there are four or more operators (Market 3).

Annex 12

Potential for future LLU rollout

Introduction

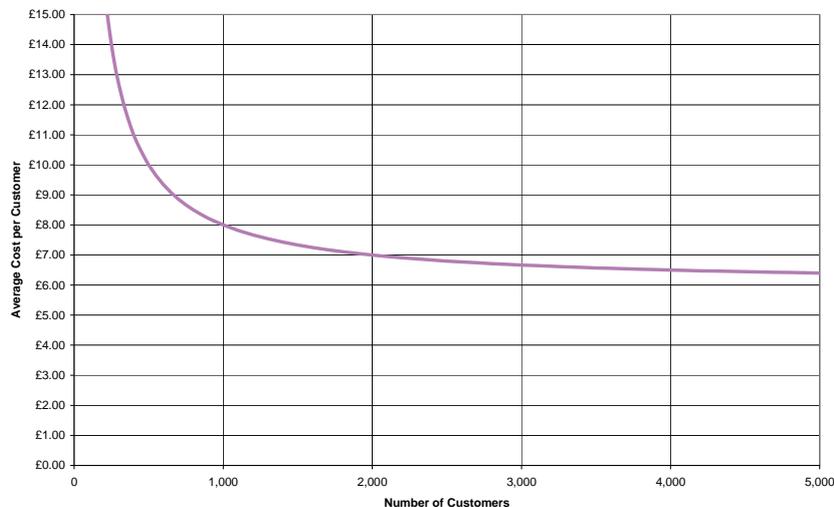
A12.1 This annex sets out a summary of our analysis of the potential for LLU rollout.

Economics of LLU

A12.2 LLU allows competing CPs to gain physical access to BT's copper local loops. However, to do this they are required to install and operate their own equipment in BT's local exchanges. In order to get complete coverage of the UK an LLU operator would thus need to install equipment in all of BT's local exchanges.

A12.3 However, there are certain fixed costs associated with unbundling each individual local exchange, regardless of its size. For example, space and power preparation, equipment purchase, equipment installation and backhaul installation. The existence of these fixed costs means that there is an economy of scale associated with each individual local exchange. Figure A12.1 shows a stylised cost function for local exchanges based on number of customers.

Figure A12.1: Stylised LLU cost function for local exchanges by number of customers



A12.4 This stylised cost function is intended to demonstrate how the cost per customer varies as a function of the number of customers served from a given local exchange. It should not be used as a reference to what the absolute level of the cost is. Whilst it is based on typical prices for backhaul, space and power and expected costs of equipment, each operator will have different costs due to:

- Different equipment prices, dependent on manufacturer and contract terms (such as volume purchase discounts, etc.)
- Different backhaul costs, depending on whether they use their own network or purchase capacity from another CP. BT provides backhaul as a regulated product, but prices vary based on bandwidth, distance, etc. In respect of BT provided backhaul, we note that prices have reduced since the last WBA market

review. We also note that the reductions for lower bandwidth services were less significant than for higher bandwidths. This means that in cases where LLU operators require lower backhaul bandwidth (where they serve fewer customers such as smaller exchanges or because they have a low market share), savings due to reduced bandwidth prices are much lower.

- Different space and power costs – Openreach offer a suite of space and power products that may affect the costs of LLU deployment. Whilst these allow LLU operators to pick from a range of products depending on the amount of equipment deployed, it is likely to be more efficient to buy larger footprints where these can be filled (e.g. in larger exchanges).

A12.5 The cost function shown in Figure A12.1 has two key features:

- The average cost per customer is higher when fewer customers are being served and this is because the fixed costs associated with unbundling the local exchange are being shared across a smaller group of customers.
- The average cost per customer is much more sensitive to changes in the number of customers being served when fewer customers are being served. For example, a 50% reduction in customers from 1,000 to 500 will increase the average cost per customer by about four times as much as a 50% reduction in customers from 4,000 to 2,000.

A12.6 The second feature is important because of its implications for the ability of a given LLU operator to achieve a certain number of customers at a given local exchange. This is dependent on three parameters:

- Total number of premises served by the exchange
- Service penetration (e.g. how many of the total premises actually purchase broadband)
- The operator's expected market share

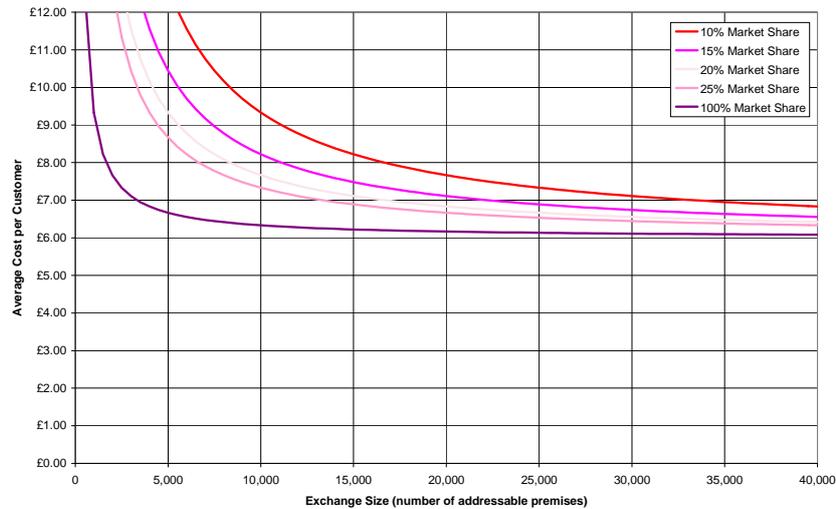
A12.7 Where the number of premises served by the exchange reduces, for a given market share and penetration an operator will obviously have fewer customers.

A12.8 For example, if the service penetration is 60% and the operator has a market share of 20%, then in an exchange with 20,000 addressable premises the operator will have 2,400 customers whereas in an exchange with 5,000 addressable premises the operator will only have 600 customers. Referring to Figure [A12.1] it is apparent that the cost per customer will be much higher in the smaller exchange.

A12.9 Conversely, with the same service penetration and exchange sizes, if the operator has a market share of 100% (i.e. it is the monopolist) then it would have 12,000 customers in the larger exchange and 3,000 customers in the smaller exchange. Again highlighting a higher cost per customer in the smaller exchange.

A12.10 For a given service penetration we can therefore plot the cost per customer as a function of exchange size and market share and this is shown in Figure A12.2. We have used a service penetration of 60% to calculate Figure A12.2, but note that penetration of broadband in the UK is now around 63%.

Figure A12.2: Stylised LLU cost functions, as a function of exchange size and market share¹²³



- A12.11 In Market 1 the average exchange size serves 1,124 customer premises, whilst in areas with two or three POs (as per the definition of Market 2 in the last review) the number rises to 5,445 and in Market 3 to 15,734.
- A12.12 On average, exchanges with two POs serve just under 4,500 customer premises, whilst exchanges with three POs serve around 7,500 customer premises. Exchanges with four POs serve, on average, around 10,000 DPs. Figure A12.2 above shows that both the absolute cost and the sensitivity to changes in market share (and therefore end customers connected) are already beginning to increase where an exchange serves 10,000 customers.
- A12.13 In order to deploy LLU in exchanges with fewer than 10,000 DPs (e.g. the exchanges with two or three POs currently), the market share that the PO expects to achieve would need to be high to justify investment. This means that the opportunity for multiple POs to invest is more limited.
- A12.14 There is also a higher risk attached to the investment because if a PO does not achieve its forecasted market share, the average cost per customer will increase more than in the larger exchanges.
- A12.15 There are approximately 1000 exchanges that serve greater than 10,000 premises¹²⁴. Our analysis of current and planned rollout to June 2010 shows 1287 exchanges with four or more POs present. Whilst these will not necessarily be the 1287 largest exchanges in the country, it is reasonable to assume that the very large majority of the exchanges with four or more POs will be the largest exchanges. The 1287th largest exchange in the UK serves around 7370 premises. Therefore, consistent with the analysis above, it is likely that the exchanges with fewer than four POs (current or planned) are likely to be those exchanges with fewer than 10,000 customer premises and, as such the costs per user are likely to be higher and more sensitive to market share than those exchanges where there are currently four or more providers.

¹²³ These stylised cost functions are intended to demonstrate how the cost per customer varies as a function of the exchange size and market share. They should not be used as a reference to what the absolute level of the cost is.

¹²⁴ Source: Openreach S.135 response

Annex 13

Glossary

21CN: BT's next generation network upgrade.

Access Network: The part of the network that connects directly to customers from the local telephone exchange.

ADSL (Asymmetric Digital Subscriber Line): a digital technology that allows the local loop to send a large quantity of data in one direction and a lesser quantity in the other.

Backhaul: Connection from the first access node (for example the local exchange or street cabinet) to the core network.

Bandwidth: The measure of the how much data can be carried across a link in the network.

Broadband: a service or connection which is capable of supporting always-on services which provide the end-user with high data transfer speeds.

BT: British Telecommunications plc.

Business Connectivity Market Review (BCMR): An Ofcom market review published in July 2008, in which Ofcom set out our view of competition and imposed regulation in relation to the market for leased lines in the UK.

Cable modem: a cable modem is a device that enables a consumer to access the Internet via a cable access line.

Core network: The backbone of a communications network, which carries different services such as voice or data around the country.

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

DOCSIS (Data Over Cable Service Interface Specification): The international standards for sending data over a cable network

DSL (Digital Subscriber Line): a family of technologies generically referred to as DSL, or xDSL, capable of transforming ordinary local loops into high-speed digital lines, capable of supporting advanced services such as fast Internet access and video-on-demand. ADSL (Asymmetric Digital Subscriber Line), HDSL (High bit rate Digital Subscriber Line) and VDSL (Very high data rate Digital Subscriber Line) are all variants of xDSL.

DSLAM (Digital Subscriber Loop Access Multiplexer): apparatus used to terminate DSL enabled local loops, which comprises a bank of DSL modems and a multiplexer which combines many local loops into one data path.

ERG (European Regulators Group): A group of national regulators within Europe of which Ofcom is a member.

Fibre To The Cabinet (FTTC): An access network structure in which an optical fibre extends from the exchange to the cabinet. The street cabinet is usually located only a few hundred metres from the subscriber's premises. The remaining part of the access network

from the cabinet to the customer is usually copper wire but could use another technology, such as wireless.

Fibre To The Premises (FTTP): An access network structure in which the optical fibre network runs from the local exchange to the end user's house or business premise. The optical fibre may be point-to-point – there is one dedicated fibre connection for each home – or may use a shared infrastructure such as a GPON. Sometimes also referred to as Fibre To The Home (FTTH).

GPON (Gigabit Passive Optical Network): A shared fibre network architecture that can be used for next generation access.

Hull Area: the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM plc (formerly Kingston Communications (Hull) plc).

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

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

IPStream: A BT Wholesale Broadband Access product, offering maximum downstream speeds of up to 8Mbit/s.

Integrated services digital network (ISDN): a set of communications standards for digital transmission of voice, video, data, and other network services over the traditional circuits of the PSTN.

ISDN2: Integrated Service Digital Network standard, providing a connection to the end customer (usually over a copper access network) comprising two 64kbit/s digital channels.

KCOM: KCOM plc (formerly Kingston Communications (Hull) PLC).

Local loop: the access network connection between the customer's premises and the local serving exchange, usually comprised of two copper wires twisted together.

Local loop unbundling (LLU): a process by which a dominant provider's local loops are physically disconnected from its network and connected to competing provider's networks. This enables operators other than the incumbent to use the local loop to provide services directly to customers.

Main distribution frame (MDF)/unbundled local loop: the equipment where local loops terminate and cross connection to competing providers' equipment can be made by flexible jumpers.

Metallic Path Facilities (MPF): the provision of access to the copper wires from the customer premises to a BT MDF that covers the full available frequency range, including both narrowband and broadband channels, allowing a competing provider to provide the customer with both voice and/or data services over such copper wires.

Modem: abbreviation of modulate-demodulate, a device that converts a digital signal into analogue for transmission purposes. It also receives analogue transmissions and converts them back to digital.

Narrowband: a service or connection that provides a maximum speed of up to 64kbit/s per circuit (and therefore up to 128kbit/s in the case of ISDN2). Narrowband modems generally offer a maximum rate of 56kbit/s.

NGA (Next Generation Access): New or upgraded access networks that will allow substantial improvements in broadband speeds and quality of service compared to today's services. This can be based on a number of technologies including cable, fixed wireless and mobile. Most often used to refer to networks using fibre optic technology.

NGN (Next Generation Network): A network that uses new (usually IP) technology in the core and backhaul to provide all services over a single platform.

PSTN: Public Switched Telephone Network

Shared metallic path facility (SMPF)/shared access: the provision of access to the copper wires from the customer's premises to a BT MDF that allows a competing provider to provide the customer with broadband services, while the dominant provider continues to provide the customer with conventional narrowband communications.

Traffic shaping: When certain types of packets are given priority as they pass through the network, or when customers connection speed is managed to take account of the level of demand on the network..

VDSL (Very high bitrate DSL): An upgrade to ADSL technology which allows for higher speed access over copper lines. It is likely to be the technology which will be used in FTTC deployments.

Wholesale Broadband Connect (WBC): A BT Wholesale Broadband Access product, using ADSL2+ technology to offer maximum downstream speeds of up to 24Mbit/s.

WiFi: Short range wireless technologies that allow an over-the-air connection between a wireless device and a base station, or between two wireless devices. WiFi has a range of over 30 metres indoors, and around a kilometre outside.

WiMax (the Worldwide Interoperability for Microwave access): A wireless technology, similar to WiFi, but with a longer range which can cover many kilometres. WiMAX has been considered as a wireless alternative to fixed access connections to provide high speed access links instead of using copper to properties.