



Review of the wholesale broadband access markets 2006/07

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

Explanatory Statement and Notification

Consultation

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Section 1

Summary

Introduction

- 1.1 Broadband plays a central role in communications. It is now used by many consumers and businesses to keep in touch, access information and conduct business. Developments in technology have seen broadband reaching the majority of households and businesses in the UK and this has been reflected in widespread take-up (there are now more than 14.5 million broadband connections in the UK). Competition, meanwhile, has seen service providers differentiating in terms of price, speed, quality and in terms of product bundles. For instance, some providers sell broadband in conjunction with basic telephony and/or television services. A healthy retail market is however dependent on a competitive wholesale market or regulation where competition is not yet sufficient. Ofcom needs to ensure therefore that the regulatory framework at the wholesale level is appropriate given the prevailing conditions. This review aims to do that.
- 1.2 Competition in the provision of retail broadband services depends on service providers having access to wholesale broadband services or local loop unbundling (LLU) to build their own services. Ofcom has identified that competition between networks based on LLU, rather than competition based on wholesale broadband products, is crucial to maintaining the UK's broadband progress. Promoting competition based on LLU continues to be central to Ofcom's approach in making sure that consumers can access the services they demand.
- 1.3 LLU is not, however, economically viable on a national basis. This means that in some geographic areas there will not 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. Conversely, in areas which benefit from competition between networks, Ofcom must seek to remove unnecessary regulation.

The November consultation

- 1.4 On 21 November 2006, Ofcom published the consultation document entitled Review of the wholesale broadband access markets 2006/07¹ ("the November consultation") in which it set out its initial views in relation to the definition of the relevant product and geographic markets, the existence of significant market power ("SMP") within those markets, and the regulatory remedies that should apply.
- 1.5 Ofcom's initial view was that the relevant product market could be 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.

¹ <http://www.ofcom.org.uk/consult/condocs/wbamr/wbamr.pdf>

- 1.6 In terms of the geographic market, Ofcom considered that there were four distinct geographic markets in which competitive conditions within each were broadly similar. The competitive conditions between the markets were, however, distinct. The four markets were:
- i) those geographic areas covered by exchanges where KCOM² is the only operator (“the Hull area”);
 - ii) those geographic areas covered by exchanges where BT is the only operator (“Market 1”);
 - iii) those geographic areas covered by exchanges where there are 2 or 3 Principal Operators AND exchanges where there are 4 or more Principal Operators but where the exchange serves less than 10,000 premises (“Market 2”); and
 - iv) those geographic areas covered by exchanges where there are 4 or more Principal Operators and where the exchange serves 10,000 or more premises (“Market 3”).
- 1.7 In terms of its SMP assessment, Ofcom considered that KCOM had SMP in the Hull area and that BT had SMP in Market 1 and, separately, in Market 2. However, in light of the rapidly changing competitive conditions and given the fact that Ofcom was planning a second consultation Ofcom did not believe that it was appropriate or necessary to reach a firm conclusion on the existence or otherwise of SMP in Market 3.
- 1.8 As a result of its SMP assessment in relation to the Hull area, Market 1 and, separately, Market 2 Ofcom proposed to impose the following regulatory remedies in each market:
- requirement to provide Network Access on reasonable request;
 - requirement not to discriminate unduly;
 - requirement to publish a reference offer;
 - requirement to notify terms and conditions;
 - requirement to publish technical information; and
 - requirement to have accounting separation.
- 1.9 Ofcom invited comments on its views in relation to the product and geographic market definitions, its assessment of SMP, and the regulatory remedies proposed. Ofcom received 30 responses, 7 of which were confidential.

Respondents' views

- 1.10 Respondents' views were mixed. A number of respondents suggested that there was no compelling evidence that markets were sub-national and some considered that the market review was premature. Other respondents, however, were supportive of the finding of sub-national markets. There were wide-ranging views on the appropriateness of the product market definition. A number of respondents

² KCOM Group PLC previously named Kingston Communications (Hull) PLC

suggested that symmetric services should be included. Other respondents suggested that residential and large business customers might be in separate markets.

- 1.11 Respondents also disagreed about the competitive conditions in Market 3. A number stated that BT retained SMP in the market and that it should be required to provide wholesale broadband services. They argued that the withdrawal of regulatory obligations might prove detrimental to the retail broadband market. BT, on the other hand, stated that the market was competitive on a forward-looking basis and that no one possessed SMP in Market 3. BT stated that regulation should therefore be removed.
- 1.12 In terms of Markets 1 and 2, there was broad agreement that BT retained SMP. There was not, however, broad agreement on the regulatory remedies proposed. A number of respondents stated that price controls and/or cost orientation requirements should be imposed. BT took the opposite view.
- 1.13 Ofcom's assessment of the geographic nature of the market in Hull or the existence of SMP was not questioned. KCOM accepted that both the market definition and SMP assessment were appropriate. It did not consider, however, that the regulatory remedies proposed were appropriate. It argued that the threat of entry acted as a sufficient constraint on its activities and that, in any case, it provided good quality broadband service at competitive prices. Ofcom did, however, receive a number of responses from residents of the Hull area who expressed dissatisfaction that their choice of broadband supplier was limited, unlike the rest of the UK.

The Hull area, Market 1 and Market 2

- 1.14 Ofcom has not made any fundamental changes to the proposals set out in the November consultation in relation to the Hull area, Market 1 and Market 2. Some exchanges have, however, moved between Markets due to the fact that Ofcom based its geographic analysis on the most recent data sets and on a new forecast date. The effect of this is material only to the exchanges that have moved to or from Market 3 which, as explained below, Ofcom considers to be a market in which no operator has SMP. Ofcom has, however, decided that it is appropriate to propose an additional SMP services condition in the Hull area, Market 1 and Market 2 in relation to the transparency as to the quality of service of Network Access.

Revocation of SMP regulation in Market 3

- 1.15 Ofcom has now assessed SMP in Market 3 and, as explained in Section 4, considers that no operator has SMP in the market on a forward-looking basis. Ofcom will therefore be required to revoke existing SMP regulation in Market 3. However, in order to ensure that disruptive effects do not occur on the relevant market, Ofcom is required by Article 16(3) of the Framework Directive to provide those affected by the revocation of sector-specific regulation with a period of notice. Ofcom considers that a period of notice of 12 months following the final statement is appropriate to this end and proposes to maintain the existing obligation to supply network access to existing customers of wholesale broadband access in place in Market 3 for this period.

BT's commitments

- 1.16 Separate to this review BT has made certain pricing commitments to the industry and Ofcom. These commitments are set out in two letters, dated 10 November 2006, which were sent to Ofcom. These letters are available on Ofcom's web site³.
- 1.17 One of these commitment letters relates to ceilings for future broadband pricing and in this letter BT commits to reducing the price of its wholesale broadband services, in all parts of the UK, year-on-year until the end of 2010. Also in this letter BT commits to supply wholesale broadband services and to not unduly discriminate, in all parts of the UK, until the end of 2008.
- 1.18 The other commitment letter relates to floors for future broadband pricing and in this letter BT commits to providing a period of stability to LLU by not introducing geographically targeted reductions, below a certain level, to its wholesale broadband prices.

Period covered by this review

- 1.19 When reviewing a market Ofcom is required to be forward looking and to consider likely future developments. In doing this Ofcom needs to decide the period that the review is expected to cover. Given the ongoing developments in this market and the time period covered by BT's ceiling pricing commitment Ofcom believes that this review should cover the period up to the end of 2010. Of course, if unexpected market developments occur which render the prevailing regulatory regime inappropriate then Ofcom has a duty to re-review the market at that time.

Consultation and market review timetable

- 1.20 Comments are sought on the proposals set out in this consultation document and the draft Notifications, which are set out at Annex 1, by 7 February 2008. Ofcom then intends to publish a statement with its final conclusions in June 2008.

Notification to the Commission

- 1.21 The formal Notification of Ofcom's proposals in relation to the relevant markets, the designation of SMP, and the regulatory remedies proposed is set out at Annex 1.
- 1.22 This document, including the Notification set out at Annex 1, has been sent to the European Commission in accordance with Article 7 of the Framework Directive and section 50 of the Act.

³ www.ofcom.org.uk/telecoms/ioi/bbpricing

Section 2

Introduction

The regulatory framework

- 2.1 The present regulatory framework for electronic communications networks and services entered into force on 25 July 2003. The framework is designed to create harmonised regulation across Europe and is aimed at reducing entry barriers and fostering prospects for effective competition to the benefit of consumers. The basis for the regulatory framework is five EU Communications Directives (together “the Directives”):
- Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (“Framework Directive”);
 - Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (“Access Directive”);
 - Directive 2002/20/EC on the authorisation of electronic communications networks and services (“Authorisation Directive”);
 - Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, (“Universal Service Directive”); and
 - Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector (“Privacy Directive”).
- 2.2 The Framework Directive, the Access Directive, the Authorisation Directive and the Universal Service Directive were implemented in the United Kingdom on 25 July 2003 via the Communications Act 2003 (“the Act”). The Privacy Directive was implemented by Regulation which came into force on 11 December 2003.
- 2.3 Article 16 of the Framework Directive requires each national regulatory authority (NRA) to carry out an analysis of the relevant markets as soon as possible after the adoption of the recommendation on relevant product and service markets (“the Recommendation”) or any updating thereof.
- 2.4 The Commission adopted the first edition of the Recommendation on 11 February 2003⁴ and Ofcom therefore carried out a review of wholesale broadband access markets in 2003/04 with the final statement published on 13 May 2004 (“the 2003/04 Review”).
- 2.5 The Commission has recently completed a review of the Recommendation and on 13 November 2007 published a second edition⁵. In addition the Commission has

⁴ (2003/311/EC) Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services

⁵ C(2007) 5406 rev 1 Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (second edition)

provided a revised explanatory note to the Recommendation (“the Explanatory Memorandum”)⁶.

2.6 In accordance with Article 16 of the Framework Directive Ofcom is therefore carrying out an analysis of the wholesale broadband access market – market 5 (previously market 12). In any event Ofcom considers that there has been a change in the competitive conditions in the wholesale broadband markets in the UK and, therefore, the current market definitions and regulatory remedies may no longer be appropriate and may need revising. Ofcom therefore considers that it should undertake a review of the wholesale broadband access market.

2.7 This is consistent with the Access Directive which states that market analyses should be carried out periodically and also consistent with Ofcom’s duties under the Act and, in particular, Section 84(2)(b) of the Act which states that:

“Ofcom must, at such intervals as they consider appropriate, carry out further analyses of the identified market...to make proposals for the modification of SMP conditions.”

The market review process

2.8 Each market review has three parts:

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

2.9 More detailed requirements and guidance concerning the conduct of market reviews are provided in the Directives, the Act, and in additional documents issued by the Commission, the European Regulators Group (ERG) and the Independent Regulators Group (IRG). As required by the new regime, in conducting this review, Ofcom has taken the utmost account of two European Commission documents: the Recommendation and the “Guidelines on market analysis and the assessment of SMP”⁷ (the SMP Guidelines).

2.10 The Commission identified in the Recommendation a set of markets in which *ex-ante* regulation might be warranted. The Recommendation seeks to promote harmonisation across the European Community by ensuring that the same product and service markets are subject to a market analysis in all Member States. NRAs can define relevant markets appropriate to national circumstances, provided that the utmost account is taken of the product markets listed in the Recommendation. In the United Kingdom, Section 79 of the Act implements this provision in relation to a determination of market power by Ofcom.

⁶ SEC(2007) 1483 Commission Staff Working Document Explanatory Note Accompanying document to the Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (second edition)

⁷ 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)

The SMP Guidelines

- 2.11 The Commission issued the SMP Guidelines in July 2002 which provide guidance on the assessment of the relevant markets and the designation that an operator has SMP in any given market. Ofcom has produced additional guidelines on the criteria to assess effective competition based on the SMP Guidelines (see www.ofcom.org.uk/static/archive/ofcom/publications/about_ofcom/2002/smpg0802.htm).
- 2.12 Ofcom, in conducting its analysis of the wholesale broadband access market, has taken the utmost account of both the Recommendation and the SMP Guidelines when identifying a services market and when considering whether to make a market power determination under Section 79 of the Act.

The 2003/04 Review and existing regulation

- 2.13 Ofcom concluded in the 2003/04 Review that there were three economic wholesale markets in the UK and these were:
- i) asymmetric broadband origination in the UK (excluding Hull);
 - ii) asymmetric broadband origination in Hull; and
 - iii) broadband conveyance in the UK.
- 2.14 On the basis of its analyses of the operation of these markets, Ofcom concluded that BT had SMP in the markets for asymmetric broadband origination in the UK (excluding Hull) and the market for broadband conveyance. KCOM was found to have SMP in the market for asymmetric broadband origination in Hull.
- 2.15 Ofcom therefore set regulatory remedies which were considered appropriate to address the SMP of BT and KCOM in the relevant markets. These remedies were designed to ensure that other Communications Providers could purchase wholesale broadband access services from BT and KCOM on non-discriminatory terms, although the exact remedies imposed on BT and KCOM differed slightly.

The November consultation

- 2.16 In the 2003/04 Review Ofcom found separate economic markets for asymmetric broadband origination and broadband conveyance. Asymmetric broadband origination was defined as extending from the end-user's premises to the first suitable point of interconnection in the core network, whereas broadband conveyance was defined as conveyance of broadband traffic across the core network.
- 2.17 These market definitions were heavily influenced by the network topology, its underlying technology and the services that Communications Providers (CPs) were demanding at that time. However, as explained in the consultation document entitled Review of the wholesale broadband access markets 2006/07⁸ (the "November consultation"), Ofcom considers that each of these factors will change in the period covered by this review. Network topologies are expected to change from a service specific arrangement to a more converged arrangement. Technologies such as asynchronous transfer mode (ATM) are expected to be replaced by technologies such as Ethernet and internet protocol (IP), which are capable of providing much

⁸ <http://www.ofcom.org.uk/consult/condocs/wbamr/wbamr.pdf>

higher levels of control and quality and thus are able to support product differentiation. As a result of these developments Communications Providers are now demanding services that have a higher level of aggregation whilst still allowing differentiation, as opposed to network element based type services. Section 3 shows that there is also an increasing tendency to use wholesale products at different levels of the value chain in different geographic areas to support the provision of retail broadband internet access.

2.18 The combination of these developments has led Ofcom to conclude in Section 3 that it is no longer appropriate to have separate markets for origination and conveyance and to instead define a single wholesale broadband access product market being asymmetric broadband access and any backhaul as necessary to allow interconnection with other Communications Providers.

2.19 The 2003/04 Review also found that the economic markets for wholesale broadband origination and broadband conveyance were national in scope (excluding the Hull area). Ofcom noted, however, that these national markets had local characteristics, in that BT's two material competitors, at the time, provided services in their cable franchise areas only and that these did not overlap. The main reasons underpinning Ofcom's definitions of the relevant markets as national (excluding the Hull area) were:

- BT priced on a national basis at both the retail and the wholesale level (i.e. there was a common pricing constraint);
- the cable operators priced on a national basis, even though their cable franchise areas were in geographically distinct locations;
- Internet service providers (ISPs) designed and priced their products on a national basis; and
- available evidence on advertising practices, at the time, suggested that all operators in the broadband internet access market advertised on a national basis.

2.20 However, as explained in the November consultation, Ofcom considers that the previously identifiable common pricing constraint no longer exists at either the wholesale level or the retail level. The reasons for this are set out below.

2.21 At the wholesale level, from 1 April 2005, BT started offering discounts which it applied automatically to customers of its broadband products (DataStream and IPStream), at so-called qualifying exchanges (or "dense cells"). At the time BT classified 561 of its exchanges as qualifying and, in general, they are the ones that serve the most homes and businesses.

2.22 At the retail level, providers such as; AOL, Sky and TalkTalk, offer lower retail prices for broadband products in certain geographic areas (typically where they have rolled out their own broadband network or intend to do so). In addition, some operators offer broadband products for which the functionality varies by geographic area.

2.23 In addition, Ofcom considers that there is a strong probability that competition at the wholesale level will be stronger in some geographic areas than it will be in others. This is because the cost of rolling out a communications network is expensive and there are often significant variations in the cost per end-user between different geographies. Generally densely populated areas have a lower cost per end-user

compared with sparsely populated areas. The increased roll-out of LLU and the corresponding increase in competition in downstream markets is highlighting the presence of these cost differences. Ofcom has also been made aware of increasing entry into the wholesale merchant market for broadband services by LLU operators, with many operators saying that they intend to expand this activity.

- 2.24 For these reasons, as explained in the November consultation, Ofcom considers that it is necessary to carry out an analysis of competition in the provision of wholesale broadband access to understand whether the definitions of the relevant product and geographic markets, the assessment of SMP in those markets, and the need for regulatory remedies, has changed.
- 2.25 Ofcom's preliminary view, which was set out in the November consultation, was that there has been a noticeable change in competition in the provision of wholesale broadband services and that competition varies significantly by geographic area and that regulation needs to recognise this change.
- 2.26 Ofcom sought respondents' views on its analyses and, in particular, Ofcom was keen to hear comments on the precise definitions of the relevant economic markets, Ofcom's assessment of SMP within those markets and on the proposed remedies. Ofcom has taken respondents' views into account in setting out the proposals in this document. In addition, as explained in the November consultation, Ofcom had not at that point in time assessed whether or not BT had SMP in Market 3. Ofcom has now taken a view on this matter.

Outline of this document

- 2.27 The rest of this document is structured as follows:
- Section 3 Market Definition
 - Section 4 Market Power Assessment
 - Section 5 Regulatory Remedies
 - Section 6 Responding to this Consultation
 - Annex 1 Notification
 - Annex 2 Retail Marketing Information
 - Annex 3 Independent Consumer Information
 - Annex 4 Geographic Data Analysis
 - Annex 5 Assessment of January 2007 data
 - Annex 6 Impact Assessment
 - Annex 7 Alternative Broadband Technologies
 - Annex 8 Consumer Research
 - Annex 9 Ofcom's Consultation Principles

- Annex 10 Consultation Response Cover Sheet
- Annex 11 Consultation Questions
- Annex 12 Respondents to the November consultation
- Annex 13 Glossary

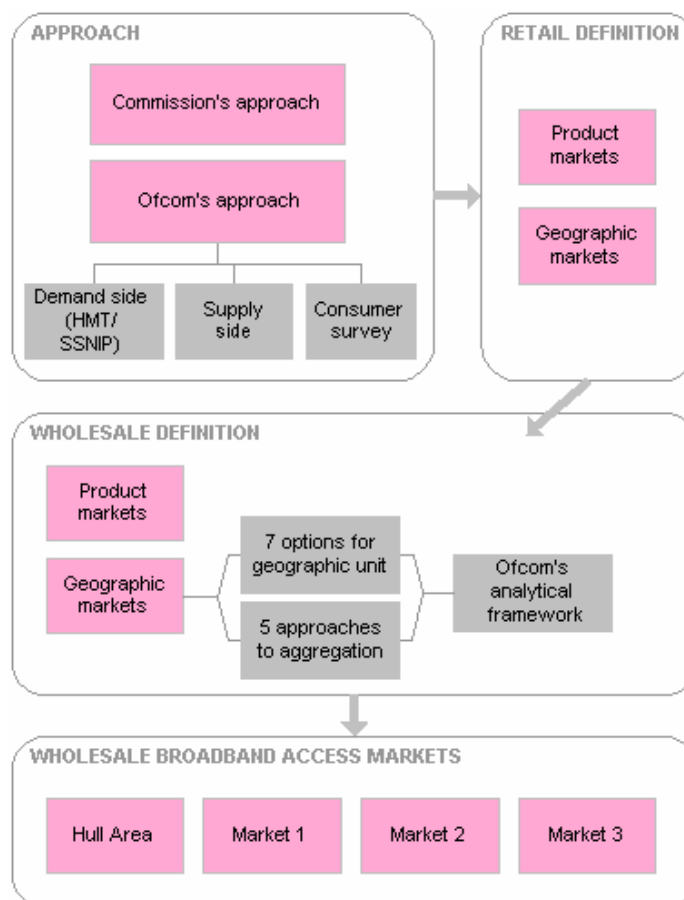
Section 3

Market Definition

Introduction

- 3.1 Section 79(1) of the Act provides that before making a market power determination Ofcom needs to define the relevant markets most appropriate to the market power determination that it proposes to make. In defining relevant markets, Ofcom is required to take the utmost account of all applicable guidelines and recommendations issued by the Commission and to issue a notification of its proposals. Once markets are appropriately defined Ofcom can then analyse the competitive conditions in those markets and identify appropriate remedies (if any).
- 3.2 The purpose of this section is to define the relevant wholesale markets in which the assessments of market power are to be undertaken. Its structure is as follows: first, the Commission's approach to market definition is set out based on its applicable guidelines and recommendations. This is followed by a discussion of Ofcom's general approach to market definition which is consistent with that of the Commission. Next, definitions of the relevant retail market are considered insofar as they are logically prior to and affect wholesale market definitions. Then the relevant wholesale markets are defined. A diagram of the structure of this section is set out in Figure 3.1.

Figure 3.1 – Diagrammatic representation of Market Definition



Commission's approach to market definition

- 3.3 Ofcom has set out below some of the key aspects of the Commission's approach which Ofcom needs to consider when defining wholesale broadband markets. This is primarily set out in the Recommendation and the Explanatory Memorandum to that document.
- 3.4 Recital 4 of the Recommendation clearly states that the starting point for market definition is a characterisation of the retail market over a given time horizon, taking into account the possibilities for demand and supply-side substitution. The wholesale market is identified subsequent to this exercise being carried out. This approach is repeated in Section 2.1 of the Explanatory Memorandum and is exactly that set out below and followed by Ofcom.
- 3.5 Section 2.1 of the Explanatory Memorandum also states that because market analysis is forward-looking, markets are defined prospectively, taking account of expected or foreseeable technological or economic developments over a reasonable horizon linked to the timing of the next market review. Again, this is the approach followed by Ofcom.
- 3.6 The Explanatory Memorandum also states that market definition is not an end in itself, but a means to undertake an analysis of competitive conditions, for the purposes of determining whether *ex-ante* regulation is required or not. Ofcom has adopted an approach by which this consideration is at the centre of its analysis.
- 3.7 Section 4 of the Explanatory Memorandum further states that markets should be examined in a way that is independent of the network or infrastructure being used, as well as in accordance with the principles of Competition Law. Again this approach is key to Ofcom's analysis. Ofcom's approach is based on a Competition Law assessment of markets and an assessment of the extent to which switching among services by consumers could constrain prices, irrespective of the infrastructure used by the providers of those services.

Account taken of the EC Guidelines/Recommendations

- 3.8 In formulating its approach to market definition in the context of this market review, Ofcom is required to take the utmost account of all applicable guidelines and recommendations published by the Commission in its market analysis, including the Recommendation and SMP Guidelines.
- 3.9 In particular, in reaching its decision, Ofcom has taken the utmost account of the Recommendation. The Recommendation identifies the wholesale broadband access market as a relevant market at point 5 of the Annex to the Recommendation. "Wholesale broadband access" is defined in the Recommendation 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."
- 3.10 Ofcom has given careful consideration to the Recommendation and considers that the market definition adopted is consistent with the approach set-out in the Recommendation and the Explanatory Memorandum.

General approach to market definition

- 3.11 As noted above, the Explanatory Memorandum makes clear that 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 and thus whether there is a requirement for the imposition of *ex-ante* regulation. It is in this light that Ofcom has conducted its market definition in this market review.
- 3.12 There are two dimensions to the definition of a relevant market: the relevant products to be included in the market and the geographic extent of that market. Market boundaries are determined by identifying constraints on the price setting behaviour of firms. There are two main competitive constraints to consider: first, to what extent is it possible for customers to substitute other services for those in question (demand-side substitution); and second, to what extent can suppliers switch, or increase, production to supply the relevant products or services (supply-side substitution) in response to a relative price increase.
- 3.13 The ‘hypothetical monopolist test’ (HMT) is a useful tool often used 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 increase in price (SSNIP) above the competitive level without losing sales to such a degree as to make this price rise unprofitable. If such a price rise would be unprofitable, because consumers would switch to other products, or because suppliers of other products would begin to compete with the hypothetical monopolist, then the market definition should be expanded to include the substitute products.
- 3.14 Throughout this section, markets have been defined first on the demand-side. The analysis of demand-side substitution has been undertaken by considering if other services could be considered as substitutes by consumers, in the event of the hypothetical monopolist introducing a SSNIP above the competitive level.
- 3.15 Supply-side substitution possibilities have then been assessed to consider whether they provide any additional constraints on the pricing behaviour of the hypothetical monopolist which have not been captured in the demand-side analysis. In this assessment, supply-side substitution is considered to be a low cost form of entry which can take place within a reasonable time frame⁹ (e.g. up to 12 months). The key point is that, for supply-side substitution to be relevant, not only must suppliers be able, in theory, to enter the market quickly and at low cost by virtue of their existing position in the supply of other services or areas, but there must also be an additional competitive constraint arising from such entry into the supply of the service in question.
- 3.16 Therefore, in identifying potential supply-side substitutes it is important that providers of these services have not already been taken into consideration. There might be suppliers who provide other services but who might also be materially present in the provision of demand-side substitutes to the service for which the hypothetical monopolist has raised its price. Such suppliers are not relevant to supply-side substitution since they supply services already identified as demand-side substitutes. As such, their entry has already been taken into account and so supply-side

⁹ See the SMP guidelines at paragraph 52 http://europa.eu/eur-lex/pri/en/oj/dat/2002/c_165/c_16520020711en00060031.pdf#search=%22Commission%20guidelines%20on%20market%20analysis%20and%20the%20assessment%20of%20significant%20market%20power%20under%22

substitution from these suppliers cannot provide an additional competitive constraint on the hypothetical monopolist. However, the impact of expansion by such suppliers can be taken into account in the assessment of market power.

- 3.17 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 voluntarily offers its services at a geographically uniform price). Where common pricing constraints exist the geographic areas in which they apply could be included within the same relevant market even if demand-side and supply-side substitution are not present. Failure to consider the existence of a common pricing constraint could lead to unduly narrow markets being defined.
- 3.18 Ofcom's approach also takes into account the SMP Guidelines. In particular, paragraph 56 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...”.

- 3.19 Hence, subject to the relevant caveats above, where there are geographic areas where competitive conditions are sufficiently homogenous the definition of the relevant geographic market will include all of those areas within one market.

Relationship between the wholesale and retail markets

- 3.20 Although the focus of this market review is the wholesale level, the analysis of retail market definitions is logically prior to the definition of the wholesale markets. This is because the demand for the upstream service is a derived demand, i.e. the level of the demand for upstream input depends on the demand for the retail service. Hence, 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 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 in the price of one retail service will cause retail customers to switch to substitute retail products, reducing demand for the wholesale input.
- 3.21 In the current review it is therefore necessary to start with an assessment of the retail market. Since the demand for wholesale broadband access is ultimately derived from the demand for retail broadband access, market definition at the retail level is likely to be important for determining the extent of the market for wholesale broadband access services. In some cases the wholesale service may be used as an input to markets that are defined as separate at the retail level. Ofcom needs to take this into account in its wholesale market definition.

Relevance of existing regulation

- 3.22 When Ofcom conducts its analysis to define the relevant retail and wholesale markets it assumes that there is no SMP regulation in place in the market under consideration. To do otherwise would mean that the subsequent wholesale market power assessment would depend on a retail market definition that relied on a

wholesale regulatory remedy arising from the finding of wholesale market power. This would be a circular and incorrect approach to market definition. Ofcom has therefore considered the demand-side and supply-side substitution possibilities at the retail level, only if they are economically viable in the absence of regulation in the market being considered. This is consistent with the Explanatory Memorandum¹⁰.

- 3.23 On the other hand it is appropriate to take into account any regulation that is upstream of the market being considered, as this upstream regulation has the potential to affect the competitive state of downstream markets. Indeed this is generally one of the main intentions of the upstream regulation. In this case the existence of regulated LLU and backhaul products¹¹ has the potential to affect the competitive state of the wholesale broadband access market and as such they need to be considered when reviewing the wholesale broadband access market. Ofcom recognises that regulation requiring the provision of LLU and backhaul products may be subject to further review during the period of this market review. In the event that regulation in those markets is revoked or modified, Ofcom will consider whether it is appropriate to conduct a further review of the wholesale broadband access market.

Retail market definition

- 3.24 Ofcom's analysis, as set out in Section 4 of the November consultation, concluded that the following two retail broadband markets were relevant downstream markets to wholesale broadband access and that these included both residential and business customers:

- 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.

Definition of asymmetric broadband internet access

- 3.25 As stated above, Ofcom needs to identify an appropriate starting point for its definition of retail services in the broadband access market. At the retail level broadband services may be based either on point-to-point connectivity services (leased lines) or 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 Ofcom considers that the starting point for the definition of the product market at the retail level should be based upon asymmetric broadband internet access. Set out below are the different dimensions to these services.

¹⁰ Section 2.2 (without ex ante regulation)

¹¹ Regulated LLU products are provided under the obligations included in the wholesale local access market review (see <http://www.ofcom.org.uk/consult/condocs/rwlam/statement/>) and regulated backhaul products are provided under the obligations included in the leased lines market review (see <http://www.ofcom.org.uk/consult/condocs/llmr/statement/>).

Asymmetric service

- 3.26 The asymmetric nature of these services means that the maximum downstream capacity, i.e. end-user receiving information, is higher than the upstream capacity, i.e. end-user sending information.

Internet access

- 3.27 Asymmetric broadband access has the potential of supporting a variety of services, eg internet access, voice, TV and virtual private networks (VPNs), and it is possible that additional services will be developed within the period covered by this review. However, at the current time asymmetric broadband access is almost always used to support internet access in one way or another. Consequently, the definition of the relevant economic markets focuses on the primary retail broadband service of asymmetric broadband internet access.

Broadband service

- 3.28 Asymmetric broadband internet access has three distinguishing features or functionalities which are not available, in practice, using narrowband internet access and that as a group distinguish it 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 so allowing real time delivery of services such as email;
 - 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 downstream speed than a dial up connection¹².
- 3.29 The importance of these features to residential and business consumers of broadband can be seen by the consumer surveys undertaken by Ofcom in 2006 and at the time of the 2003/04 Review.
- 3.30 These defining features are also used by ISPs in their marketing literature, with many of them citing the always-on nature of the service, the faster available speeds and the ability to make calls while accessing the internet. For example, on the AOL website under “frequently asked questions” there are questions relating to all three of these characteristics.¹³ On the Orange website under “compare our packages” included in the summarised features are ‘speed’ and ‘use phone while online?’¹⁴
- 3.31 In Ofcom’s view, it is necessary for all three of the features set out above to be present simultaneously for an internet access service to be defined as broadband. Dial-up internet access using technologies such as PSTN and ISDN2 do not have all of the above features. PSTN fails on all three, whereas ISDN2 fails on the basis that

¹² Ofcom considers that the internet access speeds that are currently attainable over a dial up connection are: 56kbit/s over an analogue line; 64kbit/s over an ISDN 2 digital channel and 128kbit/s over the two bonded digital channels of an ISDN 2 line.

¹³ <http://info.aol.co.uk/products/broadbandFaqs.adp?promo=228937&promoCode=228937>

¹⁴ <http://www.orange.co.uk/time/compareall.htm>

it is not always on and because it cannot achieve speeds greater than 64kbit/s when providing voice and data services simultaneously.

- 3.32 Ofcom currently considers that these distinguishing features of broadband internet access services capture the relevant demand-side distinction for the UK's existing broadband internet access services.

Bandwidth

- 3.33 Ofcom has also considered whether there is an upper bound on the speed for asymmetric broadband internet access. Whilst there is a wide range of speeds currently available, ranging from below 1Mbit/s to (up to) 24Mbit/s, Ofcom does not believe that there are any prevalent applications or requirements that allow it to identify separate markets for different speed ranges. Instead Ofcom believes that there is a single retail market for asymmetric broadband internet access, irrespective of speed, and that this is due to the existence of a chain of substitution¹⁵ on the demand side.
- 3.34 Since the 2003/04 Review the broadband speeds available have increased significantly and there has been continuous development of applications that are supported by broadband. Going forwards, it is important that these developments are monitored, as if it transpires that new applications, which rely on higher speed connections, are developed and increasingly taken up by end consumers, it may be necessary for Ofcom to reconsider its definition.

Respondents' views

- 3.35 The November consultation asked the following question:

Question 2: Do respondents agree with Ofcom's definition of the retail asymmetric broadband internet access market in the UK?

- 3.36 Respondents were generally satisfied with Ofcom's definition of the relevant retail broadband access market and it is noted that no respondent questioned the conclusion that ADSL and cable were in the same retail market. A number of respondents stated, however, that symmetric services were either in the same market as asymmetric services or certainly would need to be considered in conjunction with them in future. Others respondents also queried whether businesses and residential end-users were in the same market. These respondents suggested that smaller businesses were clearly in the same market as residential end-users. It was not clear, however, that larger businesses formed part of the same market, as their service requirements are quite distinct from residential end-users.

Ofcom's response

- 3.37 On the question of whether symmetric services are included within the wholesale broadband access market, Ofcom continues to consider that they are not. This conclusion is based on the evidence from relative charges and costs and from

¹⁵ A chain of substitution may exist, for example where a customer would not substitute from product A to product C to avoid a SSNIP, but would substitute to product B. This may suggest that products A and B are in the same market but that products A and C are in separate markets. However, if there are customers who would substitute from product B to product C to avoid a SSNIP then this may suggest that products B and C are in the same market. Because of a chain of substitution between products A and B and products B and C, products A and C would be defined to be in the same market.

consumer surveys¹⁶. Ofcom considers that symmetric broadband internet access does not constrain the price of asymmetric broadband internet access and therefore should not be included within the same market (see paragraphs 3.78 to 3.91 below). This proposal is consistent with Ofcom's previous conclusions on this question, both in the context of the wholesale broadband access markets and the leased lines markets.

3.38 On the second issue raised by respondents regarding whether there are separate retail markets for business and residential consumers, Ofcom continues to consider that there is a broad retail market which includes the provision of retail services to business and residential consumers. This is due primarily to the conclusion that a chain of substitution at the retail level exists and will continue to exist over the period of the market review (see paragraphs 3.92 to 3.102 below).

Ofcom's proposals on retail market definition

3.39 In assessing the appropriate broadband retail market, Ofcom has used the evidence available to it. There are two main retail broadband services currently available in the UK: symmetric connectivity services (leased lines which could be used to provide internet access as well as other communications services); and asymmetric broadband internet access. Ofcom has started from a narrow definition of retail broadband services based upon asymmetric broadband internet access. It is appropriate to start with a relatively narrow market definition so that Ofcom can then apply the HMT to examine whether the market definition should be broadened to include other products or services. In particular, Ofcom has considered whether:

- cable-based and ADSL-based broadband internet access services are in the same retail market;
- narrowband and broadband internet access services are in the same retail market;
- mobile and fixed broadband internet access services are in the same retail market;
- symmetric (including leased lines) and asymmetric broadband internet access services are in the same retail market; and
- residential and business broadband internet access services are in the same retail market.

3.40 The relevant wholesale markets are then defined in the light of the conclusions regarding these issues and market definitions at the retail level.

Cable-based and ADSL-based broadband internet access

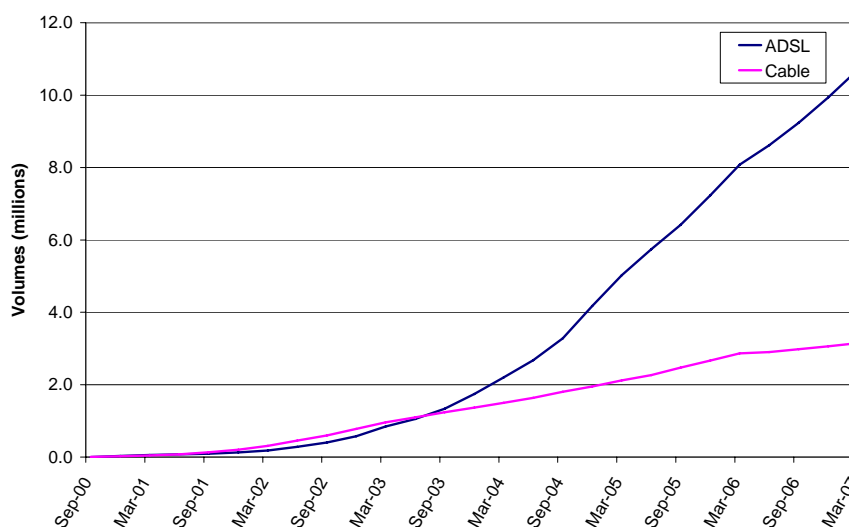
3.41 Ofcom considers that cable-based and ADSL-based broadband internet access services are in the same relevant economic market for the reasons set out below.

3.42 When determining if cable-based and ADSL-based broadband internet access services are in the same relevant product market it is instructive to consider empirical evidence about how the market has developed and the information available to consumers, including marketing information.

¹⁶ Consumer research conducted for the November consultation and for the leased lines market review.

- 3.43 In the UK, cable-based and ADSL-based broadband internet access services have the same intended use and were launched at a similar time, around the year 2000. Since their launch, these two technologies have consistently offered comparable characteristics at comparable prices and this has remained the case even though prices have consistently fallen whilst characteristics, such as speed, have increased. The result has been that consumer demand for broadband internet access has been largely unrelated to the underlying technology and this is evident by the fact that there are currently about 3.3 million cable-based broadband internet access services in use in the UK, even though cable is only available to about 45% of premises, see Figure 3.2.

Figure 3.2 – broadband volume growth 2000 to 2007



- 3.44 Figure 3.2 shows a similar take up of cable-based and ADSL-based services in the early years with a significant swing towards ADSL-based services in the later years. However, it needs to be recognised that in the early years both of these technologies were being rolled-out and thus their availability was changing (increasing). In the very early stages of broadband rollout cable-based and ADSL-based services were made available to a similar number of premises. The cable companies (ntl and Telewest at the time) soon got to the point where they had broadband enabled nearly all of their networks – which covered about 45% of UK premises. However, BT was able to continue to ADSL enable its network, eventually achieving nearly 100% coverage by the end of 2004.
- 3.45 This suggests that on the demand side consumers, where they have a choice, do consider cable-based and ADSL-based broadband internet access services to be interchangeable or substitutable.
- 3.46 From the marketing information available it also seems evident that cable-based and ADSL-based broadband internet access providers consider themselves to be in competition with one another and thus operating in the same retail market. See Annex 2 for some recent examples of marketing campaigns and literature.
- 3.47 Consumers in the UK also have access to a number of additional advice and information sources, such as; independent broadband comparison web-sites, manufactures of home networking products and suppliers of computers and computer equipment. In all cases reviewed by Ofcom none of these sources draw any distinction between cable-based and ADSL-based broadband services. On the

contrary, they are presented as alternatives to one another. See Annex 3 for some examples.

- 3.48 The fact that cable-based and ADSL-based broadband internet access services have the same intended use, have similar characteristics, are priced at a similar level, have had similar consumer demand (where available), are marketed against one another and are presented as alternatives to one another by independent information sources, overwhelmingly suggest that they are in the same retail market. Such a conclusion would also seem to be consistent with the Explanatory Memorandum which recognises that consumers [may] have a range of broadband technology options available to them, including cable and ADSL, and that between these options, provided prices are comparable, a consumer is likely to be indifferent¹⁷.
- 3.49 Notwithstanding the above, Ofcom sought to test the hypothesis that consumers would be indifferent between different internet access technologies at similar prices. To do this Ofcom commissioned consumer research to determine whether end-users are likely to switch between different broadband access technologies in response to a SSNIP. A finding that a SSNIP on the price of services provided using any subset of the available technologies would be unprofitable would imply that all the services are in the same market irrespective of the underlying technology.
- 3.50 Ofcom's consumer research also suggests that at the retail level there would be a sufficient constraint from end-users switching from ADSL-based broadband internet access to cable-based internet access in response to a price rise by a hypothetical monopolist to render the price rise unprofitable. The details of this analysis are contained in Annex 8.

Narrowband and broadband internet access

- 3.51 Ofcom considers that narrowband and broadband internet access services are in separate economic markets for the reasons set out below.
- 3.52 Narrowband, or dial-up, internet access is generally available as either un-metered or pay-as-you-go. However, irrespective of the payment plan used, narrowband internet access is inferior to broadband internet access in three areas:
- 3.53 Firstly, narrowband cannot be used to provide an always-on service and thus the end-user must establish the connection as and when required. It may be considered that an un-metered narrowband service could be used to provide an always-on service. However, this is not the case as almost all un-metered services have a cut-off feature, where the service is automatically disconnected after a given time period (typically 2 hours). Further, the end-user would not be able to create a pseudo always-on service by re-establishing the connection following a cut-off, as most un-metered services also have a connection time allowance (per month) and this would become exhausted before the end of the month. It is of course possible to leave a pay-as-you-go service connected. However, this is not a realistic proposition given the likely charges. At a weekday call rate of, for example, 4p per minute, the charge for a single 8 hour working day would be over £19 (i.e. more than the typical monthly charge for broadband).
- 3.54 Secondly, narrowband uses the telephone network and therefore prevents the end-user from using the telephone service when in use. Thus, with narrowband if the end-

¹⁷ Section 4.2, page 31

user did want to use internet access and the telephone service at the same time they would need to purchase two telephone network connections.

- 3.55 Thirdly, narrowband has a very limited speed capability. For example, the theoretical maximum downstream speed achievable by a v.92 analogue dial-up modem is 56kbit/s.
- 3.56 Ofcom believes that consumers value the fact that broadband provides an always-on service, the fact that it does not tie-up the telephone and the faster speeds that it offers. This view is supported by the fact that many of the major broadband providers frequently highlight these features in their marketing information. Further, Ofcom has commissioned surveys where consumers were asked to identify the features of broadband internet access that they consider to be important. The results of these surveys consistently show that consumers consider these three distinguishing features of broadband to be important.
- 3.57 When broadband was first launched a typical entry level broadband internet access service was priced at a premium compared with a typical un-metered narrowband service. Even so, a significant number of consumers were prepared to pay this premium which demonstrates the value that consumers place on the distinguishing features offered by broadband. However, the price of broadband services has been constantly reducing whereas the price for narrowband services has remained relatively constant and this has resulted in the situation where the price for typical entry level broadband services and typical un-metered narrowband services are at a similar level. Given that consumers were prepared to pay a premium for broadband in the past it seems unlikely that broadband users would now switch back to narrowband in response to a broadband SSNIP.
- 3.58 As broadband take-up has increased applications and content available on the internet have been increasingly geared towards broadband users and this is likely to continue. So in addition to the three distinguishing features of broadband, broadband users will also have access to certain applications and content which is not 'realistically' available to narrowband users. There is, thus, an argument that broadband is an "experience" good and once end-users have tried broadband products they would be unlikely to switch back to narrowband. Ofcom considers that this is likely.
- 3.59 Ofcom considers that it is unlikely that broadband will become any less differentiated from narrowband over the period of this review. If anything, the difference is likely to increase as the availability and take up of broadband services means that internet applications and content are likely to continue to be increasingly geared towards broadband users.
- 3.60 On the basis that consumers value the three distinguishing features provided by broadband and have demonstrated a willingness to pay a premium for them, the fact that they can now obtain them without paying a premium and given the ongoing developments in internet applications and content, Ofcom believes that broadband and narrowband are in separate markets on the demand side.
- 3.61 However, as explained in Ofcom's approach to market definition, the key market definition question is whether a SSNIP above the competitive level by a hypothetical monopolist in the supply of asymmetric broadband internet access would be undermined by sufficient customers switching to other services, in this case narrowband internet access.

- 3.62 Ofcom's consumer research shows that at the retail level there would not be a sufficient constraint from end-users switching from broadband internet access to narrowband internet access in response to a price rise by a hypothetical monopolist to render the price rise unprofitable. The details of this analysis are contained in Annex 8.

Accounting for migration effects

- 3.63 In its response to the November consultation, BT noted that Ofcom's critical loss calculation only included the loss in demand from existing broadband consumers. BT noted that this approach was likely to underestimate the true loss as it does not capture the loss from potential joiners, i.e. those consumers who are planning to migrate from narrowband to broadband but would be deterred from doing so if a SSNIP was introduced.
- 3.64 Ofcom recognises that the SSNIP analysis should capture all the changes in behaviour that it causes and thus accepts that the impact on potential joiners is relevant. Ofcom has therefore reassessed the critical loss calculation, but has concluded that the inclusion of migration effects does not change the overall result, (see Annex 8).

Supply-side substitution

- 3.65 Ofcom considers that the possibilities for supply-side substitution at the retail level by suppliers of narrowband internet access who are not currently suppliers of broadband would not provide a competitive constraint on a hypothetical monopolist of broadband internet access raising prices. Ofcom has identified below four different scenarios by which, at least theoretically, supply-side substitution could occur. For each scenario, Ofcom has then considered whether such supply-side substitution by suppliers of retail narrowband would prevent a SSNIP in the retail broadband price. The four scenarios for supply-side substitution that Ofcom has considered are:
- the use of narrowband wholesale inputs;
 - the building of any necessary access (and backhaul) networks;
 - the use of wholesale broadband access inputs; and
 - the use of LLU.
- 3.66 In order to supply broadband services, narrowband suppliers would need necessary network or would need to purchase the necessary wholesale services. Clearly some supply-side substitution options can be ruled out on technical grounds. For example, wholesale narrowband inputs cannot be used to provide a retail broadband service. Hence, suppliers providing narrowband services could not switch in this manner.
- 3.67 An alternative approach could be for an operator to enter the market by building necessary access (and backhaul) networks. However, Ofcom considers this form of supply-side substitution is unlikely in response to a 5% to 10% increase in the price of broadband internet access. The reason for this is that the costs of providing a wholesale broadband access network (especially digging and ducting) include significant sunk costs and would be likely to include significant time delay in responding to the price increase.

- 3.68 A further potential means of supply-side substitution could be from narrowband suppliers procuring wholesale broadband access or some other downstream variation in order to supply retail broadband services. However, as noted at paragraph 3.22, the definition of the retail product market should be conducted under an assumption of an absence of regulation in the market being considered i.e. wholesale broadband access. It cannot be assumed that in the absence of regulation that a wholesale broadband access product would be provided by a hypothetical monopolist. Even if narrowband retail suppliers could obtain broadband wholesale inputs to allow them to supply broadband retail customers this would not provide a constraint on a hypothetical supplier of the broadband wholesale input. This is because, by definition, the hypothetical monopolist would be providing the wholesale inputs.
- 3.69 Instead of purchasing wholesale broadband access products, supply-side substitution could occur by retail narrowband suppliers purchasing a product upstream of wholesale broadband access such as LLU. A question is whether in fact narrowband suppliers switching to provision of broadband services using LLU would actually constitute supply-side substitution. Supply-side substitution would be defined as narrowband suppliers being able to enter the broadband internet access market quickly and at low cost, by virtue of their existing position in the supply of these other services. In the case of these suppliers using LLU, it would not appear that providing retail narrowband would provide a significant advantage over a new entrant by virtue of its existing narrowband retail market presence. In such circumstances, narrowband suppliers switching to providing broadband services would be more appropriately considered as having the same characteristics as a new entrant and, as such, any additional constraint should be considered in the assessment of market power¹⁸.
- 3.70 In conclusion, Ofcom considers that during the time period of this forward-looking review, demand-side substitution between narrowband and asymmetric broadband internet access is likely to be limited for both residential and business broadband customers such that narrowband would not be expected to provide a competitive constraint on broadband. As such Ofcom considers that broadband internet access constitutes a distinct economic market to narrowband on the demand side and will continue to do so during the time period of this review.
- 3.71 Supply-side substitution at the retail level is not relevant to this market review because it is unlikely to occur for the reasons given above and would not provide a constraint on suppliers of wholesale broadband services. Therefore, Ofcom currently considers that broadband internet access services constitute a separate and distinct economic market from narrowband internet access and other services. Ofcom believes that this will remain the case for the time period relevant to this review.

Mobile and fixed broadband internet access

- 3.72 Ofcom considers that mobile and fixed broadband internet access services are in separate economic markets for the reasons set out below.
- 3.73 Ofcom does not consider internet access over mobile networks, using mobile devices such as mobile telephones, to be an effective demand-side substitute for broadband internet access on a fixed network. This is because of the practical limitations of

¹⁸ While potential entry by LLU operators is not relevant for the analysis of demand-side and supply-side substitution, the geographical extent of LLU-based competition is relevant for the definition of the geographic markets, which is based on an analysis of the homogeneity of competitive conditions in geographic areas.

mobile devices which results in certain applications and content not being reasonably accessible. These limitations include screen size/resolution and interactivity.

- 3.74 However, Ofcom recognises that it is possible to use a mobile network data-card which plugs into a personal computer (PC). However, these products are currently marketed as mobile broadband for laptops and this would make them a complement to fixed broadband internet access rather than a substitute.
- 3.75 It is possible that consumers could rely solely on a mobile data-card solution for all of their broadband needs. However, it is only very recently that 'affordable' mobile broadband products have been offered in the UK and thus their long-term sustainability is unknown. Further, there is no evidence to suggest that consumers would consider mobile broadband to be a substitute for fixed broadband, either today or within the period covered by this review. Ofcom therefore believes that demand-side substitution from fixed broadband to mobile broadband is not relevant for the period covered by this review.
- 3.76 Supply-side substitution by suppliers of mobile internet access is not considered relevant to this review, for the reasons given in the discussion of supply-side substitution from narrowband to broadband. In particular, in order to enter the market for fixed broadband internet access, suppliers of mobile internet access would need to purchase the relevant wholesale inputs or establish their own network. These suppliers would not, therefore, impose a constraint on the suppliers of the wholesale broadband services over the relevant timeframe.
- 3.77 The absence of demand-side substitution and the finding that supply-side substitution is not relevant to this market review means that the availability of mobile internet access would not provide a constraint on a hypothetical monopolist pricing above the competitive level in the supply of fixed broadband internet access. Therefore, for the period covered by this market review Ofcom considers that broadband internet access constitutes a separate economic market from mobile internet access.

Symmetric and asymmetric broadband internet access

- 3.78 Ofcom considers that symmetric and asymmetric broadband internet access services are in separate economic markets for the reasons set out below.
- 3.79 Symmetric internet access can be provided using leased lines or SDSL. Whereas asymmetric internet access is provided predominantly through ADSL and cable.
- 3.80 Leased lines offer dedicated capacity whereas ADSL and cable broadband internet access services are generally contended (i.e. a fixed amount of capacity in the network is shared amongst multiple end-users). It is also the case that the technologies used to support leased lines generally have a higher cost than ADSL and cable. The combination of a higher cost technology and the dedicated capacity results in the cost, and thus price, of leased lines being appreciably higher than ADSL-based and cable-based broadband internet access. Given this price difference, consumers of broadband internet access (based on ADSL or cable) are unlikely to consider leased lines to be interchangeable or substitutable and this is supported by the fact that demand for these services has remained fairly constant during the rapid rollout and take-up of ADSL-based and cable-based broadband internet access services. Further, the difference in price is such that a SSNIP on the price for asymmetric broadband internet access is unlikely to be undermined by sufficient customers switching to leased lines.

- 3.81 Of all the current symmetric services/technologies the one that could potentially constraint asymmetric services is SDSL. On the face of it ADSL and SDSL technologies seem to be very similar. They both utilise existing telephone lines and can be contended, or not, in the same way. However, at the current time the prevailing market price of SDSL services is much higher than the price of ADSL services and for the reasons set out above, in relation to leased lines, this would suggest that consumers of ADSL-based services are unlikely to consider SDSL-based services to be interchangeable or substitutable given current retail prices. Again this is supported by the fact that demand for SDSL-based services has been very low during the rapid rollout and take-up of ADSL-based and cable-based broadband internet access services.
- 3.82 The significant differences in the price and demand for ADSL-based and SDSL-based services would thus seem to be at odds with the technical similarities. It is thus necessary to consider whether the resulting market outcome is a function of a pricing distortion (e.g. SDSL prices have been maintained at an artificially high level)¹⁹ and this can be done by assessing the underlying cost difference between ADSL and SDSL, as this will provide a proxy for the expected differential in the competitive price levels.
- 3.83 Notwithstanding the technical similarities between ADSL and SDSL there are two factors that make the cost of an SDSL-based service considerably more than the cost of an equivalent ADSL-based service.
- 3.84 Firstly, the price of the modems. SDSL modems are considerably more expensive than ADSL modems. This is of course a function of relative demand. However Ofcom can find no evidence that suggests that ADSL and SDSL modem prices are likely to converge within the period covered by this review.
- 3.85 Secondly, ADSL is able to share the telephone line with a PSTN voice service whereas SDSL requires its own dedicated line. Thus, if an end-user wished to maintain their PSTN voice service, with SDSL they would need to pay for an additional telephone line whereas with ADSL this is not the case.
- 3.86 These differences in cost, when reflected in the retail price, means that a 10% rise in the price of asymmetric services would not result in a sufficient number of customers switching to symmetric services to make that price rise unprofitable.
- 3.87 In addition to the differences in costs of providing asymmetric and symmetric internet access services, these services are also likely to be used by different customers for different purposes. For example, asymmetric access may be preferred over symmetric access because the customer does not have high upload requirements and so is unwilling to pay the price premium for symmetric services.
- 3.88 It could be expected that current internet access usage patterns will change over time, with more end-users demanding increasingly symmetric internet access. This is because of the growth in end-users placing their own content on the internet, including video and music content. These demand trends may mean that over time there is a dilution of the boundary between asymmetric and symmetric broadband

¹⁹ Demand-side and supply-side substitution should be assessed at the competitive price level in order to avoid the “cellophane fallacy” whereby markets are erroneously found to be too broad as a result of substitution being assessed when a SSNIP is applied to a prevailing price which is already above cost.

internet access. However, there are currently significant technical challenges²⁰ associated with the large scale delivery of symmetric services to end-users and consequently they are unlikely to be deployed significantly within the period covered by this review. Thus, these issues are more likely to be relevant for future market reviews.

- 3.89 On the supply side, it is technically feasible for symmetric service providers to offer retail asymmetric services using their own infrastructure and any wholesale products of a symmetric nature (such as partial private circuits). But this would mean that they would be using capacity inefficiently as they would be offering an asymmetric service over symmetric capacity. This would exacerbate the cost disadvantage that symmetric services face relative to asymmetric services. Therefore, such supply is likely to be unprofitable and supply-side substitution from symmetric to asymmetric service provision would not provide a competitive constraint.
- 3.90 Other methods of supply-side substitution by suppliers of symmetric services are not relevant to this review, for similar reasons given for the discussion about supply-side substitution between narrowband and broadband. Suppliers of symmetric services might purchase an asymmetric wholesale product in order to offer an asymmetric service but such substitution behaviour would require them to have access to the relevant wholesale inputs. As discussed previously, this would not impose a constraint on the suppliers of the wholesale services and so is not relevant to this market review.
- 3.91 In conclusion, demand-side substitution between symmetric and asymmetric broadband internet access is limited by the large difference in costs in the UK and the low value that UK asymmetric broadband internet access customers place on symmetric broadband internet access. Supply-side substitution at the retail level is either not economically feasible or not relevant in the context of this market review.

Residential and business broadband internet access

- 3.92 Ofcom considers that residential and business broadband internet access services are in the same relevant economic market for the reasons set out below.
- 3.93 Currently, many providers of asymmetric broadband internet access products offer separate residential and business services. These business services are generally targeted at SoHo and SME customers and, like the residential services, a range of business services are available. The features of business services will clearly vary depending on the provider and the 'level' of the service. However, business services generally include features such as; higher download limits, a business support helpdesk, web hosting, more email accounts, PC security, IT support and static IP addresses.
- 3.94 Whilst business services are generally priced higher than residential services, there is a large overlap between the price range of business services and the price range of residential services. It is also the case that many of the features associated with business services are available to customers using residential services, either as part of a higher level service or as a pay-for option.

²⁰ In the case of cable the underlying technology is currently inherently asymmetric and as such a move to mass market symmetrical services would require a significant network upgrade programme. In the case of DSL a move to SDSL would either require a second access line for each end-user premise or it would require the re-engineering of the current telephone service.

- 3.95 Where business customers purchase more expensive and higher quality (more feature rich) products, this does not in itself suggest that residential and business customers should be in separate markets. The issue of market definition depends on the existence of a chain of substitution between products of higher quality sold at higher (competitive) price levels and those lower down the quality/price scale. Moreover, as the asymmetric broadband internet access products available in the market have progressed over recent years (notably with greater upstream and downstream speeds), it could be argued that any distinction between residential and business demand has decreased.
- 3.96 Ofcom considers that the distinction between residential and business asymmetric broadband internet access is now weaker than at the time of the 2003/04 Review. Moreover, as 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.
- 3.97 On the demand side, Ofcom considers that there is currently a chain of substitution between the various residential broadband offers and the various business broadband offers. If anything, Ofcom believes that future product developments will further strengthen the current chain of substitution and thus any differences between residential and business product ranges will diminish further.
- 3.98 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.
- 3.99 Ofcom recognises that retail broadband internet access can be used as part of a VPN. However, in this case VPN is more analogous to an application that runs over broadband internet access. Accordingly, both residential and business retail broadband internet access are able to be used as part of a VPN and thus on the demand-side consumers who intend to use retail broadband internet access as part of a VPN can substitute between residential and business products.
- 3.100 Supply-side substitution at the retail level between business and residential broadband internet access could be affected in two main ways. The first is where any LLU operators which provide services solely to residential consumers supply-side substitute in response to a SSNIP by a hypothetical monopolist in the provision of services to business consumers (and vice-versa). The second would be where an ISP which uses regulated wholesale inputs and which focuses on the residential retail market supply-side substitutes. However, this would not limit the exercise of market power in the related wholesale markets, given that similar inputs typically provided by the same wholesale supplier are required. Since the purpose of this section of the market analysis is to determine the impact that the definition of the relevant retail markets has on upstream market power, such supply-side substitution is not important to the consideration of markets at the wholesale level.
- 3.101 Ofcom recognises that large business customers may demand products with significantly higher specifications and quality levels than those currently offered by asymmetric broadband internet access products. For instance, higher and more predictable speeds (possibly dedicated capacity) and very short repair times which are supported by service level guarantees. Such services will often be supported by PPCs or leased lines and accordingly Ofcom does not consider these business customers to be in the asymmetric broadband internet access market. Indeed, Ofcom has previously found such customers to be in the retail leased lines market.

3.102 In conclusion, Ofcom considers that residential and business asymmetric broadband internet access services are in the same relevant market at the retail level. This is consistent with the approach adopted by Ofcom in the previous market review and also with the Recommendation which does not define separate markets for business and residential broadband markets.

Bundling

3.103 In the period since the 2003/04 Review there has been a marked increase in the propensity for retail broadband internet access providers to seek to bundle their broadband offerings with other products. This includes linking broadband provision with line rental, calls, television subscription and/or mobile subscription tariffs. These services can be sold as bundles in order to benefit from economies of scope in the supply of these services e.g. marketing and billing.

3.104 In the Explanatory Memorandum the Commission has sought to address this issue. The Commission states that whilst certain bundles are well established others are at an earlier stage of development. It goes on to conclude that service elements constitute markets in their own right if a sufficient number of customers would 'unpick' the bundle if a SSNIP were introduced.

3.105 Until recently, at the retail level, broadband internet access has tended not to have been sold as part of a bundle (with the exception of access network operators, in particular BT). However, with BT's offer it is possible for the end-user to "unpick the bundle" and purchase broadband internet access separately from another service provider and pay BT separately for line rental²¹.

3.106 It is Ofcom's view that there is not sufficient evidence to consider that broadband combined with those other services as offered by some retail service providers constitute a separate retail market. The option is available to customers to unpick such a bundle and obtain a particular service from an alternative provider if so desired.

3.107 It is also important to bear in mind that this review is a review of the wholesale broadband access market. The retail product markets are being defined in order to aid the definition of the product markets at the wholesale level. As such, the question of bundling that is of most interest is the bundling that takes place at the wholesale level. These issues are addressed below at paragraphs 3.192 to 3.193.

Retail geographic market definition

3.108 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.

3.109 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

²¹ This may be directly from BT or indirectly through another operator using wholesale line rental.

unlikely to move home to benefit from lower broadband prices and supply-side substitution requires significant sunk costs.

- 3.110 Instead of assessing substitution through an analysis of demand-side 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.
- 3.111 The 2003/04 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).
- 3.112 In the UK (excluding the Hull area), retail ISPs have historically offered prices, and products, that do not vary by geography, suggesting a single geographic market for that area. However, this pricing model has recently begun to break down, with a number of ISPs offering differential prices in different geographic areas. For example:
- AOL offers a range of Broadband Wireless Plus products which are priced between £19.99 and £29.99 per month. There is however the following caveat: “These prices are available in selected areas. If you live outside these areas you may still be able to get this offer and pay £10 extra per month on each price plan.” AOL’s Broadband Wireless product, priced at £14.99 per month, is also only available in selected areas. However, consumers may be able to get this service in other areas but will be charged £5 extra per month²².
 - TalkTalk offers a bundle of line rental, a call plan and broadband for £16.39²³ per month in areas where it is using LLU. This is marketed as: £10.50 for line rental, £5.89 for Talk2 International call plan and free broadband. However, in all other areas TalkTalk charges £15 per month for broadband.
 - Tiscali offers a range of broadband products with ‘free phone line rental’. However, it is noted that “This package is available to 52% of all UK homes. If this product is not available in your area then you will be offered a discounted alternative so you can still enjoy savings on your line rental.” The discounted alternative is that consumers are required to pay an additional line rental fee (normally £11.99) but discounted by 25%. Thus, consumers will be charged an additional £8.24 per month.²⁴
- 3.113 In addition to geographic variations in prices, there is also evidence of geographic variations in the availability of services. For example:

²² As per the AOL web site (www.aol.co.uk) on 7th September 2007

²³ As per the TalkTalk web site (www.talktalk.co.uk) on 7th September 2007

²⁴ As per Tiscali web site (www.tiscali.co.uk) on 25th September 2007

- Be unlimited only provides services, including its 'up to 24 meg ultra-fast broadband', in areas where it is using LLU²⁵.
- O2 offers a range of broadband packages. However, these are "subject to availability" and consumers are required to "...click Get O2 Broadband to see if O2 broadband is available in your area."²⁶.
- Sky is providing its Base (up to 2Mb), Mid (up to 8Mb) and Max (up to 16Mb) broadband product for free, £5 per month and £10 per month respectively, to its SkyTV customers, but only in selected areas (i.e. those areas where it is using LLU)²⁷.

3.114 It is worth noting that in all the examples given above the 'selected areas' are 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 exchange²⁸. 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.

3.115 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 policy²⁹. 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.

Summary of proposals

3.116 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.

²⁵ As per the Be web site (www.bethere.co.uk) on 7th September 2007

²⁶ As per the O2 Broadband web site (<http://broadband.o2.co.uk>) on 8th November 2007

²⁷ As per the Sky web site (www.sky.co.uk) on 7th September 2007

²⁸ This can be confirmed by reference to these operators' websites.

²⁹ These ISPs include a number of LLU operators which use LLU in some areas and wholesale broadband access products in other areas but have so far chosen to maintain a national retail price; BT; and ISP which rely entirely on regulated broadband access products.

Wholesale market definition

3.117 Ofcom's analysis, as set out in Section 4 of the November consultation, concluded that there were four wholesale broadband markets. The relevant product market is defined as asymmetric broadband access and any backhaul to allow interconnection with other Communications Providers which provides an always-on capability, allows both voice and data service to be used simultaneously and provides data at speeds greater than a dial-up connection. Based on this product definition, Ofcom identified the following four distinct geographic markets:

- the Hull area - those geographic areas covered by exchanges where KCOM is the only operator;
- 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 Principal Operators present (actual or forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises; and
- Market 3 - those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises.

Respondents' views

3.118 The November consultation asked the following questions:

Question 3: Do respondents agree with Ofcom's definition of the wholesale broadband access product market?

Question 4: Do respondents agree that the Hull area should be defined as a separate geographic market on the basis of the presence of common pricing constraints?

Question 5: Do respondents agree with Ofcom's methodology for assessing geographic variations in the competitive conditions in the wholesale broadband access product market?

Question 6: Do respondents agree with Ofcom's analytical framework for defining geographic markets in the UK (excluding the Hull area) and the conclusions reached?

Definition of the wholesale broadband access product market

3.119 Respondents broadly agreed that the definition of the wholesale broadband access product market was appropriate. However, a number of respondents stated that self-supply of broadband access should not be included in the market which in their view should be limited to the supply to third parties of such products. A number of others stated that the product definition gave BT too much discretion in terms of deciding the extent of backhaul that would be necessary to provide broadband access product.

3.120 Respondents also commented that Ofcom had not differentiated or made reference to the speeds that might or might not be included in the definition of the product

market. They suggested that in the longer-term higher speed services might be in a distinct product market.

- 3.121 As with the retail market definition, a number of respondents reiterated their concerns in relation to the treatment of the provision of wholesale broadband access products used to support the provision of retail services to businesses. One stated that such products for business consumers were in a separate market for products for residential consumers. Another respondent suggested that cable services do not provide a constraint in the business sector of the market and therefore these should be excluded from the wholesale market definition.

The Hull area

- 3.122 Respondents agreed with Ofcom's proposals in relation to the definition of the Hull area as a separate geographic market. KCOM also accepted that the Hull area was a distinct geographic market. It stated, however, that in assessing regulatory remedies that should be applied Ofcom needed to take into account the size of its business in comparison to BT's.

Methodology for assessing geographic variations in competitive conditions

- 3.123 BT considered that use of its local exchange footprint represented a pragmatic if not ideal approach to the identification of geographic markets at this point in time. Postcodes would, however, be technologically neutral. One other respondent also suggested that using BT's exchange footprint was not technologically neutral and could potentially be gamed by BT.
- 3.124 One respondent stated that it was unclear why Ofcom had not maintained that the market was national and varied remedies according to competitive constraints in localised areas. The respondent suggested that the competitive conditions were homogeneous across the UK and BT retained SMP throughout. Other respondents also suggested that the competitive conditions were sufficiently similar throughout the UK to identify a single wholesale geographic market. Ofcom had placed too much emphasis on projected LLU growth.
- 3.125 One respondent explicitly noted that it agrees with the approach adopted by Ofcom, in particular that the approaches identified by Ofcom to assess differences in competitive conditions were all potentially relevant. It suggested, however, that less reliance should be placed on the common pricing constraint and services provided via alternative infrastructure compared to the other approaches discussed by Ofcom.

Analytical framework for defining in geographic markets in the UK

- 3.126 BT strongly agreed with Ofcom's proposal to define geographic markets. It suggested, however, that it was not necessary for there to be four Principal Operators at one exchange to ensure strong competition and nor was it necessary to specify that at least 10,000 end-users need to be served by any exchange. It argued that LLU operators that chose to place equipment at any exchange must have concluded that the exchange provided them with a viable business opportunity.
- 3.127 Other respondents were less supportive of Ofcom's conclusions. One stated that rollout plans were not certain to be fulfilled and therefore Ofcom's analysis included too many assumptions. They added that consolidation is likely at some point in time and this would mean that the necessary competitive conditions on which Ofcom identified geographic markets would change. Another respondent also stated that too

many judgements had been made in concluding that there were distinct geographic markets. They did not consider that Ofcom had provided convincing evidence that the existence of four Principal Operators appreciably changed the competitive dynamics of the market. A similar point was made in another response in which it was suggested that there needed to be five Principal Operators to an exchange. They added that the analysis should focus on operators that intended to unbundle at exchanges which covered 30% of the UK. These operators might consider offering wholesale broadband access services.

- 3.128 Another respondent disagreed with Ofcom's aggregation of individual local exchange areas into broader geographic markets based on the similarity of competitive conditions in those local exchange areas. This respondent disagrees with Ofcom's approach, drawing attention to the Commission's guidance set out at paragraph 3.195 below. This respondent argues that this guidance requires geographic areas included within a geographic market to be contiguous.
- 3.129 A number of other respondents did not agree with the proposal as they believed that dividing the country into distinct geographic markets would lead to the preservation of dominance and might mean that the provision of wholesale broadband access services to third-parties would not be provided nationally.

Ofcom's response

Definition of the wholesale broadband access product market

- 3.130 Ofcom recognises that there is limited provision of wholesale broadband access product to third-parties (with the exception of BT, which is under a regulatory obligation to offer such supply to third-parties). However, as noted above, under Ofcom's approach to market definition, market definition is a means to an end, the end of which is to assess whether end-users are sufficiently protected by effective competition and whether or not *ex-ante* regulations are required.
- 3.131 In light of this, Ofcom considers that it is appropriate to include self-supply of wholesale broadband access in the assessment of market definition. As explained below at paragraphs 3.152 to 3.153, when defining the relevant wholesale product market it is important that the market is defined absent existing regulation at the level of the market being reviewed. This is to avoid circularity in market definition. Ofcom considers, absent a regulatory requirement to provide a wholesale broadband access service, there would not necessarily be any offered and the only such product would be those that are self-supplied.
- 3.132 In addition, as explained below at paragraphs 3.154 to 3.184 to the extent that there is an indirect constraint from operators which self-supply wholesale broadband access, then these constraints are relevant both for the purposes of market definition and the assessment of SMP.
- 3.133 On the comments relating to the precise specification of the wholesale broadband access product market definition and the discretion that this may give to BT in relation to the provision of backhaul, it is Ofcom's view that it is necessary, both for BT and BT's competitors, to retain some flexibility in the definition. This is because next generation network (NGN) interconnection arrangements are still being discussed by the industry, ahead of BT's deployment of its 21st century (21C) NGN. Given that NGN deployments are expected to continue and accelerate within the period covered by this review and that NGN interconnection arrangements are still

under discussion Ofcom believes that an overly prescriptive product definition may place an unnecessary and artificial restriction on the industry.

- 3.134 On the comments relating to broadband speeds and whether there may be a separate market at higher speeds, Ofcom recognises that at some time in the future, it may be the case that as download speeds increase and applications are developed which require these higher speeds in order to work effectively, then a break in the chain of substitution between different speeds may materialise such that it would be appropriate to define separate product markets. However, at this time there is no evidence to suggest that such developments will occur within the period covered by this review and as such it is appropriate to define the wholesale product market without an upper speed boundary. However, in the event that such evidence becomes available, Ofcom would have to consider this question and whether to conduct a further market review.
- 3.135 On the comments relating to the definition of a broad product market which includes wholesale broadband access for the purposes of supporting the provision of services to residential and business consumers, Ofcom disagrees with the comments suggesting that narrower market definitions would be appropriate. The main reason is that, while a certain degree of product differentiation at the retail level can be observed, there is much less differentiation at the wholesale level. The fundamental wholesale inputs required to support the provision of services to residential consumers are for all intents and purposes identical to those used to support business consumers and vice-versa, although some minor differences are observed in the wholesale products actually offered. As such, Ofcom considers the underlying costs to be identical and the ability for price discrimination between ISPs purchasing wholesale inputs to use as an input to retail services and ISPs purchasing wholesale inputs as an input to business services is severely limited. Given this Ofcom concludes that there is a single broad wholesale market which includes wholesale broadband access for the purposes of supporting the provision of services to residential and business consumers. In addition, Ofcom's consumer surveys have consistently shown that at the retail level for the provision of services to business consumers, cable does constrain DSL and as such should be included within the scope of the relevant market.

The Hull area

- 3.136 Ofcom continues to consider that the Hull area constitutes a separate geographic market from the rest of the UK for the reasons set out below in the discussion of wholesale geographic markets.

Methodology for assessing geographic variations in competitive conditions

- 3.137 Ofcom agrees with respondents that suggest that the use of BT's exchange footprints as the basic geographic unit from which to conduct the geographic market analysis is not technology neutral and set this out in the November consultation. Nevertheless, for the reasons set out there and below, Ofcom continues to consider that this is the appropriate geographic unit for conducting the geographic market analysis.
- 3.138 Ofcom disagrees that the competitive conditions for wholesale broadband access in the UK are sufficiently homogeneous across the UK to conclude that there exists a national market. The analysis set out in the November consultation and updated below, illustrates that there are significant geographic variations in competitive conditions and that the conclusion of defining local geographic markets is appropriate.

- 3.139 Ofcom agrees with the respondent that the structural factors of the presence of a common pricing constraint and the presence of alternative network infrastructure should be given less weight in the geographic market analysis than the other structural factors identified, such as the current and planned availability of LLU-based and cable-based services. This is the approach that Ofcom has adopted as discussed in below.

Analytical framework for defining in geographic markets in the UK

- 3.140 Ofcom continues to consider that the presence of at least four Principal Operators within an exchange footprint should be used to define those geographic areas where competitive conditions are strongest, for the reasons set out in the November consultation and below. On the point relating to whether the criteria of an exchange serving at least 10,000 premises is relevant or not, Ofcom has revised its methodology slightly in this regard and now includes such exchanges in Market 3 where the most recent data available to Ofcom shows that there are four or more Principal Operators currently present in an exchange. The reasons for this change are explained below at paragraphs 3.277 to 3.282.
- 3.141 Ofcom agrees that at the time of the November consultation (and in some respects for the analysis included in this consultation) there was uncertainty as to the precise LLU deployments of the Principal Operators. However, this uncertainty is reducing as investments are deployed and any uncertainty at the time of the final market review statement is likely to be minimal. Similarly, Ofcom's analysis shows that to the extent that consolidation does occur, this would initially have a marginal impact on the precise geographic boundary of the market. This only becomes a significant issue if there were to be many mergers which would nevertheless continue to be subject to general competition law.
- 3.142 On the question of whether four Principal Operators is the "correct" number for identifying a break in the homogeneity of competitive conditions such that it is appropriate to define a separate geographic market, Ofcom explained its rationale in the November consultation and does so again below at paragraphs 3.267 to 3.274. Ofcom considers that its analytical framework, when taken in the round produces a result which broadly represents an accurate reflection of geographic variations in competitive conditions which are likely to prevail during the term of the market review. However, for completeness Ofcom has set out, in Annex 4, a sensitivity analysis to show what affect changes in the minimum number of Principal Operators required has on the precise market boundary.
- 3.143 On the point about the coverage an operator needs to achieve to be considered as a Principal Operator for the purposes of this assessment, Ofcom believes that any operator that is expected to provide a material constraint in the market, either directly or indirectly should be included. Upon assessing the various business models it became apparent that there are two distinct models currently being pursued. One is highly localised and niche whereas the other is wide-scale and mass market. It is Ofcom's view that only the latter could be expected to provide a material constraint and thus only operators with such business models should be included in this assessment. From the data available to Ofcom it was apparent that all the wide-scale and mass market operators had, or planned to have, a coverage of over 10% whereas all the localised and niche operators had a coverage significantly below 10%. Ofcom therefore chose to use the 10% coverage threshold as a way of filtering out the niche operators. It should however be noted that any figure between 5% and 40% will produce exactly the same result. Of course, if such a clear divide between the two business models did not exist then Ofcom would need to individually assess

each operator's business model and decide whether, or not, it could be expected to provide a material constraint. However, given the current circumstances Ofcom does not consider such an approach to be necessary.

- 3.144 On the comments that defining local markets would lead to the preservation of dominance in wholesale broadband access, Ofcom disagrees. The proposal to define local geographic markets reflects the geographic variations in competitive conditions that exist and are likely to persist throughout the period of the market review. If the constraints in local markets are such that end-consumers have sufficient protection and choice then this would indicate that dominance that had previously been present had been diminished. Moreover, the definition of local geographic markets allows for a more targeted approach to regulation.
- 3.145 On the comment suggesting that the Commission's guidance requires areas included within a geographic market to be contiguous, Ofcom disagrees. The Commission's guidance requires that geographic areas included in a geographic market have conditions of competition which are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas. The geographic markets defined by Ofcom achieve both of these requirements. The criteria applied by Ofcom in defining the geographic markets identify those exchange areas of similar competitive conditions. In addition, by using exchange areas as the geographic unit, the exchange areas included in a particular market can be distinguished from neighbouring areas.
- 3.146 On the comment that there might no longer be a nationally offered wholesale broadband access product in the event of the definition of local geographic markets, Ofcom accepts that this may be (but will not necessarily be) the market outcome. However, in those areas where a finding of SMP is made, the remedies put in place will ensure that a wholesale product is available to other operators which will protect consumers from the SMP. In the absence of SMP, competition will ensure that the interests of consumers are adequately protected. Ofcom does not consider that the absence of a nationally available wholesale product (if that was the outcome) would, of itself adversely affect the interests of consumers.

Ofcom's proposals on wholesale market definition

- 3.147 This section considers relevant wholesale market definitions in light of the conclusions of the relevant retail market definitions, as demand for wholesale broadband services is derived from retail demand. It also takes into account Ofcom's full consideration of all of the relevant comments received in response to the November consultation.
- 3.148 The previous section concluded that at the retail level there is a distinct economic market for asymmetric broadband access.

Wholesale product market definition

- 3.149 The wholesale economic markets of asymmetric wholesale broadband access are defined in non-technology specific terms. Reference to any particular technology and network architecture will be for illustrative purposes only. What is important is the functionality provided by this type of wholesale service. The particular use by BT of its ATM and IP networks in its provision of services to ISPs and other operators is not the key issue for market definition, since competing wholesale services might provide similar functionality using a different mix of technology or network architecture.

ADSL-based and cable-based wholesale services

3.150 This section considers whether ADSL-based and cable-based wholesale services are in the same market. Ofcom begins by providing an overview of wholesale broadband access in the UK. For the purposes of market definition, it is necessary to consider the wholesale market definition in the absence of regulation in the market being considered. Therefore, Ofcom considers whether wholesale services are likely to be offered in the absence of regulation. Ofcom then sets out how the operation of indirect constraints can lead to two products which do not compete directly being found to be in the same relevant market and reviews case law and economic theory of indirect constraints. Ofcom then sets out its understanding of the Commission's view of indirect constraints in a market assessment and goes on to consider whether ADSL and cable (identified as being in the same market at the retail level) are also included in the same market at the wholesale level, through the operation of indirect constraints. Finally, as the market definition exercise should also assume competitive market conditions, Ofcom considers if a direct constraint could arise in the absence of regulation.

Overview of wholesale broadband access in the UK

3.151 In the UK, BT is required, through regulation, to offer a wholesale broadband access product to third-parties. This is currently an ADSL-based product and is used by third-parties to offer downstream services, including broadband internet access. In addition, there are a number of LLU operators which offer wholesale ADSL-based products to third-parties, although these are limited in volumes at the current time. In addition to supplying wholesale products to third-parties, BT, the cable operator (Virgin Media) and each of the LLU operators all notionally self-provide a wholesale product to their vertically integrated downstream arm which is used by the downstream arm as an input into their retail broadband internet access products.

Wholesale market products in the absence of regulation

3.152 Ofcom recognises that Virgin Media does not currently offer a wholesale broadband product³⁰. However, in defining the relevant wholesale markets for the purposes of this market review, it is appropriate (for the reasons set out at the beginning of this section) to define the relevant markets, at the retail and wholesale level, in the absence of regulation in the markets being considered.

3.153 In the absence of regulation, it is possible that a wholesale product would not be made available at all (although the scenarios where wholesale products are made available are considered below). In such a circumstance there could nevertheless exist sufficient indirect constraints from the retail level to lead to a conclusion that ADSL and cable are included within the definition of the same wholesale broadband access market. For example, if competition in the retail market, absent regulation at the wholesale level, is not effective it might be appropriate to impose an obligation on the dominant retail provider to provide a wholesale broadband access product as a remedy. In considering this, it would clearly be necessary to take into account the retail constraint provided by cable. If the analysis is then conducted at the wholesale level, in order to reach the same outcome (that is, to require the provision of a

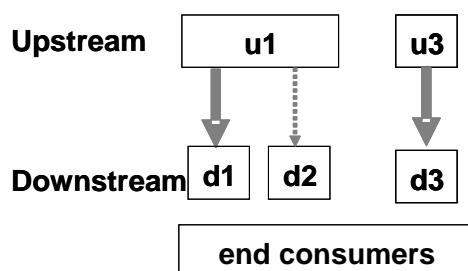
³⁰ Virgin Media does provide a broadband internet access product to AOL. However, since cable operators have been able to offer wholesale broadband access products since they started to broadband enable their networks in the late 1990s; there is to date only one contract with limited end-users; and the control that AOL has over the dimensioning of the product is very limited, it is Ofcom's view that the product offered by Virgin Media is much more aligned to a resale/ intermediate product rather than a wholesale broadband access product.

regulated wholesale broadband access product only in the same set of circumstances) it is again necessary to take into account the constraint imposed by cable, although it will be indirect.

Indirect constraints

- 3.154 As noted above under Ofcom’s approach to market definition, market definition is a means to an end, the end of which is to assess whether end-users are sufficiently protected by effective competition and whether or not *ex-ante* regulations are required. In the context of this market review, this means whether there is a need for *ex-ante* regulation at the wholesale level of the broadband access value chain.
- 3.155 In making this assessment it is necessary to identify all relevant products which provide a sufficient constraint on each other. Generally, this involves assessing direct constraints (e.g. does mobile telephony constrain fixed line telephony etc). and when this is done in the market definition exercise this is achieved by assessing demand-side and supply-side substitution (see paragraphs 3.11 to 3.19). However, when defining wholesale product markets it is also possible that substitution at the retail level provides an indirect constraint on the pricing of wholesale products. If such constraints are ignored this can lead to erroneous conclusions, with market power being overstated and markets being regulated when such regulation is unnecessary
- 3.156 Accordingly, Ofcom’s approach takes into account the effect of indirect substitution through applying the SSNIP as if it were passed through to the retail market. The impact of the upstream SSNIP is ‘diluted’ and so one could argue that the indirect competitive constraints at the upstream level are muted relative to the direct retail level constraint. However, the strength of the indirect constraint at the wholesale level may very well be greater than the strength of any direct wholesale level constraints, as indeed in this case where the latter may in some areas be largely inoperative
- 3.157 The concept of indirect constraints in the context of a market structure with two vertically integrated firms is illustrated in Figure 3.3.

Figure 3.3 – Schematic representation of the indirect constraint



- 3.158 Both firms in Figure 3.3 are vertically integrated, but u1 sells on the merchant market to independent firm d2 in addition to selling to its own downstream operations d1. d2 is only active downstream, retailing to end consumers. Firm u3 only sells to its own downstream operations d3. In such a setting, the ability of firm u1 to raise the wholesale price it charges d2 may be constrained in two ways: firstly, directly, if in response to a rise in the input price u3 begins supplying d2. In this case d2 would simply switch to buying its inputs from u3. Secondly, u1 may also be constrained indirectly by the retail sales of the competing vertically integrated business.
- 3.159 For example, the hypothetical monopolist, u1, may be unable to raise the price to d2 (and its downstream arm d1) profitably because, by virtue of raising the charge for

the wholesale product, it may force d2 (and d1 in order to avoid a margin squeeze) to raise its retail price. As d1 and d2 raise their retail price, end consumers may start switching to other downstream products, including to d3's retail products. In this case, u1 is bound to lose some of its sales – possibly enough to make the initial price rise to d2 (and d1) unprofitable. In sum, the constraint posed by the retail customers may prevent a (hypothetical or real) wholesale monopolist u1 from raising its price (in our case to d2 and d1) above a competitive level.

- 3.160 In the above example, the hypothetical monopolist, u1, is not constrained directly, by an actual or potential supplier of substitute wholesale products, but by the fact that end consumers at the retail level may be switching to retail products that do not depend on its wholesale input. Instead, retail consumers are supplied via products produced from u3's internal "sales". If the facts of the case suggest that this constraint is relevant in the short-term then this constraint is relevant for defining the market.
- 3.161 Ofcom argued in the 2003/04 Review that this analysis implies that the market for wholesale broadband access included both BT's ADSL-based products and cable-based products, even in the absence of a wholesale cable product. This is because at the retail level, cable broadband products do compete with products which use ADSL as an input. If BT raises its wholesale price to ISPs, the ISPs will be forced to increase their retail prices and consumers may switch to comparable products using a different wholesale input (cable). Therefore, the profitability of wholesale price rises by BT is mitigated. As a result, Ofcom considered that the exclusion of cable would result in the market being defined too narrowly.
- 3.162 In addition, this argument can also be used to include within the definition of the relevant wholesale market the notional supply of wholesale broadband access by LLU operators which self provide wholesale elements in order to be able to offer a retail broadband service.

Indirect constraints, case law and economic theory

- 3.163 Given the potential significance of indirect constraints to the analysis, Ofcom commissioned CRA International to prepare a survey of the treatment of captive sales and indirect constraints in market definition and market power assessments by competition policy and telecommunications regulatory authorities in the EU³¹. It is instructive to summarise here some of the main conclusions from that survey:
- From an economic perspective, it can be argued that indirect constraints can be deferred to the market power assessment of the analysis, with market definition only including direct constraints, or alternatively direct constraints and indirect constraints can be taken into account when defining the market. Regardless of which approach is taken it should not ultimately affect the outcome on the question of market power if the analytical model is correctly specified³²;
 - The Court of First Instance (CFI) has stated that indirect constraints can be used to establish whether upstream goods belong to the same market even if they are not directly substitutable;

³¹ CRA's report prepared for Ofcom is available at http://www.crai.com/ecpl/assets/Indirect_constraints_and_captive_sales.pdf

³² As discussed further below, it is not necessarily equally easy to specify the model correctly in each case.

- The Commission has used indirect constraints in the market definition stage of analysis, e.g. GE/Honeywell;
- Guidelines published by a variety of competition authorities do not provide consistent advice for the treatment of indirect constraints in market definition; and
- A number of NRA decisions under the new regulatory framework for electronic communications have included indirect constraints in the market definition stage of the analysis.

3.164 In addition, in the period since Ofcom published its 2003/04 Review, the Dutch NRA, OPTA, commissioned consultancy firm Decisio to prepare a report to explore the possibilities and limitations of the application of the principle of indirect pricing constraints in defining the market of wholesale broadband access with a particular focus on the Netherlands³³. A number of recent academic papers have also sought to explore the question of indirect constraints in market definition. These include two by Inderst and Valletti³⁴ and one by Schwarz³⁵. Further, the Commission has published a consultation on its non-horizontal merger guidelines which recognises the constraints from downstream competitors are relevant when considering non-horizontal mergers³⁶.

3.165 Ofcom has taken all of these documents into account when formulating its proposals in this market review. Taken together Ofcom believes that the documents examined present a powerful case that the assessment of indirect constraints should be a central feature of the market assessment.

The Commission's view on the use of indirect constraints in market assessments

3.166 The Commission, in its Article 7 Comments letter to Ofcom on the 2003/04 Review³⁷, noted that the approach adopted by Ofcom in defining the relevant wholesale market was not in principle inconsistent with the methodology set out in the Recommendation and the Commission's Guidelines (first edition). However, the Commission went on to state that Ofcom should have provided evidence of a potential direct constraint between cable and ADSL and not merely referred to the indirect pricing constraints from the retail level to justify the inclusion of cable in the definition of the relevant wholesale market. The Commission considered that the indirect pricing constraint could be taken into account at the stage of the assessment of SMP.

³³ <http://www.opta.nl/download/Indirect+Pricing+Constraints+in+Market+Analyses+2%2Epdf>

³⁴ Valletti T. And Inderst R., "A Tale of Two Constraints: Assessing Market Power in Wholesale Markets", *European Competition Law Review*, 2007, 2, 84-91

available at <http://www3.imperial.ac.uk/portal/pls/portallive/docs/1/7309737.PDF>.

Valletti T. And Inderst R., "Market Analysis in the Presence of Indirect Constraints and Captive Sales", *Journal of Competition Law and Economics*, 2007, 1-25, available at

<http://www3.imperial.ac.uk/portal/pls/portallive/docs/1/15263697.PDF>

³⁵ Schwarz, A., "Wholesale market definition in telecommunications: The issue of wholesale broadband access", *Telecommunications Policy*, 2006, 31, 251-264.

³⁶ European Commission "Draft Commission Notice: Guidelines on the assessment of non-horizontal mergers under Council Regulation on the control of considerations between undertakings" paragraph 48 available at http://ec.europa.eu/comm/competition/mergers/legislation/draft_nonhorizontal_mergers.pdf

³⁷ http://circa.europa.eu/Public/irc/infso/ecctf/library?l=/uk/registerednotifications/uk20030032/sqsgreffes2004sds200485p/EN_1.0_&a=d

- 3.167 However, as the inclusion of cable in the market did not lead to a different result in the SMP assessment, the Commission considered that a conclusion on the exact scope of the market was not relevant for the purposes of SMP assessment and did not raise serious doubts with regards to Ofcom's approach.
- 3.168 The Commission, in the Explanatory Memorandum published on 13 November 2007, states that wholesale markets are markets involving the demand and supply of products to a third party wishing to supply end users. The Commission also notes that alternative networks, including cable and LLU, could also exercise an indirect constraint through substitutability at the retail level. However, the Commission states that such indirect constraints should be taken into account when assessing if the incumbent DSL operator has SMP.
- 3.169 In the Explanatory Memorandum the Commission also states that self supply of the incumbent operator should be taken into account, However the Commission goes on to state that it is only justifiable to take the self supply of alternative operators into consideration where:
- wholesale customers are interested to procure from alternative operators;
 - the alternative operators do not face capacity constraints;
 - the alternative operators networks have the ubiquity expected by access seekers; and
 - the alternative operators do not have difficulties entering the merchant market.
- 3.170 Ofcom agrees with the Commission that indirect constraints from alternative networks, such as cable and LLU, should be included in the assessment. However, Ofcom considers that, consistent with much of the academic discussion of this issue set out above, regardless of where these indirect constraints are factored into the analysis, be it when defining the scope of the relevant market or the assessment of market power, it should not affect the conclusions of the analysis if the presence of indirect constraints are correctly reflected in the analysis. However, it is not necessarily equally easy to identify relevant constraints in each case. In particular, the danger of overlooking effective constraints appears greater if the relevant products are not included in the market definition. In addition, on the issue of self supply of alternative operators, Ofcom considers that all operators should be included in the assessment if they are able to exert either a direct constraint at the wholesale level or an indirect constraint, for instances via the retail level.

Indirect constraints in wholesale broadband access in the UK

- 3.171 Consistent with established precedent Ofcom considers that for the purposes of assessing the market for wholesale broadband access in the UK, indirect constraints should be taken into account. Conceptually, this could be done at either the market definition stage or at the market power assessment stage. In the former case the defined market would include services that are not directly substitutable at the wholesale level. In the latter case market power would be constrained in practice by services outside of the defined market. Therefore, in principle it should not matter to the overall market assessment which of these approaches is taken, provided the presence of indirect constraints is correctly reflected in the analysis. However, in practice, Ofcom believes that it is generally preferable to include sources of indirect constraints at the market definition stage.

3.172 Ofcom's preference in this particular case is to include the consideration of indirect constraints in the market definition stage. The main reasons for this include:

- The retail broadband market in the UK is very competitive. A significant proportion of this retail competition relies on the self-provision of wholesale inputs (i.e. BT, Virgin Media and LLU operators). Including these constraints in the market definition stage would ensure that this competitive dynamic is fully captured;
- The competitive constraint provided by cable and LLU operators varies by geographic location. Including these constraints in the market definition stage would ensure that the geographic dimension of competition is fully captured;
- The indirect constraint which cable and LLU operators exert at the wholesale level results from potential substitution by retail customers. This is a demand-side effect. Whilst it is often argued that it is possible to take account of supply-side constraints either at the market definition stage (as supply-side substitution) or in the assessment of market power (as potential entry), the constraining effect of cable and LLU operators does not depend on any perceived threat of entry to the wholesale market; and
- If indirect constraints were included only in the assessment of SMP, they would not be reflected in the calculation of market shares. Given the importance given to market share in SMP analysis, there would be a danger of overstating market power if sources of indirect constraints were not included in the relevant market. Given the level of BT's share of wholesale broadband access services sold to third-parties, Ofcom considers that to exclude the constraint imposed by cable and LLU at the market definition stage therefore risks, in effect, prejudging the assessment of SMP. Hence for the purposes of market definition, Ofcom takes the approach of defining a broader market including both ADSL-based and cable-based wholesale broadband access services, leaving the assessment of the strength of competitive pressure from indirect constraints (and direct constraints) to the assessment of SMP.

3.173 The following sets out Ofcom's assessment of indirect constraints, assessing whether cable is a sufficient constraint to ADSL such that it should be included in the market for wholesale broadband access.

3.174 As noted above at paragraph 3.151, BT is the major broadband operator that provides wholesale broadband access products to third-parties³⁸. Moreover, in an unregulated environment where BT was not required to offer wholesale broadband access products to third-parties it is possible that there would be no wholesale provision at all. In the absence of wholesale products there would clearly be no direct competition between ADSL and cable at the wholesale level. However, it is still possible to consider the question of market definition at the wholesale level because as noted above in the discussion of indirect constraints, competition would take place further downstream at the retail level. The relevant question is whether a hypothetical monopolist of a wholesale service could profitably sustain a small but significant price rise. Retail prices can be regarded as being comprised of a number of input costs and one of these input costs can be characterised as the cost of a wholesale service. If the charge for this wholesale service was to increase, and all other elements of the

³⁸ Some LLU operators offer wholesale broadband access products to third-parties but currently only have limited volumes.

retail service were priced at the competitive level, this would translate into a price increase at the retail level.

- 3.175 This means that, for example, a 10 per cent price increase for a notional ADSL wholesale service would translate into a price increase (of less than 10 per cent) for the ADSL based broadband internet access product at the retail level. This retail price increase would be less than 10 per cent because the wholesale element is only part of the total retail cost stack. Using BT's current IPStream and BT Central product prices as an estimate for a typical wholesale broadband access product and its retail prices, Ofcom considers that wholesale costs constitute approximately 85 per cent³⁹ of the retail price of an ADSL-based broadband internet access service. Therefore, a 10 per cent price increase of the wholesale element would translate into an 8.5 per cent price increase at the retail level.
- 3.176 Such a price increase would lead to some end-users switching from ADSL-based to cable-based broadband internet access at the retail level. The relevant question in terms of wholesale market definition is whether the scale of such switching would be sufficient to render the price increase unprofitable. Clearly, if the wholesale element of the retail price were very small, it would be unlikely that significant switching at the retail level would take place. There would thus be a case for regarding ADSL and cable wholesale services as being in separate markets.
- 3.177 However, in this case, the wholesale element of this service comprises approximately 85 per cent of the retail price, and, in principle, ADSL and cable services are essentially the same from the end-user's perspective and therefore are very close substitutes at the retail level. On that basis, it is Ofcom's current view that an 8.5 per cent price increase at the retail level (i.e. one corresponding to a 10 per cent increase at the wholesale level) should lead to sufficient numbers of customers switching to cable-based broadband internet access to render the price increase unprofitable.
- 3.178 It is not possible from Ofcom's latest end-user research to determine directly the likely level of switching in response to an 8.5 per cent increase at the retail level as the research only asked respondents likely reaction to a 10 per cent SSNIP. However, the end-user research indicated that around 19 per cent of ADSL customers would switch in response to this 10 per cent SSNIP. If a "linear" relationship were assumed between switching rate and the price increase, then a 8.5 price rise could potentially imply a switching rate of just over 16 per cent.⁴⁰ This falls at the upper end of our estimated critical loss range of 12 to 16 per cent calculated (at the retail level)⁴¹, which would imply that a SSNIP on wholesale ADSL would be unprofitable. Ofcom also considers that the history of price and service characteristics changes between cable retail services and ADSL wholesale services supports this conclusion.

³⁹ This number is derived from calculating the ratio between a wholesale price of £12.95 and £14.09 (inc VAT) and a retail price of £14.98 and £16.74 (inc VAT) and is higher than in the 2003/04 Review, where wholesale costs were estimated to constitute approximately 45% of the retail price. This is due to the greater reductions in retail broadband prices that have occurred during the period since the 2003/04 Review.

⁴⁰ That is, based on 19% switching rate in response to a 10 per cent price rise would imply a 1.9% switching rate for each 1% increase in the price.

⁴¹ Ofcom has assumed that the critical loss ranges for wholesale and retail are broadly similar. This is appropriate as the relevant wholesale cost stack in the case of WBA relates largely to conveyance and wholesale overheads. Hence the cost savings a hypothetical monopolist of a wholesale product might experience due to customer switching are unlikely to be much higher than implied by the 25% to 50% range used to derive the retail critical loss estimates.

- 3.179 In light of the above consideration of indirect constraints in wholesale broadband access in the UK, Ofcom considers that, in this unregulated situation, the evidence suggests that cable would provide an indirect constraint on the behaviour of the ADSL-based wholesale broadband access provider to such an extent that the appropriate wholesale market definition would include both ADSL and cable.
- 3.180 It is also worth considering a counterfactual situation to that where cable and ADSL are included in the same wholesale product market. As shown above under the discussion of retail market definition, the empirical evidence suggests that a SSNIP by a hypothetical monopolist in the provision of ADSL-based broadband access services is constrained by cable at the retail level. If Ofcom were to conclude that ADSL-based wholesale services were not constrained by cable, such that they were defined to be included in separate wholesale markets, this would imply (in a world absent LLU operators) that BT is dominant in the provision of wholesale broadband access services, irrespective of the retail market share of cable-based operators. This would be the case even though the evidence suggests that there is a strong constraint in operation at the retail level.

Direct constraints assuming competitive market conditions

- 3.181 The preceding analysis considered the case, absent regulation, where neither ADSL nor cable offered a wholesale broadband access product to third-parties. However, in principle, absent regulation, it is possible that cable operators and ADSL operators might offer a wholesale broadband product. Given that the market definition exercise assumes competitive conditions and the absence of regulation, the relevant question is whether wholesale products would be offered in these circumstances, and whether a cable wholesale product would constrain the price of the ADSL wholesale product and vice versa. Under competitive market conditions, both Virgin Media and BT might have an incentive to offer a wholesale product. Competitive pressure would mean that, on average, their upstream (network) and downstream (retail) divisions would make only a normal return (i.e. their cost of capital). In these circumstances, Virgin Media or BT would find it profitable to supply a wholesale product to any alternative operator which was more efficient than them in the provision of retail services, or was one that could successfully market broadband services to a wider range of customers (perhaps through greater product differentiation or combining with its own service offering such as content).
- 3.182 Given the similarity of retail prices for cable-based broadband internet access and ADSL-based broadband internet access (as discussed in paragraph 3.43) it is reasonable to presume that cable operators could provide a wholesale broadband product at similar cost to that of the ADSL alternative, and that the services offered would have similar characteristics. If a cable wholesale broadband access product were made available on similar terms as the ADSL product, purchasers of the wholesale product might be expected to substitute between them. An increase in the price of the ADSL or cable product above the competitive level would lead to purchasers switching to the alternative product. Thus, cable wholesale access and ADSL wholesale access should be included in the same product market on the basis of direct constraints.
- 3.183 A further case where direct constraints from cable could materialise is where ADSL offers a wholesale broadband access product to third-parties, absent regulation but cable does not. In such circumstances, if, in the event of a SSNIP by the hypothetical monopolist of ADSL a cable operator were able to offer a wholesale product then wholesale cable could be in the same product market on the basis of supply-side substitution. In order for there to be such a direct constraint the cable operator would

have to have a sufficient incentive to offer a wholesale product to third-parties and be able to technically offer a substitute wholesale product at sufficiently low cost within a sufficiently fast timeframe (usually one year for the purposes of market definition). While Ofcom does not have evidence to suggest that such a direct constraint exists at this time, mainly because a SSNIP has not been affected in the provision of ADSL-based wholesale broadband access, in principle such a constraint could nevertheless exist.

Conclusion

3.184 In conclusion, Ofcom considers that the indirect effects via the retail level are sufficient to include cable in the same wholesale broadband access market as ADSL. However, in addition, direct effects at the wholesale level would increase the existence of a sufficient constraint. Therefore Ofcom considers that the appropriate wholesale broadband access market definition includes both ADSL and cable.

Residential and business wholesale broadband access

3.185 This section considers, in light of the responses to the November consultation, whether wholesale broadband access products required to support business retail asymmetric broadband internet access are in the same market as wholesale broadband access products required to support residential retail broadband internet access. As noted above in the discussion of retail product market definition, Ofcom considers that business and residential asymmetric broadband internet access services are in the same relevant market at the retail level. However, as noted there this review is concerned with wholesale level.

3.186 The respondents to the November consultation that commented on Ofcom's conclusion in terms of the wholesale product market definition were concerned that Ofcom had wrongly concluded that a broad market exists, which includes wholesale broadband access for both residential and business asymmetric broadband internet access products. These respondents were of the view that separate residential and business wholesale markets exist.

3.187 Ofcom has carefully reconsidered its conclusions on the definition of the residential and business wholesale broadband access product market in light of the comments received in response to the November consultation. However, Ofcom continues to consider that a broad market exists, which includes wholesale broadband access for both residential and business asymmetric broadband internet access products. This is for the following main reasons:

- The wholesale input to support the provision of asymmetric broadband internet access services to business customers is to 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 is identical to that for residential end-use;
- 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; 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 VPN. Indeed, as noted in paragraph 3.99 it is possible for a VPN service to be downstream to the retail level.

Wholesale broadband access product

- 3.188 The 2003/04 Review defined the relevant economic markets for wholesale broadband access to be (separately) asymmetric broadband origination and broadband conveyance. Asymmetric broadband origination was defined as extending from the end-user's premises to the first suitable point of interconnection within the core network, i.e. the parent node. Asymmetric broadband origination therefore consisted of local access and some backhaul. Broadband conveyance on the other hand is the conveyance of broadband traffic across the core network in such a way as to allow interconnecting operators to differentiate the technical characteristics of the services they offer to their ISP and other customers.
- 3.189 In this current market review, Ofcom no longer believes that this split is necessary. This is primarily because of the migration of wholesale broadband access products to next generation infrastructure within the timeframe of this market review and the inherent unpredictability at this time of the precise method in which these services will be delivered. In these circumstances, it is more appropriate to define the scope of the relevant market as being asymmetric access and any backhaul to allow interconnection with other Communications Providers. The effect of this change in the definition is that the backhaul can extend beyond the parent core node to a point which allows interconnection with other operators.
- 3.190 As wholesale broadband access will ultimately be used to provide broadband internet access at the retail level, it is important that it can deliver the services that characterise broadband internet access. That is to say, the wholesale broadband access product must be capable of supporting broadband internet access and other multimedia applications, have the capability to be always-on and have a potential downstream speed that exceeds that achievable on a traditional dial-up service.
- 3.191 A point to note from this definition of wholesale broadband access is that it does not have an upper speed limit. This is because there does not yet appear to be a break in the chain of substitution between asymmetric broadband internet access services available today, which can go up to 24Mbit/s. This means that these higher speed asymmetric broadband internet access products are a sufficient substitute for lower speed asymmetric broadband internet access products i.e. there is a chain of substitution through the currently available broadband internet access speeds. It is possible that available speeds may increase over the period of this review, for example using so called next generation access technologies. If it transpires that new higher speed applications are developed and increasingly taken up by end consumers, it may be necessary for Ofcom to consider further its definition of broadband internet access services in future market reviews. However, until such a time, these new higher speed services are considered to be included within the scope of this market.

Bundling

- 3.192 As explained in the definition of retail asymmetric broadband internet access, recently there has been an increase in bundling of retail broadband services with other services. That discussion concluded that there was not sufficient evidence to consider that those other services in conjunction with broadband services constitute a single market. At the wholesale level, there is less opportunity for operators to bundle wholesale broadband access with other offerings.

- 3.193 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

- 3.194 Having considered the relevant wholesale product market definition, the wholesale geographic market definition is considered. The principles of demand-side and supply-side substitution also apply to the definition of the geographic scope of the relevant economic market. However, rather than considering alternative products, the analysis assesses the effect on demand for the relevant product if there is a relative price change in a narrow geographic area. If products in the relevant product market in other areas are sufficient substitutes, such as to render the price rise unprofitable, then the geographic scope of the relevant market is widened to include these additional areas. Similar principles apply in relation to supply-side substitution. The presence of common pricing constraints across geographic areas is also relevant for the purposes of defining the geographic scope of a market.
- 3.195 Also relevant is paragraph 56 of the SMP Guidelines on market analysis and the assessment of market power, which states that in cases where there is a sufficient degree of variety in competitive conditions between geographic areas (what a sufficient level might be is not specified), distinct local markets should be defined:

“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. The definition of the geographic market does not require the conditions of competition between traders or providers of services to be perfectly homogeneous. It is sufficient that they are similar or sufficiently homogeneous, and accordingly, only those areas in which the conditions of competition are ‘heterogeneous’ may not be considered to constitute a uniform market.”

- 3.196 This definition suggests that different geographic areas are found to be in the same relevant geographic markets to the extent that competitive conditions in different areas are sufficiently homogeneous.

Overview of demand and supply for wholesale broadband access in the UK

- 3.197 Before assessing in detail the definition of the wholesale broadband access market, it is worthwhile considering current and future patterns of geographic demand. 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.

- 3.198 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 45% of retail broadband internet connections in the UK. In addition, BT self-supplies its wholesale broadband access products on a national basis.
- 3.199 This indicates that in the UK the presence of cable and LLU operators, each of which have their own infrastructure on a sub-national basis, there is significant sub-national demand for wholesale broadband access products.
- 3.200 On the supply-side, whilst at the current time BT is by far the largest provider of wholesale broadband services on the merchant market other operators are now starting to enter this market. Indeed, most of the large LLU operators have informed Ofcom 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. This is in line with Ofcom's view that not all LLU operators will choose to solely self-provide to their own downstream business. 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.

Geographic demand-side substitution

- 3.201 The question being asked in this assessment is whether the purchaser of wholesale broadband access services would purchase the service from another geographic area if faced with a local SSNIP by a hypothetical monopolist, to the extent that it would render the SSNIP unprofitable. If the SSNIP would be unprofitable then this other geographic area should be grouped with the original area being considered for the purpose of defining the relevant market.
- 3.202 However, it needs to be recognised that these wholesale services are an input to other products and services that are subsequently used to supply various downstream (retail) markets. Further, wholesale broadband access, in keeping with communications networks more generally, has a fixed and pre-defined geographic presence. This means that a wholesale purchaser would only be able to switch its demand to an alternative area if the downstream (retail) customer is willing to move to that alternative area. Thus, the question becomes whether a sufficient number of downstream customers would move location (house, business premise, etc.) in response to a SSNIP at the wholesale level, such as to make the SSNIP unprofitable.
- 3.203 It further needs to be recognised that a wholesale SSNIP will be diluted in any downstream markets. For example, if we have a wholesale product which is priced at £10 and this is used, in conjunction with other inputs, to make a retail product which is priced at £12 (i.e. the wholesale product would constitute over four-fifths of the price of the retail product), then a 10% SSNIP at the wholesale level, which is simply passed on, would result in a price rise of around 8.5% at the retail level.
- 3.204 Given that the cost associated with moving location is likely to be significantly higher than the cost of a wholesale broadband access SSNIP, it is reasonable to conclude

that geographic demand-side substitution is either a very weak or non-existent constraint. This approach would therefore lead to the definition of very narrow markets from the demand-side, which is unlikely to be practical to analyse or be representative of competitive constraints that exist. Ofcom therefore concludes that in this case demand-side substitution is not relevant to assessing the geographic market definition.

Geographic supply-side substitution

- 3.205 The question being asked in this assessment is whether a supplier of wholesale broadband access who is operating in one geographic area would start supplying in another geographic area if this other area was exposed to a SSNIP by a hypothetical monopolist, to the extent that it would render the SSNIP unprofitable. If the SSNIP would be unprofitable then these geographic areas should be grouped together for the purpose of defining the relevant market.
- 3.206 In communications markets geographic supply-side substitution is generally considered to be a weak or non-existent constraint due to the high cost and long lead times associated with deploying new network infrastructure. However, the availability of regulated LLU and backhaul products (which represent upstream regulatory remedies)⁴² has the potential to change this.
- 3.207 LLU allows competing Communications Providers to use the ubiquitous access network by installing their own equipment in the incumbents' local exchanges. However, there are 5,587 local exchanges in BT's network and 14 local exchanges in KCOM's network. In the absence of a wholesale broadband access product, it would be necessary for a Communications Provider seeking to achieve full national coverage on the basis of LLU to install equipment in all of these exchanges.
- 3.208 Ofcom has considered whether the availability of LLU allows supply-side substitution by an operator present in one (exchange) area into another (neighbouring) area in the event of a SSNIP in the price of wholesale broadband access in this latter area. As noted in the section above on product market definition, it may be both economic and technically possible to begin using LLU in a reasonable time frame in some, though not all, areas. Ofcom believes that the availability of LLU may be relevant to the issue of whether two (adjacent) areas form part of a single geographic market. However, because the economics of LLU vary by geographic area, this can only be decided through an analysis of each of the areas in question. Moreover, it seems likely that the plans of LLU operators already cover most of the areas where LLU might permit supply-side substitution to take place. Supply-side substitution based on LLU would not then provide an additional competitive constraint over and above that identified by the analysis of competitive conditions and as such is not relevant for market definition. Ofcom considers that the effect of LLU is best captured by its proposal to define geographic markets on the basis of homogeneity of competitive conditions, which largely reflect the extent of (planned) entry by LLU operators.

⁴² These remedies were imposed as a result of Ofcom's review of the wholesale local access markets <http://www.ofcom.org.uk/consult/condocs/rwlam/statement/> and its review of retail leased lines, wholesale symmetric broadband origination and wholesale trunk markets <http://www.ofcom.org.uk/consult/condocs/llmr/statement/>.

Common pricing constraints

- 3.209 As explained at paragraphs 3.108 to 3.115, which discussed the definition of the geographic scope of the retail markets, the presence of common pricing constraints can be used to define the boundary of geographic markets. This is the approach that Ofcom adopted in the 2003/04 Review which defined separate geographic markets covering the UK (excluding the Hull area) and the Hull area.
- 3.210 Ofcom, in this market review, has again considered whether the presence of common pricing constraints can be used to define the geographic boundaries of the markets. The 2003/04 Review concluded that there was a separate geographic market for the Hull area from the rest of the UK national market (by which is meant the UK excluding the Hull area) for asymmetric broadband origination. Ofcom noted that the only provider of retail fixed broadband internet access in the Hull area was KCOM. Neither BT nor the cable operators, which at that time offered common prices across the rest of the UK, offered a broadband internet access service in the Hull area. Therefore, the Hull area was subject to a common pricing constraint (KCOM's prices) but was not subject to the common pricing constraint that was present throughout the rest of the UK.
- 3.211 Since the 2003/04 Review there have been a number of developments across the UK as a whole. However, Ofcom considers that these developments do not act to undermine the previous reasons for concluding that a separate geographic market exists in the Hull area. BT, cable operators or LLU operators still do not have a presence in the Hull area and as such a common pricing constraint continues to exist across the whole of the Hull area. Therefore, Ofcom has again defined a separate geographic market for the Hull area based on the presence of a common pricing constraint.
- 3.212 However, in the rest of the UK, market developments have seen geographic variations in wholesale broadband access prices, most notably BT's decision to geographically vary its DataStream and IPStream prices in April 2005. Therefore, it may be the case that the identification of common pricing constraints in the rest of the UK is no longer appropriate, for reasons discussed further below.
- 3.213 Given the limitations of demand-side and supply-side substitution to inform the relevant scope of the geographic wholesale broadband access market and BT's decision to geographically vary its DataStream and IPStream prices, Ofcom has adopted the approach of assessing the extent to which there are, or could be expected to be on a forward-looking basis for the period of the market review, geographic variations in competitive conditions and using this assessment as the basis for defining the boundary of the geographic market in the UK (excluding the Hull area). Ofcom's approach is set out in detail in the remainder of this section.

Geographic Market Assessment

- 3.214 As noted above, Ofcom, in the 2003/04 Review concluded that there were two geographic markets for asymmetric broadband origination: the UK (excluding the Hull area) and the Hull area. The main reasons for Ofcom concluding a national (the UK excluding the Hull area) geographic market definition for asymmetric broadband origination were that:
- BT had priced and continued to price on a national basis at both the retail and the wholesale level;

- the cable operators priced on a national basis, even though their cable franchise areas were in geographically distinct locations;
 - ISPs designed and priced their products on a national basis; and
 - available evidence on advertising practices suggested that all operators in the broadband Internet access market advertised on a national basis.
- 3.215 Ofcom recognised however that within the national market there were local characteristics including some variation in the degrees of competitive pressure. These variations in competitive pressure were, at the time, primarily from cable operators.
- 3.216 Since the 2003/04 Review there have been a number of developments that suggest that there may no longer be a national geographic market. In particular, in April 2005 BT introduced geographically de-averaged prices for its wholesale broadband products by reducing its prices by £1.10 in 561 “dense cell” exchanges that tend to serve more densely populated geographic areas. In addition, as noted above at paragraphs 3.108 to 3.115 the rollout of LLU-based services has increased local competitive pressures and has led to ISPs offering retail prices and products that vary by geography.
- 3.217 When assessing the geographic scope of a market on the basis of the homogeneity of competitive conditions it is normal practice to start with a narrow definition (small area) and then to see how this can be augmented. This raises the following questions:
- i) What geographic unit should be used for the geographic market assessment? That is, what is the smallest unit of area to be considered and how should it be defined?
 - ii) What factors should be used to identify similar conditions of competition?
- 3.218 In some cases there will be an interaction between these two questions. However, in the first instance, the question relating to what constitutes an appropriate geographic unit will be considered in isolation. Following this the factors that should be used to identify similar conditions of competition will be considered.

What geographic unit should be used for the geographic market assessment?

- 3.219 For any geographic market assessment it is necessary to define the geographic units, or building blocks, to be used. At the extreme, but in keeping with the view that retail customers are unlikely to move house/business premises in response to a SSNIP, it could be concluded that the geographic unit should be individual premises, i.e. each house and business premises would be considered separately. In the UK there are about 28 million individual premises and therefore such an extreme position may be impractical. Ofcom therefore needs to consider a more practical building block. Table 3.1 sets out some options for possible geographic units and identifies the approximate number of units needed to cover the entire UK.
- 3.220 When selecting an appropriate geographic unit it is likely that there will need to be a trade-off between granularity and practicality. Using individual houses and business premises would certainly allow a very granular assessment to be conducted, but obtaining accurate data, conducting the analysis and specifying/implementing the findings is likely to be impractical. On the other hand, the geographical unit selected

needs to be capable of mapping the local competitive constraints that exist in the market and in effect this means that the unit should not be so large as to arbitrarily mix together areas that have heterogeneous competitive conditions. For example, using the nations and regions areas may seem to be attractive from a presentational point of view, but such large areas are likely to comprise very diverse competitive conditions within each area and as such their use would fail to capture the local competitive conditions that are being assessed. Each of the options identified in Table 3.1 are discussed in more detail below.

Table 3.1: Geographic unit options

Option	Geographic unit	Number of units
1	Premises	c.28m
2	Full postcode	c.1.8m
3	Postal sector	c.11k
4	BT local exchanges	c.5.6k
5	Groups of local exchanges based on incumbent network hierarchy	? (depends on hierarchy)
6	Counties/metropolitan districts	c.70
7	Nations and Regions	12

Option 1 - Premises

3.221 The use of individual premises would support very granular assessments and if implemented accurately would avoid the inadvertent mixing of consumers that face different competitive conditions. However, with approximately 28 million individual premises in the UK obtaining accurate data, conducting the analysis and specifying/implementing the findings is likely to be impractical and thus would not allow the identification of areas in which competition is sufficiently homogenous such that they may be considered distinct geographic markets.

Option 2 – Full postcode

3.222 Full postcodes represent an aggregation of a small group of premises that are geographically close to one another, thus reducing the total number of geographic units needed to cover the UK. The grouping of premises into postcodes is independent of any Communications Provider and technology and this may be considered desirable from a neutrality point of view. However, because of this independence it is possible that the competitive conditions will vary within a postcode. This is because network rollout will not necessarily follow postcode boundaries and thus there may be some premises within a postcode that have access to a certain service and others that do not. This type of misalignment is an inherent consequence of aggregating premises. However, from a practicality point of view, some level of aggregation will be necessary. Therefore, when selecting the geographic unit, Ofcom is mindful of this issue and aims to minimise any adverse affects. There is thus a trade-off between granularity/precision and practicality.

3.223 The use of postcodes compared to individual premises is clearly a move towards practicality in the trade-off between granularity and practicality. However, with c.1.8 million postcodes in the UK it is likely that this option remains biased towards granularity, as the practical implications of handling c.1.8 million units are still formidable.

Option 3 – Postal sector

- 3.224 Postal sectors represent an aggregation of a group of postcodes that are geographically close to one another, thus reducing the total number of geographic units needed to cover the UK. Compared with premises and postcodes their use would therefore be a move towards practicality in the trade-off between granularity and practicality.
- 3.225 As with postcodes, postal sectors also provide a technology neutral approach to aggregation and again this means that it is possible that the competitive conditions will vary within a postal sector. Indeed with greater aggregation there is a greater likelihood that the competitive conditions will vary within any given geographic unit and/or that any variation will be larger. However, this has to be accepted as a natural consequence when trading-off granularity and practicality. With approximately 11,000 unique postal sectors in the UK this may represent a reasonable trade-off.

Option 4 – BT local exchanges

- 3.226 With approximately 5,600 individual exchanges, the use of BT's local exchange footprints offers about twice as much aggregation as postal sectors, but still offers a reasonable level of granularity. It therefore probably strikes a reasonable balance in the trade-off between granularity and practicality. However, this approach is not technology neutral as it has as its basis the network topology of BT. However, if a truly technology neutral approach to aggregation were to be adopted it is possible that the competitive conditions would vary within the resultant geographic unit. This is because network rollout, and thus service availability, will not necessarily follow any particular identifiable boundary, such as postal sectors or county boundaries. This will lead to a misalignment between a network specific geographic unit and a technology neutral geographic unit.
- 3.227 If there were only one access network within a specific geographic area then basing the geographical unit on this would seem to be a sensible approach. However, where there is more than one type of access network a decision would need to be made over which access network would be used to define the boundary of the geographic unit. In these circumstances it would seem appropriate to define the boundary of the geographic unit in reference to any upstream remedy that may be influencing any variations in competitive conditions, because any geographic variations in these conditions will tend to reflect the structure of the network on which the upstream remedy is imposed.
- 3.228 This suggests that BT's local exchanges may be an appropriate geographic unit as BT has obligations flowing from the review of competition in the provision of wholesale local access where it was found to have SMP⁴³. As explained below, in the discussion of the factors which could be used to identify areas of similar competitive conditions, it is the imposition of these upstream remedies (including the requirement for the provision of LLU, which is provided at the local exchange level) that is in large part responsible for the variations in competitive conditions that can be observed in the wholesale broadband access market.
- 3.229 Moreover, BT's geographic de-averaging of its wholesale broadband access prices is based on its local exchange footprints, which further reflects the presence of actual or prospective competition from LLU operators.

⁴³ Similar obligations were imposed on KCOM in the Hull area but as explained in paragraphs 3.210 to 3.211 Ofcom is using the presence of a common pricing constraint to define the geographic boundary in the Hull area.

Option 5 – Groups of local exchanges based on BT network hierarchy

- 3.230 It could be appropriate to use groups of exchanges as the relevant geographic area from which to conduct the geographic analysis. This may be especially relevant where the wholesale broadband access product is provided at some point (or points) downstream of local exchanges, that is, at a point closer to the core of the network where traffic from a number of different exchanges is aggregated.
- 3.231 However, such an approach may be considered to be circular as it is assuming what in essence is a remedy (the provision of a wholesale broadband access product) when analysing whether there are local geographic markets. Moreover, Ofcom's understanding is that the variations in competitive conditions on a geographic basis are being driven by the increased take-up of LLU. This means that basing the geographic analysis on groups of local exchanges risks mixing areas of competitive conditions within that geographic unit i.e. within a group of exchanges there could be exchanges in which LLU entry has occurred and exchanges where there has been no entry and there is little prospect of entry. This is particularly true if the exchange groupings are based on an operator's network hierarchy.

Option 6 – Counties/metropolitan districts

- 3.232 Counties and metropolitan districts represent an aggregation of a group of individual premises within that county/ district and as such offer a further level of aggregation. As with individual premises, postcodes and postal sectors (options 1, 2 and 3) it would provide a technology neutral approach to aggregation. Although there would be the benefit in terms of practicality as there would only need to be around 70 areas considered, there would be a larger issue with the lack of granularity. With greater aggregation there is a greater likelihood that the competitive conditions will vary within any given geographic unit and/or that any variation will be larger.

Option 7 – Nations and regions

- 3.233 This option would be similar to option 6 in that it would provide a technology neutral solution but would face the same problems associated with the level of aggregation and would not provide an effective means to test differences in competitive conditions.

Conclusion on geographic unit

- 3.234 Ofcom believes that the most appropriate geographic unit for assessing the wholesale broadband access geographic market definition is BT's local exchange footprints (Option 4). This is based on the following reasons:
- these exchange footprints align perfectly with the upstream regulatory remedy LLU;
 - the belief that LLU is a significant driver in the changing competitive conditions in the wholesale broadband access market; and
 - the fact that BT's geographically de-averaging of wholesale broadband prices is based around its local exchange footprints which reflects LLU competition.

Factors that could be used to identify areas with similar competitive conditions

- 3.235 Having determined the geographic unit to be used it is necessary to analyse the conditions of competition in each local exchange so that areas where 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 can be grouped together for the purpose of the geographic market assessment.
- 3.236 As discussed earlier in this section, defining the scope of geographic markets on the basis of demand and supply-side substitution may result in impracticably narrowly defined markets. The standard methods used to define markets may be characterised as largely focussing on the behaviour of customers and suppliers, that is, the way in which they respond to price changes (in the SSNIP test) and their buying and pricing patterns (in considering the extent of a common pricing constraint). On the other hand, an assessment of the homogeneity of competitive conditions between geographic areas places more weight on the structural factors that are most relevant in determining how competitive a market is. These structural factors include the number of competitors and the economic viability of entry in an area and can help identify the actual and/or potential level of competitive constraint in a particular geographic area.
- 3.237 In applying this approach to market definition which involves assessing variations in competitive conditions, the types of analyses used to assess such variations are similar to some of those which Ofcom would adopt when assessing SMP in a relevant economic market. The difference here though is that the competitive conditions for different products are assessed on a geographic basis to define the geographic market. Thereafter, once the scope of the product market and geographic market has been identified, the relevant SMP analysis would be conducted in reference to those markets.
- 3.238 The use of a consistent set of indicators to define the geographical scope of the market and in the analysis of SMP should help ensure that competitive conditions in a defined area are indeed broadly homogenous and that any finding of SMP or non-SMP is appropriate to the market as a whole. Therefore, this approach is likely to reduce the occurrence of “black holes”⁴⁴ in any SMP assessment and makes it much more likely that, when the analysis of SMP and the need for remedies is performed using data for the combined area, its conclusion will be appropriate throughout the combined area as a whole.
- 3.239 Ofcom has identified the following possible structural factors that could be used to identify geographic areas of similar competitive conditions in the wholesale broadband access market:
- i) current availability of cable-based services;
 - ii) current availability of LLU-based services;
 - iii) planned availability of LLU-based services;

⁴⁴ “Black holes” being those small areas within a larger area where the incorrect conclusion on SMP is found, e.g. no SMP is found in a broad area, but that area contains pockets within that area where there is indeed SMP. Alternatively, SMP could be found in a broad area but that area contains pockets within that area in which there are competitive constraints such that SMP should not have been found.

- iv) LLU-based entry likely;
- v) presence of a common pricing constraint; and
- vi) presence of alternative network infrastructure.

3.240 Clearly there is significant overlap between some of these factors and in fact they could all be relevant to a greater or lesser degree when assessing geographic variations in competitive conditions. We discuss the relevance of each of these below.

Approach 1: Current availability of cable-based services

3.241 Cable-based retail broadband services are available to c.45% of premises in the UK and it seems unlikely that there will be any further rollout of cable networks in the short to medium term. One approach would be to group together all areas (geographic units) where cable is available and all areas where it is not. The rationale for doing this would be that areas where cable-based services are available could be said to have conditions of competition that are similar or sufficiently homogeneous and equally areas where cable-based services are not available could also be said to have conditions of competition that are similar or sufficiently homogeneous. Furthermore the prevailing conditions of competition within each of these two areas are appreciably different.

3.242 As recognised in the 2003/04 Review, competition from cable-based services leads to variations in the competitive conditions on a geographic basis. However, at that time, Ofcom concluded that the variation in competitive conditions caused by the presence of cable-based services was not sufficient to lead to a definition of local markets. Furthermore, since the 2003/04 Review there have been increases in the competitive pressure within the wholesale broadband access market as reflected (at least in part) in BT's decision to geographically de-average its wholesale prices. This appears however to be driven by the increased roll-out by LLU operators rather than by the presence of cable. This would suggest that whilst the availability of cable-based services has some impact on the geographic competitive conditions within wholesale broadband access it would not be appropriate to define the boundary of the relevant geographic market solely on the basis of the presence of cable infrastructure because other factors are at work.

Approach 2: Current availability of LLU-based services

3.243 Like cable-based services, LLU-based services are currently only available in certain geographic areas and this leads to variations in the competitive conditions on a geographic basis.

3.244 Although BT has an obligation to make LLU available in all parts of the UK, with this obligation being derived from the remedies imposed as a result of BT's SMP in the upstream wholesale local access market, it is apparent from the publicly stated plans of LLU operators that LLU is unlikely to be successful in all geographic areas. This view is consistent with Ofcom's own analysis in its Strategic Review of Telecommunications which recognised that LLU would be unlikely to be economically viable across all geographic areas⁴⁵.

⁴⁵ For example see Ofcom's Strategic Review of Telecommunications phase 2, paragraph F.71.
http://www.ofcom.org.uk/consult/condocs/telecoms_p2/tsrphase2/PolicyAnnexes_FL.pdf

- 3.245 The economics of telecommunications access networks are such that the provision of services based on LLU are economically viable only from those exchanges where an LLU operator can serve a sufficient number of end-users in order to benefit from the economies of scale within an individual exchange. However, there are significant variations in the size of exchanges in the UK, with some serving only a few tens of premises and others serving tens of thousands of premises. Clearly, the ability of an LLU operator to serve a sufficient number of end-users at a given exchange will be directly related to the size of the exchange. This means that in general LLU will be economically viable in those exchanges that are used to provide services to a sufficiently large number of premises.
- 3.246 The effect of this is that LLU-based competition in markets downstream from wholesale local access (including wholesale broadband access) will only be viable from a proportion of local exchanges. This means that it could be expected that there will be significant differences in competitive conditions in the wholesale broadband access market between the geographic areas which are served by local exchanges where LLU operators have rolled-out network and those local exchanges where they have not.
- 3.247 If it is the case that LLU is expected to be one of the main determinants of differential competitive conditions on a geographic basis in the wholesale broadband access market (which it could be, as LLU-based competition is not expected to be possible everywhere in the UK) then using areas where LLU-based services are currently being offered could provide a basis for identifying the boundary of the geographic wholesale broadband access markets.
- 3.248 However, LLU operators are still in the process of investing in LLU infrastructure at BT's exchanges. This process is likely to continue for many months. Therefore, at this time, Ofcom does not consider that the availability of LLU-based services to set the geographic market boundary would accurately reflect the areas in which LLU-based competition could be expected to develop during the period until the next market review. Nevertheless, this approach could be appropriate for some future market review after LLU operators have invested in all of the areas that they intend to i.e. at a time when the market is much more stable.

Approach 3: Planned availability of LLU-based services

- 3.249 Given that LLU operators are continuing to roll-out their networks and that this is set to continue throughout 2007, it may be more appropriate to base the definition of the geographic boundary of the wholesale broadband access market on the planned availability of LLU-based services. This approach would have the benefits of the approach above of using the current availability of LLU-based services as it would reflect the differences in competitive conditions created by the entry into the market by LLU operators, which appears to be the main driver of geographic variations in competitive conditions. An added benefit is that this approach is forward-looking. The effect would be that the definition of the geographic scope of the market would take into account the geographic extension of increased competitive pressures beyond those areas currently served by LLU operators.
- 3.250 A possible concern with this approach is that it relies on information from each LLU operator's roll-out plan which could be subject to certain assumptions such as the entry of other market players and their own and others' business plans. Also the forecast business plans may not transpire due to consolidation, lack of finance or other reasons. In addition, it may be the case that LLU operators have in fact under or over estimated particular features of the market e.g. the likely entry of other LLU

operators within a particular exchange or group of exchanges. On the other hand, if a number of LLU operators adopt similar roll-out plans in terms of the exchanges where they think it is possible to compete, then this can help identify areas where the competition conditions are sufficiently homogenous.

Approach 4: LLU-based entry likely

- 3.251 This approach would require Ofcom to make its own prediction of where LLU-based competition is likely to emerge. This would differ from Approach 3 which looked at 'planned availability' and was based on information from LLU operators about their intended roll-out plans across different LLU exchanges. Instead, Ofcom would need to undertake its own assessment of the exchanges where conditions were conducive to LLU-based entry. For example, exchange size can inform the presence of significant economies of scale and density from using LLU upstream inputs in the provision of wholesale broadband access services. As such, the use of exchange size can help to inform those geographic areas in which entry through LLU can be expected to be sustainable and entry likely.
- 3.252 This approach could look, for example, at the number of end-users served by a local exchange as indicators of likely entry. There are of course many other factors that will influence the commercial decision about service roll-out and Ofcom is unlikely to be able to predict this with sufficient accuracy since it would in effect be trying to second guess the business decisions of LLU operators. As such, Ofcom does not believe that the definition of the geographic boundary of the wholesale broadband access market should be based solely on this approach.

Approach 5: Presence of a common pricing constraint

- 3.253 As noted in paragraph 3.212, since the 2003/04 Review, BT amended its DataStream and IPStream prices so that they now vary by geographic area. This geographic variation in its prices appears to be largely in response to actual and expected competition from alternative operators providing services using LLU inputs.
- 3.254 The merit of using BT's DataStream and IPStream prices to identify the boundary of separate geographic markets is that market dynamics are delivering the boundary. Geographic differentiation in BT's prices is in response to a change in competitive conditions, prompted by the increase in competitive pressures from entry by LLU operators. Therefore, differentials in market prices could be taken as an indicator of the homogeneity in competitive conditions. Moreover, this approach would be consistent with the approach in the 2003/04 Review which considered the presence of a common pricing constraint to indicate the boundary of the geographic market. This approach would also allow the market definition in future reviews to be amended in light of BT further changing its prices in response to changing competitive conditions in the wholesale broadband access market.
- 3.255 However, it could be argued that this approach to setting the geographic market boundary for wholesale broadband access would give discretion to a dominant operator to set the market boundary. This discretion may allow a dominant operator to "game" the regulatory structure, e.g. by changing prices in order to change where the market boundaries lay in any future market review. Another potential criticism of using this approach to determine the geographic market boundary would be that it would not appear to be sufficiently forward-looking to capture the geographic variations in competitive conditions that could be expected over the period of the current market review. However, market participants may to some extent set their prices in light of expected future, as well as current, market conditions. Included in

this may be a consideration of how competitive conditions in different parts of the country may change. It is possible that considerations of this sort are reflected in the fact that when BT reduced its DataStream and IPStream prices, it did so at some exchanges where there were no LLU operators or indeed cable operators at that time.

- 3.256 Ofcom recognises the risk associated with Approach 5 in that it has the potential to give a dominant operator discretion to determine the geographic boundary of the market and that there are also limitations in terms of how forward looking this approach would be. It is for these reasons that Ofcom does not propose to adopt this methodology to define the geographic boundary of the market.

Approach 6: Areas in which services are provided over other network infrastructure

- 3.257 For reasons similar to those used to justify the use of areas where there is cable network infrastructure, competition from other network infrastructure such as wireless or power lines could indicate breaks in homogeneous competitive conditions such that separate geographic market should be defined. However, at the current time competition from such other network infrastructure is limited and so is likely to be a less relevant factor for considering geographic variations in competitive conditions over the period of the market review.

Conclusion on the methodology to assess geographic variations in competitive conditions

- 3.258 There appear to be a number of different approaches that could be adopted to assess geographic variations in competitive conditions in the provision of wholesale broadband access services. However, there seems to be a reasonable level of correlation between each of these factors and the areas which they cover overlap to a significant degree. Therefore, it is appropriate to take into account, to a greater or lesser extent, a combination of these factors in order to determine the geographic market boundary. The next part of this section sets out Ofcom's analytical approach for defining the geographic scope of the wholesale broadband access markets.

Ofcom's analytical framework for defining the wholesale broadband access geographic market

Using number of operators within each exchange footprint

- 3.259 Given that the geographic market definition is required to be forward looking, the fact that LLU is expected to provide a significant constraint in the wholesale broadband access markets within the period of the review means that the forecast number of operators, within each exchange footprint, is a key factor when identifying areas with sufficiently homogenous competitive conditions. However, using this factor alone would be inappropriate as LLU operators' rollout plans are forecasts (and therefore subject to change) and there is a significant divergence between LLU operators' business plans.
- 3.260 Ofcom's approach is therefore to include in its assessment of geographic variations in competitive conditions only those cable and LLU operators that are expected to provide a material competitive constraint during the period covered by this review. Additional factors such as ease of market entry and sustainability will also be relevant to ensure that the resultant areas possess similar conditions of competition. These factors are addressed in the discussion of exchange size at paragraphs 3.277 to 3.282 below.

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

- 3.261 At the current time there are 20 (non-BT) operators in the UK that use LLU inputs provided by BT. Each of these operators has its own unique business plan. Some of these operators are concentrating on the provision of symmetrical services to businesses or to fulfil local government contracts and, as such, they do not intend to compete in the provision of wholesale broadband access beyond those narrowly-defined customer groups. Whereas, others are providing mass market asymmetric products to residential and business customers. It is Ofcom's view that only that later could be expected to provide a material constraint in the broadband market and thus only operators with such business models should be included in this assessment.
- 3.262 From the data available to Ofcom it is apparent that all the mass market operators have, or planned to have, coverage of at least 10% whereas all the business/government contract focused operators have coverage significantly below 10%. Ofcom has therefore decided to use a 10% coverage threshold (as of December 2007) as a way of filtering out the 'niche' operators. There are currently six such operators. It should however be noted that any figure between 5% and 40% will produce exactly the same result. Table 3.2 shows a breakdown of all LLU operators by their planned coverage over time.

Table 3.2: Breakdown of all LLU operators by their planned coverage over time

Coverage	Jul 07	Dec 07	Jun 08
up to 10%	20	20	20
up to 20%	6	6	6
up to 30%	6	6	6
up to 40%	6	6	6
up to 50%	5	6	6
up to 60%	3	5	5
up to 70%	2	2	2
up to 80%	0	1	1

- 3.263 If BT and Virgin Media are added to the 6 LLU operators identified above then there is a total of 8 operators (the "Principal Operators") upon which the assessment of geographic variations in competitive conditions can be based.

Inclusion of Virgin Media

- 3.264 The proposed approach relies on being able to determine whether an operator provides a service in a particular exchange area. With the six LLU operators and BT the assessment is fairly straightforward, as these operators map precisely onto the exchange footprints and thus they are either active in an exchange area (in which case they are able to supply the customers in the exchange footprint) or they are not. However, the situation with Virgin Media is different as it has its own access network which does not match BT's exchange footprints. It is therefore possible that Virgin Media is able to supply only a proportion of the customers within a given BT exchange footprint. Therefore, it is necessary to develop a proxy for cable coverage by exchange.

- 3.265 The test used by Ofcom to determine whether a particular operator is present within an exchange footprint is whether that operator is able to provide a competitive constraint. Suppose there is one operator (a hypothetical monopolist) serving the whole of an area and Virgin Media serving only part of it. Then could this hypothetical monopolist within the exchange footprint introduce a profitable SSNIP, or would it lose sufficient customers to render the SSNIP unprofitable? Clearly, if Virgin Media is only able to supply (say) 10% of the potential customers within an exchange footprint then this leaves 90% that would have no choice but to stay with the hypothetical monopolist, thus suggesting that a SSNIP is likely to be profitable. On the other hand, if Virgin Media is able to supply (say) 90% of the potential customers within an exchange footprint then this only leaves 10% that would have no choice but to stay with the hypothetical monopolist, thus suggesting that a SSNIP is less likely to be profitable (assuming that prices are uniform within the area). The minimum overlap required would be where a SSNIP is profit neutral and to determine this value on this basis would require accurate information about marginal costs, prices/profitability and cross price elasticity, which is not available with sufficient accuracy. It is clear, however, that 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, probably above 50%, though not necessarily as high as 90%. Therefore, Ofcom has proposed to use a value within these bounds and has conducted sensitivity analyses on this, which are included in Annex 4.
- 3.266 Ofcom has considered Virgin Media as being present within an exchange footprint if it is able to supply at least 65% of the homes and businesses within the footprint. Sensitivity analysis set out in Annex 4 shows that for variations of cable overlap between 55% and 85% of all delivery points within an exchange coverage area, the maximum variation in an area covered by any one market is less than 2% of UK delivery points.

Grouping exchanges by the number of operators within each exchange footprint

- 3.267 Individual exchanges can be grouped by the number of operators within each exchange footprint. Table 3.3 provides a breakdown of the number of exchanges (and the percentage of homes/businesses they cover) by the number of Principal Operators within each exchange footprint. Ofcom has used data at three time points to inform its geographic market definition in this consultation document: actual data from July 2007 and forecast data for December 2007 and June 2008. This forecast data was obtained through formal information requests sent by Ofcom to BT, Virgin Media and each of the main LLU operators.

Table 3.3: Exchange breakdown by number of operators in exchange footprint

No. of Principal Operators	Jul 07		Dec 07		Jun 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	3,958	21.6%	3,874	19.4%	3,856	19.0%
2	382	7.9%	394	7.7%	397	7.6%
3	196	7.0%	215	7.2%	229	7.6%
4	195	8.0%	186	7.1%	185	7.1%
5	177	9.5%	189	9.5%	188	9.3%
6	175	9.9%	172	9.8%	175	10.1%
7	280	19.2%	276	18.2%	276	18.2%
8	224	16.9%	281	21.0%	281	21.0%

- 3.268 Not surprisingly, there are some exchanges where one Principal Operator (BT) is present, some where two Principal Operators are present, some where three Principal Operators are present and so on all the way up to eight operators present (i.e. all the Principal Operators). The number of Principal Operators clearly represents a continuum of competitive conditions, with those geographic areas served solely by BT being significantly less competitive than those geographic areas where all the Principal Operators stated that they would provide services. In defining the boundary of the geographic market in terms of the homogeneity of competitive conditions a decision will need to be taken as to whether these geographic areas can be consolidated.
- 3.269 Exchanges where BT is the only Principal Operator present would appear to be a sensible grouping for the purpose of geographic market definition, as it seems reasonable to argue that the competitive conditions within this group are sufficiently homogenous (BT is the only Principal Operator) and that the competitive conditions within this group are appreciably different from other (neighbouring) areas (in every other area there is at least one competitor to BT which demonstrates that entry is possible in these geographic areas).
- 3.270 Having identified areas where BT is the only Principal Operator, there is left a large number of exchanges in the UK where there are anywhere between two and eight Principal Operators that might be present. The next consideration is whether all of these areas have sufficiently similar competitive conditions to define them as a single geographic market. If by focussing on the extremes this appears to indicate that competitive conditions in these geographic areas are sufficiently similar, then this would indicate that the two extremes (and hence all intervening markets between the two extremes) can be defined as a single geographic market. On the other hand, if the competitive conditions in the two extremes are not sufficiently similar this suggests at least one further geographic market boundary between these areas.
- 3.271 In relation to Table 3.3, once BT-only exchanges are excluded, the lowest number of Principal Operators is two and the largest is eight. The geographic areas where there are only two Principal Operators present are unlikely to have similar competitive conditions as those geographic areas where there are eight Principal Operators present. Whilst it is difficult to identify a definitive and unambiguous break in the competitive conditions, Ofcom believes that it is appropriate to define a further break between these extremes for this reason.
- 3.272 Ofcom believes that this break falls between areas where there are three Principal Operators and those areas where there are four. The rationale for this proposal is that, as the number of Principal Operators competing with one another increases, the incremental effect on competitive conditions of an additional competitor is likely to decrease. The precise number beyond which there is no further additional effect will vary from market to market depending, *inter alia*, on cost and entry conditions.
- 3.273 It is Ofcom's view that an area with two or three Principal Operators (one of which is BT and one is likely to be cable) would have an appreciably lower level of competitiveness than one with four Principal Operators. It is less apparent whether, once the number of competitors has reached four, the addition of more competitors would appreciably change the competitive conditions. Given the cost structures in the wholesale broadband access market, particularly those faced by LLU operators who have a high proportion of fixed costs and as such may be expected to compete strongly to expand their subscriber base in order to lower their per end-user costs, it is Ofcom's view that it is reasonable to regard areas where four or more Principal

Operators are present as having sufficiently similar competitive conditions to be regarded as a single geographic market for the purposes of this review⁴⁶.

- 3.274 Therefore, Ofcom's proposal is to identify separate geographic markets in the UK (excluding the Hull area) based on the number of Principal Operators present in an exchange area: those geographic areas where there is one Principal Operator present; those geographic areas where there are two or three Principal Operators present; and those geographic areas where there are four or more Principal Operators present. These three groups with the number of exchanges in each and the coverage are shown in Table 3.4. The exchanges which are included in each of these markets are listed in Annex 1.

Table 3.4: Three exchange groups using number of Principal Operators within each BT exchange footprint

No. of Principal Operators	Jul 07		Dec 07		Jun 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
BT only	3,958	21.6%	3,874	19.4%	3,856	19.0%
2 or 3	578	14.9%	609	14.9%	626	15.2%
4 or more	1051	63.5%	1104	65.7%	1105	65.7%

Data forecasts and timing

- 3.275 What is clear from Table 3.2, Table 3.3 and Table 3.4 is that the majority of planned LLU rollout has already occurred with little further rollout planned beyond December 2007.
- 3.276 Ofcom recognises that the data presented in this section only goes up to June 2008 and that this does not cover the entire period relevant to this review, although this is a slight extension of the period covered by the forecasts presented in the November consultation. At the time of the final statement, Ofcom will have gathered further data which will allow Ofcom to take a view of rollout over the entire period of the review. Moreover, the next set of data to be collected from LLU operators to inform the final statement will allow Ofcom to refine its analysis still further, to take into account market developments that will occur between now and then. It will also be possible for Ofcom to again analyse how rollout has developed and compare this with the forecasts provided by LLU operators, similar to that set out in Annex 5. Therefore, while the analysis presented in this consultation is able to identify precise geographic market boundaries based on the number of Principal Operators present or likely to be present in a given exchange, it is possible that between this second consultation and the final statement for this market review that the precise boundaries will change as the market develops, similar (but to a lesser extent) to how the precise boundaries have changed between the November consultation and this consultation.

Exchange size

- 3.277 In the November consultation, Ofcom included in its definition of the relevant geographic market an exchange size parameter. This was because the use of exchange size could help to inform those exchanges in which LLU could be expected to be sustainable because there exist significant economies of scale and density in

⁴⁶ Subject to the discussion of exchange size below.

the provision of wholesale broadband access services. In addition, at the time of the November consultation, the forward-look market definition was based to a large extent on forecast roll-out information from LLU operators.

- 3.278 Many of the costs associated with the investment necessary to provide broadband internet access services based on LLU inputs are independent of the number of end-users served by such investments, this means that as exchange size decreases, the cost of providing services, on an end-user basis, increases (all other things remaining equal). An individual operator's per end-user cost in a particular exchange will be, in part, dependent on the market share of that operator. However, the pattern remains similar.
- 3.279 From the information obtained from LLU operators prior to the November consultation, it was clear that there are a number of factors behind the decision by each individual LLU operator to roll-out to a particular exchange. One of the most common and most important is the size of exchange. This is understandable given how important it is to serve a certain number of end-users in order to benefit from the economies of scale that exist on an exchange-by-exchange basis. Ofcom, after considering the available cost information, as described above, together with the responses from LLU operators to the information requests, considered at that time that an exchange size of at least 10,000 end-users is a size from which sustainable entry is achievable.
- 3.280 However, as noted in the November consultation, this does not mean that Ofcom considers that entry is not sustainable in smaller exchanges. Roll-out decisions are a matter for individual LLU operators and different exchanges will be profitable for different operators. This may well mean that entry is sustainable in exchanges significantly smaller than 10,000 end-users. Moreover, it may also be the case that there could be a variety of reasons why LLU entry is not sustainable at some larger exchanges. Indeed, many LLU operators indicated in their roll-out forecasts that they did intend to unbundled exchanges that served less than 10,000 end-users. However, it was also the case that a number of LLU operators were forecasting that they would enter the same small exchanges. Ofcom was aware that these plans may change if and when another LLU operator entered a particular exchange (due to the economies of scale and density which are present). Therefore, the 10,000 end-user exchange size parameter helped to ensure that Ofcom's proposed geographic markets in the November consultation did not over-estimate the extent of entry into small exchange areas.
- 3.281 In a change from the proposed methodology contained in the November consultation, Ofcom now considers that it is important to distinguish between LLU operator roll-out that has already occurred and that which is forecast to occur. Ofcom considers that where roll-out has already occurred and where there are four or more Principal operators already present in an exchange, then regardless of exchange size, this exchange should be included in Market 3. This is because in order to have entered such an exchange the LLU operators will have had to have made significant sunk investments and as such it is unlikely that an operator would choose to exit that individual exchange. Therefore, where there are four or more Principal Operators actually present then such exchange areas will have sufficiently different competitive conditions from those exchanges where there are less than four Principal Operators, regardless of the exchange size.
- 3.282 However, Ofcom continues to consider that where there are forecast to be four or more Principal Operators but where the exchange serves less than 10,000 premises, it is appropriate to consider such exchanges as being in Market 2. This is because of

the reasons given above i.e. to reflect the barriers to entry that exist. The data for the end of December 2007 shows that 34 exchanges, which cover 0.9% of premises, fall into this category. However, to the extent that such forecast roll-out materialises by the time of the Final Statement then these exchanges would be included in Market 3.

Ofcom's proposal for wholesale geographic market definition

- 3.283 By including within a single relevant geographic market those exchanges where there are currently 4 or more Principal Operators and exchanges where there is forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more end-users, Ofcom believes that the resultant group of exchanges (and hence geographic areas) brings together those geographic areas, which on a forward-looking basis will exhibit similar competitive conditions such that they should be included in the same geographic market. The number of Principal Operators is a variable that indicates that market participants believe that market entry is sustainable while the exchange size variable identifies those exchanges which appear to be able to support sustainable entry.
- 3.284 While arguments could be made to support either a larger or smaller number of Principal Operators or a larger or smaller number of end-users per exchange to satisfy the prerequisite that there are sufficiently similar competitive conditions, Ofcom believes that the assumptions that it has used strike an appropriate balance of all available information. However, for completeness Ofcom has conducted a sensitivity analysis which is included in Annex 4.
- 3.285 A further implication of the use of exchange size to define the geographic market boundary in addition to the number of Principal Operators is that the geographic area that falls into Market 2 (i.e. those in which there are two or three Principal Operators) is increased and Market 3 reduced. Those exchanges where there are forecast to be four or more Principal Operators (but there are not four or more at the current time) but are smaller than 10,000 end-users, are included in Market 2. This effect is consistent with the approach of defining the geographic scope of the market on the basis of homogeneity of competitive conditions. In these geographic areas, the sustainability of LLU-based competition is less certain, because entry has not yet occurred and as such these 'smaller' exchanges have similar competitive conditions to the groups of exchanges where there are two or three operators. However, as noted above, that is not to say that sustainable competition is not feasible in these exchanges, it is just that there is greater uncertainty associated with those exchanges. Ofcom expects that as LLU investment continues and as the wholesale broadband access market matures it will become more evident where LLU-based competition is sustainable. Thus, Ofcom expects that these geographic market boundaries could well change over time and in any future market review it may be appropriate to define different geographic boundaries.
- 3.286 Ofcom's proposal for the definition of the geographic boundary of the wholesale broadband access market in the UK (excluding the Hull area) is as follows:
- those geographic areas covered by exchanges where BT is the only operator ("Market 1");
 - those geographic areas covered by exchanges where there are 2 or 3 Principal Operators present (actual or forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises ("Market 2"); and

- those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises ("Market 3").

3.287 Table 3.5 shows the relative size of these markets in the UK (excluding the Hull area) in terms of number of exchanges and population coverage based on LLU operators' roll-out forecasts for December 2007.

Table 3.5: Groupings based on number of operators and exchange size (excluding the Hull area)

Market	No. Exchs	Coverage
those geographic areas covered by exchanges where BT is the only operator ("Market 1")	3874	19.4%
those geographic areas covered by exchanges where there are 2 or 3 Principal Operators present (actual or forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises ("Market 2")	643	15.8%
those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises ("Market 3")	1070	64.8%

3.288 A list of the exchanges that falls into each of the above markets is included in Annex 1.

A potential alternative approach

3.289 Ofcom recognises that the application of its methodology, set out above, leads to the definition of geographic markets which are not geographically contiguous. The adoption of this approach may, therefore, have the potential to cause some confusion and uncertainty with retail consumers⁴⁷, ISPs and network operators. In light of this, Ofcom has considered whether an alternative approach may be adopted which seeks to define the geographic boundaries of the relevant markets in such a way that these markets are geographically contiguous.

3.290 Such an approach could involve Ofcom conducting the same analysis as set out above, but then adding a further step. This further step would seek to combine geographic areas (based on BT's exchange areas) into broader contiguous geographic areas, for example whole towns, cities or metropolitan areas being identified as a separate market and less densely populated areas being identified as further separate contiguous geographic markets.

3.291 Such an approach would require a degree of objective judgement to be applied to the definition of the geographic market. For example, within a city which is predominantly served by Market 3 exchanges, Ofcom would need to identify those exchange areas in that city which fall into either Market 1 or Market 2 and decide whether it would be beneficial to include those less competitive exchange areas with the more

⁴⁷ Although consumers are currently faced with different retail propositions in different neighbouring exchange areas and this does not appear to cause undue concern, as evidenced by the competitive retail market.

competitive exchange areas to create a broader contiguous geographic market. A further example would be in a less densely populated area which is served mainly by Market 1 or Market 2 exchanges but there was an occasional Market 3 exchange area present. Ofcom would again need to decide whether it would be beneficial to group all of those exchange areas together in order to define a broader contiguous geographic market.

3.292 Such an approach would appear to Ofcom to have both advantages and disadvantages. The main advantages are:

- It has the potential to reduce any confusion or uncertainty that may develop for either retail consumers, ISPs or network operators; and
- To the extent that operators seek to price on a broad, contiguous geographic basis and not on the basis of BT's exchange boundaries, then this approach could be consistent with such market behaviour.

3.293 The main disadvantages are:

- It introduces an element of subjectivity into the geographic market definition exercise;
- In the UK operators do not currently price on the basis of broad contiguous areas: BT sets its wholesale broadband access prices at the exchange level; and those LLU operators which offer geographically differentiated products and prices at the retail level determine which retail customer eligibility on an exchange by exchange basis; and
- It risks exposing consumers in an exchange area where there is little or no competition to the exercise of market power and/or in a more competitive exchange area, the maintaining of *ex-ante* regulation where this is no longer necessary.

3.294 On the basis of Ofcom's consideration of such an alternative approach, Ofcom does not, at this time, consider that the potential advantages to be gained from such an approach outweigh the disadvantages in the UK wholesale broadband access market. As such, Ofcom does not propose to adopt such an approach when defining the geographic boundary of the wholesale broadband access markets in the UK. However, should the characteristics of the market change such that local products and prices are offered in broader contiguous geographic areas then this conclusion may need to be reconsidered. Ofcom recognises that in other markets with different characteristics, the use of contiguous geographic areas along the lines set out above could provide a robust methodology.

Conclusion on wholesale market definition and summary of proposals

3.295 This section has discussed Ofcom's approach to the product market and geographic market definition for wholesale broadband access in the UK. Ofcom has defined the relevant wholesale broadband access product market, for the reasons given in this section as asymmetric broadband access and any backhaul as necessary to allow interconnection with other Communications Providers.

3.296 Further, Ofcom has defined four relevant geographic markets for wholesale broadband access. The geographic markets are:

- the Hull area - those geographic areas covered by exchanges where KCOM is the only operator
- 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 Principal Operators present (actual or forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises
- Market 3 - those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises

3.297 Table 3.6 shows the relative size of these markets in the UK in terms of number of exchanges and population coverage based on LLU operators' roll-out forecasts for December 2007.

Table 3.6: Summary of the wholesale broadband access market definitions in terms of number of exchanges and population coverage in the UK

Market	No. Exchs	Coverage
those geographic areas covered by exchanges where KCOM is the only operator ("the Hull area")	14	0.7%
those geographic areas covered by exchanges where BT is the only operator ("Market 1")	3874	19.2%
those geographic areas covered by exchanges where there are 2 or 3 Principal Operators present (actual or forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises ("Market 2")	643	15.7%
those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises ("Market 3")	1070	64.4%

Consultation question on the proposed market definitions

Question 1: Do respondents have any comments, additional to those made in their responses to the November consultation, on Ofcom's approach and conclusions on market definition as set out in Section 3 of this document?

Section 4

Market Power Assessment

Introduction

- 4.1 As discussed in Section 3, market definition is not an end in itself. The definition of the scope of the relevant economic market is carried out in order to identify the products and the geographic area over which an assessment can be made of operators' ability to act to an appreciable extent independently of competitors, customers and consumers i.e. whether there are any operators that hold a position of SMP within a particular market.

Market Power determinations

- 4.2 Section 45 of the Act details the various conditions that may be set under the European regulatory framework. Section 46 details who those conditions may be imposed upon. In relation to SMP services conditions, Section 46(7) provides that they may be imposed on a particular person who is a Communications Provider 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). Accordingly, having identified the relevant markets as defined in 4, 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).

Definition of SMP

- 4.3 Under the Directives and Section 78 of the Act, SMP has been defined so that it is equivalent to the competition law concept of dominance. Article 14(2) of the Framework Directive states that:

"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."

- 4.4 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".

- 4.5 Therefore, in the relevant market, one or more undertakings may be designated as having SMP (single or collective dominance) where any undertaking, or undertakings, enjoys a position of dominance in that market. 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.

- 4.6 In assessing SMP it is important to conduct the analysis under the assumption that no SMP related regulatory intervention currently or potentially exists in the relevant market. This is because the outcome of the SMP assessment is to test whether or not any regulatory intervention is required. Therefore assessing SMP in this market requires consideration of a hypothetical market where SMP regulation (or the threat of SMP regulation) does not exist.

The criteria for assessing SMP

- 4.7 In assessing whether an undertaking has SMP, Ofcom has taken the utmost account of the SMP Guidelines as it is required to do when considering whether to make a market power determination under Section 79 of the Act, as well as considering the application of the equivalent Oftel guidelines as set out in Section 3 above.

- 4.8 Specifically, the SMP Guidelines state that:

“NRAs will assess whether the competition is effective. A finding that effective competition exists on a relevant market is equivalent to a finding that no operator enjoys a single or joint dominant position on that market.”⁴⁸

- 4.9 The SMP Guidelines go on to state that:

“NRAs will conduct a forward looking structural evaluation of the relevant market, based on existing market conditions. 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. The actual period used should reflect the specific characteristics of the market and the expected timing for the next review of the relevant market by the NRA. NRAs should take past data into account in their analysis when such data are relevant to the developments in that market in the foreseeable future.”⁴⁹

- 4.10 In the SMP Guidelines, the Commission discusses market shares as being an indicator of market power:

“...Market shares are often used as a proxy for market power. Although a high market share alone is not sufficient to establish the possession of significant market power (dominance), it is unlikely that a firm without a significant share of the relevant market would be in a dominant position. Thus, undertakings with market shares of no more than 25 % are not likely to enjoy a (single) dominant position on the market concerned. In the Commission's decision making practice, single dominance concerns normally arise in the case of undertakings with market shares of over 40 %, although the Commission may in some cases have concerns about dominance even with lower market shares, as dominance may occur without the existence of a large market share. According to established case-law, very large market shares — in excess of 50 % — are in

⁴⁸ Paragraph 19

⁴⁹ Paragraph 20

themselves, save in exceptional circumstances, evidence of the existence of a dominant position...⁵⁰

4.11 However, the Commission also notes that:

“It is important to stress that the existence of a dominant position cannot be established on the sole basis of large market shares. As mentioned above, the existence of high market shares simply means that the operator concerned might be in a dominant position. Therefore, 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. In that regard, the following criteria can also be used to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers. These criteria include amongst others:

- overall size of the undertaking,
- control of infrastructure not easily duplicated,
- technological advantages or superiority,
- absence of or low countervailing buying power,
- easy or privileged access to capital markets/financial resources,
- product/services diversification (e.g. bundled products or services),
- economies of scale,
- economies of scope,
- vertical integration,
- a highly developed distribution and sales network,
- absence of potential competition,
- barriers to expansion.

A dominant position can derive from a combination of the above criteria, which taken separately may not necessarily be determinative.⁵¹

4.12 The European Regulators’ Group (“ERG”) has issued a working paper on SMP⁵² (the ERG SMP Position) that builds upon the SMP Guidelines. In this paper further criteria are explicitly considered:

- excessive pricing;
- ease of market entry;
- cost and barriers to switching;

⁵⁰ Paragraph 75

⁵¹ Paragraphs 78-79

⁵² “Revised ERG Working paper on the SMP concept for the new regulatory framework”, October 2004 (http://www.erg.eu.int/doc/publications/public_hearing_concept_smp/erg0309rev1_smp_working_doc.pdf)

- evidence of previous anti competitive behaviour;
- active competition on other parameters;
- existence of standards/conventions;
- customers' ability to access and use information;
- price trends and pricing behaviour; and
- international benchmarking.

4.13 This section of the consultation document considers the relevance of all these criteria in the assessment of SMP in the context of this market review.

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 existence of cost-based unbundled local loops (as required by SMP Condition FA9) which can be used to assist entry into the relevant wholesale markets defined below. 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 purpose of Ofcom's SMP analysis is to assess whether any operator possesses single dominance or are collectively dominant in the relevant wholesale asymmetric broadband access markets. If Ofcom considers no network provider has SMP individually or collectively, the markets will be found to be effectively competitive.

4.16 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. For example, in the analysis below, Ofcom has estimated market shares at the wholesale level based on information available at both the retail level for end-to-end network providers and at the existing wholesale level.

4.17 As explained in Section 3, Ofcom's view is that the wholesale broadband access markets in the UK can be defined as follows:

- i) wholesale broadband access in the Hull area;
- ii) wholesale broadband access in Market 1;
- iii) wholesale broadband access in Market 2; and
- iv) wholesale broadband access in Market 3.

4.18 This section considers the assessment of SMP in the wholesale broadband access markets defined in Section 3. The SMP analysis is based on the evidence available to Ofcom. In Market 3 the competitive conditions are changing very rapidly, with a significant proportion of this change forecast to take place over the next 12 to 18 months.

Summary list of SMP designations

- 4.19 Ofcom has assessed whether any operator either individually or jointly possesses SMP in the relevant markets. This equates to concepts of single firm dominance and collective dominance in Competition Law. Ofcom concludes that:
- KCOM possesses SMP in the wholesale broadband access market in the Hull area;
 - BT possesses SMP in the wholesale broadband access market in Market 1;
 - BT possesses SMP in the wholesale broadband access market in Market 2; and
 - no one possesses SMP in the wholesale broadband access market in Market 3.

Criteria used in assessing SMP in the markets for wholesale broadband access services

- 4.20 In Ofcom's view the most important criteria for the assessment of SMP in these markets are:
- market growth and market shares;
 - future potential market shares;
 - barriers to entry and expansion;
 - economies of scale and scope; and
 - countervailing buyer power.

Other criteria for assessing SMP

- 4.21 The following paragraphs (which include quotations taken from the ERG SMP Position) consider the remaining criteria listed earlier, explaining why Ofcom considers these not relevant or less relevant to this assessment of SMP in the relevant markets.

Criteria not relevant to the assessment of SMP in the wholesale broadband access markets

- 4.22 Product/services diversification (e.g. bundled products or services) – “Generally speaking there is a positive relation between product/services diversification and market power, which is due to the fact that increased differentiation in general will also hamper switching between suppliers if these are able to differentiate their products from their competitors and if others are not able to imitate the differentiation.” This criterion is not considered relevant because competition in the market for wholesale broadband access is largely based on self-supply either based on BT provided inputs (LLU) or by construction of an access network (cable). Currently, bundling at the retail and wholesale levels is limited, as discussed in Section 3.
- 4.23 A highly developed distribution and sales network – “Well-developed distribution systems are costly to replicate and maintain, and may even be incapable of duplication. They may represent a barrier to entry as well as an advantage over existing competitors”. Ofcom does not consider this criterion relevant because the

service in question is acquired only by purchasers at the wholesale level and does not therefore require a specialised or complex distribution network.

- 4.24 Existence of standards/conventions – “Useful background information not only for market delineation but also for the assessment of product homogeneity/heterogeneity, the existence of market barriers for potential entrants and for the assessment of dominance can be obtained by considering the existence and consequences of standards and conventions. The extent of technical standardization may determine the potential for product differentiation as well as the ease of market entry (availability of a certain technology; compatibility with other firms’ products/technologies).” While there are technical standards for equipment used in the provision of wholesale broadband access their impact on the development of competition is limited.
- 4.25 Evidence of previous anti-competitive behaviour – “Effectively competitive markets lack collusion among suppliers and anti-competitive behaviour.” Evidence of previous anti-competitive behaviour such as predatory pricing and other market foreclosure behaviour can be an indication that a market is not effectively competitive. However, a finding of anti-competitive behaviour could only inform the SMP assessment to the extent that dominance in the relevant market had been found. Ofcom has not made a finding of anti competitive behaviour in these markets and therefore this criteria is not relevant to the SMP assessment.

Criteria less relevant to the assessment of SMP in the wholesale broadband access markets

- 4.26 Excessive pricing – “the ability to price at a level that keeps profits persistently and significantly above the competitive level is an important indicator for market power.” Evidence of excessive pricing can support a finding of SMP. It is not, however, a prerequisite to a finding of SMP. Ofcom has no evidence of excessive pricing in the relevant markets.
- 4.27 Overall size of the undertaking – “the potential advantages, and the sustainability of those advantages, that may arise from the large size of an undertaking relative to its competitors”. There are a number of scale players present in the markets considered where this is relevant. Ofcom has considered this issue in relation to economies of scope and has not addressed it separately.
- 4.28 Technological advantages or superiority – “Such advantages may represent a barrier to entry as well as an advantage over existing competitors due to lower production costs or product differentiation”. This criterion is considered within the context of barriers to entry and has not addressed it separately.
- 4.29 Vertical integration – “Vertical integration while normally efficient can strengthen dominance by making new market entry harder due to control of upstream or downstream markets. As such, vertical integration may give an advantage to the integrated firm (over its competitors), as access to sales and supply markets might be more easily attainable for the integrated firm. Vertical integration makes it also possible to lever market power into upstream or downstream markets.” This criterion is relevant but the potential for leverage of upstream market power to damage competition has already been addressed by the imposition of remedies in the market for wholesale local access (LLU). The effectiveness of these remedies is reflected in the analysis of competitive conditions in the wholesale broadband access market.
- 4.30 Active competition on other parameters – The ERG proposes that market power can be obtained through competing on parameters such as marketing and innovation.

This criterion could be present in areas where there is competitive provision of wholesale broadband access and is considered within the section on economies of scope below.

- 4.31 Customers' ability to access and use information – The ERG SMP Position proposes that limited access to information on terms and conditions (especially prices), or access to information that is difficult to use, may reduce the capacity of consumers to act upon differences between providers. As a result firms acquire independence of action from consumers and competition. This criterion does not refer to the ability of consumers to switch between providers, but to the capacity of first time buyers to make an informed choice. There are a limited number of wholesale customers who in general are relatively well informed within the market place.
- 4.32 Price trends and pricing behaviour – “Pricing patterns substantially determine the welfare of customers, and thereby overall welfare. The degree of competition in a relevant market (and its dynamic) might be observed through time series of price movements (possibly linked to international benchmarks), the reactions on price setting of single providers and prevailing differences in prices over time (for homogenous products). If for example competitors cut their prices whereas a particular undertaking (or group of undertakings) leaves its prices unchanged, economic theory would conclude that this should lead to a loss in sales to this (group of) undertaking(s). If therefore a (group of) undertaking(s) can sustain its (their) prices permanently at a higher level, this can be seen as an indication that this (group of) undertaking(s) is free to behave independently from its rivals. Further insights can be gained by an extension of the observation period, which may reveal whether a certain undertaking (group of undertakings) is forced to react to its competitors' price cuts with a lag. The shorter the lag and the sharper the price response in reaction to price cuts of rivals, the fiercer competition can be assumed to be. Pricing patterns might therefore provide important additional information on the effectiveness of competition and might be taken into account as pricing is central to economic conduct”. Historically, BT is the only operator that has provided a wholesale broadband access product so there is little opportunity for observing price trends, although the recent changes in BT's DataStream and IPStream prices are likely to reflect changes in competitive conditions.
- 4.33 International benchmarking – The ERG proposes that, for many of the criteria listed above, additional valuable information can be obtained by investigating benchmarks from comparable economies. International benchmarking can be a useful indication of the level of competitive prices and therefore allow inference of excessive pricing. Available data appears to show BT's prices are broadly comparable with other EU countries of similar network size.
- 4.34 Access to capital markets – “Easy or privileged access to capital markets may represent a barrier to entry as well as an advantage over existing competitors. Aside from internal sources (e.g. as indicated by the cash flow or revenue) the ability to procure outside capital, a firms capital structure and its ability to increase equity capital (e.g. structure of shareholders) might be considered.” There are a number of scale players present in the markets considered, of similar overall size to BT and as such BT is not at an advantage. Ofcom has considered this issue in relation to economies of scope and has not addressed this issue separately.

Respondents' views

4.35 The November consultation asked the following question:

Question 7: Do respondents agree that Ofcom has used relevant criteria for assessing SMP in the markets defined?

- 4.36 BT explained that the document did not explain why Ofcom had chosen the criteria set out in the November consultation to assess SMP in the defined markets. It stated that other criteria were equally relevant such as pricing trends. Ofcom's explanation for not using this particular criterion was insufficient.
- 4.37 A number of other respondents stated that Ofcom should have taken greater account of vertical integration. They explained, for instance, that BT need not install additional apparatus in its exchanges to the same extent as LLU operators and this gives it a competitive advantage. Other respondents suggested that a highly developed distribution network and evidence of anti-competitive behaviour were also important factors and should have been considered. In particular one operator stated that between March 2000 and August 2003 that there had been 20 investigations relating to BT's anti-competitive behaviour in broadband markets and identified 6 where it believes that the regulator had found against BT. Another respondent suggested that predicted market shares should not have been used as a key indicator because those set out in the November consultation were based on forecasts.

Ofcom's response

- 4.38 It is not the case that Ofcom has not used pricing trend information in its consideration of SMP and Ofcom recognises recent BT price changes above at paragraph 4.32. However, Ofcom considers this indicator to not be as important as the indicators considered in more detail. Ofcom recognises that BT has changed its IPStream and DataStream prices and that these changes are likely to reflect changes in competitive conditions. Moreover, Ofcom considers that the overall conclusions from the SMP analysis are consistent with the observed pricing changes.
- 4.39 Ofcom recognises that vertical integration is relevant, but notes that the potential to leverage upstream market power has been addressed through the imposition of remedies in the market for wholesale local access and that the effectiveness of these remedies is reflected in the analysis of competitive conditions in the wholesale broadband access market.
- 4.40 On the question of the consideration of a highly developed distribution network, Ofcom continues to consider that this indicator of SMP is not relevant in this case for the reasons given above at paragraph 4.23.
- 4.41 On the question of previous anti-competitive behaviour as an SMP indicator, Ofcom continues to consider that this factor is not relevant for this market review. As set out at paragraph 4.25 above, a finding of anti-competitive behaviour could only inform the SMP assessment to the extent that dominance in the relevant market had been found. Nonetheless, on the investigations relating to BT's anti-competitive behaviour, it is important to remember that the bringing of complaints does not, of itself, show that there is evidence of anti-competitive behaviour. Instead, it is the conclusion of the administrative process, based on an evidential analysis which leads to that conclusion. The respondent acknowledges that in 14 of the 20 investigations the complaints against BT were not upheld. Further, of the remaining 6, where the respondent believes the regulator found against BT, this is not actually the case. In

fact in 5⁵³ of these investigations the regulatory did not find against BT. Although Ofcom does recognise that in some instances, cases were closed on the basis of action taken by BT in the interim period. Of the 6 complaints identified by the respondent the only one upheld by the regulator was the Refusal to offer ATM interconnection products and it was this complaint that ultimately resulted in the original requirement on BT to provide ATM Interconnection. However, it should be noted that this complaint was not about alleged anti-competitive behaviour but was treated as a dispute between Communications Providers under the Telecommunications Act 1984.

- 4.42 Ofcom disagrees that predicted market shares should not have been used to inform the market power assessment. While for Market 3 in particular there was significant uncertainty as to future market shares at the time of the November consultation, it is important to note that LLU deployments are much more certain now and will be even more certain at the time of the Final Statement. The observed market developments, including LLU operators migrating their DataStream and IPStream customers onto their LLU platforms, allow Ofcom to have much more confidence in its predictions of future market shares. Ofcom has set out in Annex 5 a comparison of its predictions for January 2007 included in the November consultation with the out-turn values. This shows that the out-turn LLU shares in Market 3 are at the upper end of Ofcom's predictions.

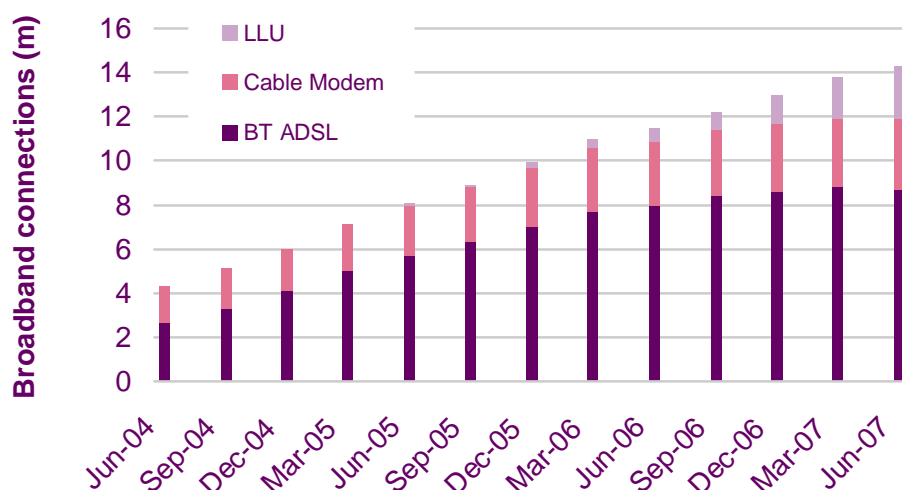
Ofcom's assessment on the relevant criteria to use in assessing SMP

- 4.43 After fully considering the responses to the November consultation, it remains Ofcom's view that the most important criteria for the assessment of SMP in the wholesale broadband access markets defined in Section 3 are:
- market growth and market shares;
 - future potential market shares;
 - barriers to entry and expansion;
 - economies of scale and scope; and
 - countervailing buyer power.

Substantive Assessment

- 4.44 As shown in Figure 4.1 the rate of increase in the take-up of broadband connections in the UK as a whole has remained high since the 2003/04 Review. By the end of Q2 2007, the UK had 14.4 million broadband subscribers, with the DSL user base numbering 11.2 million and accounting for 78% of the total market. The cable base was around 3.2 million and 22% of the total market and all other technologies comprising less than 1% of the total market.

⁵³ Non availability of rate adaptation on business products; BT's refusal to supply VP migration and STM-4 concatenation; IPStream vs DataStream margin squeeze; Volume discount scheme for IPStream and DataStream and Price increase to DataStream VPs for VBR-rt and CBR

Figure 4.1: Growth in UK broadband subscribers between Q2 2004 and Q2 2007

4.45 At July 2007, the total distribution of broadband connections between the four geographic markets identified in Section 3 was as follows:

- c.2.6m connections (18% of the total) are found within Market 1;
- c.2.2m connections (15% of the total) are found within Market 2;
- c.9.7m connections (67% of the total) are found within Market 3; and
- c.0.06m connections (0.4% of the total) are found within the Hull area.

4.46 ADSL connections consist of both bundled loop services provided by BT (or KCOM) and unbundled lines provided by LLU operators. Of the total 11.2m ADSL connections at July 2007, c.2.6m lines (23% of total DSL) are provided by LLU operators and the remaining c.8.6m lines (77% of total DSL) are provided by BT and KCOM.

4.47 As noted at paragraph 76 of the SMP Guidelines and in the ERG SMP Position, it can be informative in product markets possessing some degree of differentiation to analyse market shares both by revenue and volume. However, the criteria to be used to measure market shares of undertakings concerned will depend on the characteristics of the relevant market. In general it is likely that the most appropriate measures will be volume for bulk products (e.g. wholesale conveyance minutes), and value for differentiated (branded) products. Volume data should be used if there are no large differences in prices since this minimises the differences between results based on volume and value data. If there are significant differences in prices, calculations based on volume data would not paint a realistic picture of the position and economic significance of market players. In practice, therefore, market shares are usually calculated using sales revenues instead of volumes although in most cases it might be appropriate to analyse both for a fuller assessment. Where – concerning a fairly homogenous product or service – a firm has a higher market share by value than by volume, this might be an indication that it can price above rivals and make super normal profits. Such pricing behaviour might be a sign of SMP. In general therefore, the comparison of volume/revenue based market shares can provide some indirect and useful information on market power.

- 4.48 As in the 2003/04 Review and in accordance with the approach taken in the ERG SMP Position in relation to bulk products, Ofcom has presented wholesale market shares on a volume basis (that is, the number of subscribers). Revenue market shares are not easily discernible for two main reasons. First there is limited third-party supply currently in the market and where there is, prices are not transparent. Second, the vast majority of non-BT supply is self-supply and there is no information available on internal transfer charges. Therefore it is not possible to calculate total market revenues. Furthermore, there are differences in the composition of wholesale broadband access products provided downstream, with differing revenue shares simply expressing a difference in the quality and therefore cost of the wholesale broadband access products being supplied. Using network retail market shares between BT-provided DSL, LLU-provided DSL and cable to indicate wholesale broadband market shares is a reasonable approximation.
- 4.49 In the 2003/04 Review, Ofcom defined two separate geographic markets: the UK (excluding the Hull area) and the Hull area. In the UK, cable was not present throughout the whole of the market. In light of this, Ofcom noted, when assessing market shares to inform its market power assessment that cable's market share may overestimate the constraint that it was able to exert on BT and as such, care had to be taken when interpreting the market share data. However, as explained in Section 3, this market review is defining four separate geographic markets. The effect of the way in which these markets have been defined (i.e. with reference to operators' presence within individual exchange areas) is that the market share data will be more reflective of the constraints present within the individual markets.
- 4.50 A market review seeks to identify what *ex-ante* requirements would be proportionate and therefore the SMP assessment should be undertaken assuming that no SMP related regulation is present in the market being considered. If no wholesale regulation were in force it is possible that vertically-integrated operators (BT, Virgin Media and LLU operators) would compete at the retail level, and in such a situation the retail shares of these entities would equal the shares in the wholesale broadband access market, as the offerings in the market would be pure bundles of retail broadband and self-provided wholesale broadband access.
- 4.51 Ofcom recognises that the data and projections presented in this section only goes up to June 2008 and that this does not cover the entire period relevant to this review. However, at the time of the final statement, Ofcom will have gathered further data which will seek to cover the entire period of the review and where this is not possible Ofcom will make estimates. The final market power assessments will be based on this data.

The Hull area

- 4.52 As explained in Section 5 of the November consultation, Ofcom's preliminary conclusion was that KCOM had SMP in the provision of wholesale broadband access in the Hull area.

Respondents' views

- 4.53 The November consultation asked the following question:

Question 8: Do respondents agree with the approach set-out by Ofcom for its market power assessment in the Hull area and its conclusion of finding Kingston to have SMP?

- 4.54 KCOM agreed that it had a strong market position in the Hull area. It stated, however, that this did not stem from anti-competitive behaviour or suggest that there were high barriers to entry. It also explained that it cannot act without having due regard to developments elsewhere in the UK.
- 4.55 Other respondents also agreed that KCOM has SMP in the Hull area. It was suggested that because the boundaries are precise there is a clearer case for finding SMP in the Hull area than elsewhere in the UK.

Ofcom's response

- 4.56 Ofcom agrees with KCOM that there is no evidence to suggest that its position of SMP in the Hull area stems from anti-competitive behavior. Indeed, as set out at paragraph 4.25, a finding of anti-competitive behavior could only inform the SMP assessment to the extent that dominance in the relevant market had been found. Ofcom has not made any finding of anti-competitive behavior in the Hull area.

Ofcom's proposal on SMP in the Hull area

- 4.57 Ofcom continues to consider 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

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

Future shares

- 4.59 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

- 4.60 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

- 4.61 KCOM possesses comprehensive infrastructure in this market. It has a ubiquitous access network and the associated support network of DSLAMs and backhaul. The greater part of this sunk cost is contained in KCOM's access network to homes and businesses. The provision of concentrator units and a backhaul network would be a smaller, yet still significant cost.
- 4.62 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.

- 4.63 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. The same would be true of Virgin Media if it wished to expand into this area to provide comprehensive broadband access. At the time of this review, Ofcom understands that there are no firms considering such investment.
- 4.64 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 KCOM and provide services in this manner. However, this can still require significant sunk costs, including co-location at KCOM's exchanges and securing access to backhaul services. Also of particular significance in this market are the fixed costs associated with taking LLU from KCOM, including in terms of systems integration. Ofcom understands that to date no operator has taken LLU from KCOM in this market and Ofcom further understands that no operator plans to over the period considered by this review.
- 4.65 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. 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. This can be seen by the lack of planned entry into this market.

Economies of scale, scope and density

- 4.66 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.
- 4.67 KCOM has obtained certain scale economies in this market as a result of first-mover advantage due to the limited number of end-users in the Hull area. These economies of scale, however, may prove very difficult for other operators to replicate. KCOM's economies of scale therefore look to be a significant barrier to entry in the Hull area.

Countervailing buyer power

- 4.68 The Commission states in its Guidelines on the assessment of horizontal mergers (the Horizontal Guidelines) that even:

“firms with very high market shares may not be in a position post-merger, to significantly impede effective competition, in particular by acting to an appreciable extent independently of their customers, if the latter possess countervailing buyer power. Countervailing buyer

power in this context should be understood as the bargaining strength that the buyer has vis-à-vis the seller in commercial negotiations due to its size, its commercial significance to the seller and its ability to switch to alternative suppliers”.⁵⁴

4.69 The guidelines of the Office of Fair Trading on the assessment of market power (the OFT’s Guidelines) note that:

“Size is not sufficient for buyer power. Buyer power requires the buyer to have choice.”⁵⁵

4.70 The OFT Guidelines set out a number of factors in assessing whether there is countervailing buyer power:

- the buyer is well informed about alternative sources of supply and could readily, and at little cost to itself, switch substantial purchases from one supplier to another while continuing to meet its needs;
- the buyer could commence production of the item itself or ‘sponsor’ new entry by another supplier (e.g. through a long term contract) relatively quickly and without incurring substantial sunk costs;
- the buyer is an important outlet for the seller (i.e. the seller would be willing to cede better terms to the buyer in order to retain the opportunity to sell to that buyer); and
- the buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender.

4.71 KCOM has a 100% share of wholesale broadband access products in this market and there are significant barriers present to any firm entering this market to compete with KCOM. However, if KCOM were faced with large downstream purchasers of these products who had the ability to withhold demand or switch demand to other current or potential suppliers of wholesale broadband access products then KCOM’s prices absent regulation may be constrained by this buyer power.

4.72 However, these conditions do not hold in this market as KCOM’s downstream arm is currently the only provider of retail broadband services, i.e. there are no purchasers of wholesale broadband access in the Hull area. This, together with the fact that customers are individual retail customers and the fact that these customers have no alternative supplier, means there is a complete absence of countervailing buyer power in this market. Based on confidential information provided by KCOM, this is not expected to materially change in the period covered by this market review.

⁵⁴ Official Journal of the European Union, *Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings*, 5 Feb 2004, paragraph 64 http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf.

⁵⁵ OFT, *Assessment of market power, Understanding competition law*, December 2004, chapter 6.

SMP proposals for the Hull area

Single firm dominance

- 4.73 Ofcom is proposing that KCOM has SMP in the wholesale broadband access market in the Hull area. Further, Ofcom considers that KCOM is likely to retain SMP for the period of this review. The main reasons for this proposal are:
- KCOM currently has a 100% share of wholesale broadband access products in this market and this is not expected to change in the period of the review;
 - no Communications Providers have taken LLU in the Hull area and as far as Ofcom is aware, none plan to do so in the foreseeable future;
 - there is no cable alternative in the Hull area - KCOM's wholesale broadband access market share is thus expected to remain unchanged for the period of this review;
 - there are currently no wholesale customers in the Hull area - KCOM self-provides to its downstream arms only and as such there is no countervailing buyer power in the Hull area; and
 - KCOM possesses significant economies of scope and scale in this market.

Market 1

- 4.74 Market 1 is composed of 3,874 exchange areas, within which BT (based on forecasts for December 2007) is the only Principal Operator⁵⁶. These exchange areas cover 19.2% of all UK delivery points. The competitive conditions within the group of exchanges within Market 1 are sufficiently homogenous, in that BT is the only operator of any scale and as explained in Section 3, the competitive conditions within this group are appreciably different from other exchange areas, where there are competitors to BT at the wholesale level. As explained in Section 5 of the November consultation, Ofcom's preliminary conclusion was that BT had SMP in the provision of wholesale broadband access in Market 1.

Respondents' views

- 4.75 The November consultation asked the following question:

Question 9: Do respondents agree with the approach set-out by Ofcom for its market power assessment in Market 1 and its conclusion of finding BT to have SMP?

- 4.76 BT agreed that the factors identified tend to indicate that it has SMP in Market 1. It suggested, however, that future access technologies could change this assessment and would need to be monitored by Ofcom. Nonetheless, BT accepted that these developments would be unlikely to be relevant for the period of the present review.
- 4.77 Other respondents were generally in agreement with Ofcom's SMP assessment in Market 1. They, however, reiterated earlier concerns in relation to the definition of the market. One respondent considered that there was no evidence that LLU operators

⁵⁶ There are some exchange areas within this market which include provision of services from Virgin Media. As explained in Section 4, Virgin Media is only considered to be a Principal Operator in an individual exchange area if it is able to provide services to 65% or more of delivery points.

and cable operators would supply wholesale broadband access and therefore they should be excluded from the market. Another again stated that they disagreed with the need or appropriateness of sub-national markets whilst another once again repeated that forecast market shares should be ignored.

Ofcom's response

- 4.78 Ofcom agrees that in future market reviews other access technologies may be deployed in the geographic area covered by Market 1 which could act to undermine BT's SMP in this market (and also potentially affect the precise definition of the market). However, as accepted by BT, such technologies are unlikely to provide a competitive constraint for the period of this market review.
- 4.79 Ofcom has addressed in Section 3 the comments received relating to the definition of the relevant markets and does not consider it necessary to address them again here. On the question of future market shares, Ofcom considers that it is necessary to include a prediction of future market shares in the assessment of SMP. To not do so would risk reaching an erroneous conclusion in the forward looking market assessment, particularly where significant market developments, such as LLU investments, are taking place, although this is not relevant, by definition, for Market 1. However, Ofcom agrees that care is needed when considering such forward-looking analysis. It is for this reason that Ofcom has revisited its market share predictions in Markets 2 and 3 below from the November consultation, which shows that the market in January 2007 was closer to the top of the prediction range in terms of entrants' market shares. Ofcom will continue to monitor market developments prior to publication of the final statement and take these developments into account in its analysis.

Ofcom's assessment on SMP in Market 1

- 4.80 Ofcom continues to consider that BT has SMP in the provision of wholesale broadband access in Market 1. The reasons for this are set out below.

Market growth and market shares

- 4.81 Table 4.1 outlines the wholesale broadband access market shares in this market as of end July 2007, split between BT, Virgin Media and LLU operators.

Table 4.1: Market 1: WBA market shares, July 2007

	BT	Virgin Media	LLU operators
WBA volumes (000s)	2,615	22	0
Share of Market	99%	1%	0%

Future shares

- 4.82 The market shares outlined above are not expected to change appreciably in the period of this review. There is no planned entry between now and December 2007 from the Principal Operators, as the exchanges in this market are unlikely to be economically attractive to LLU operators due to either their small size, their remoteness or because of constraining technical factors, such as lack of suitable space. However, from December 2007 to June 2008 LLU operators have plans to

expand into a further 18 exchanges out of the 3,874 in this market. To the extent that these projections have occurred by or are likely to occur following the Final Statement, these investments will be reflected in the final geographic market definitions. In addition, Ofcom has no evidence of there being plans to expand cable coverage in these areas.

Barriers to entry and expansion

- 4.83 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.

Sunk costs

- 4.84 BT possesses comprehensive infrastructure in this market. It has a ubiquitous access network and the associated support network of DSLAMs and backhaul to its core network. The greater part of this sunk cost is contained in BT's access network to homes and businesses. The provision of concentrator units and a backhaul network would be a smaller cost, yet still significant.
- 4.85 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 can address end-users directly. The second is to take advantage of the LLU remedy.
- 4.86 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. The same would be true of Virgin Media if it wished to expand into this area to provide comprehensive broadband access. At the time of this review, from the information available to Ofcom, there is no firm considering such investment.
- 4.87 The LLU remedy imposed in the review of the wholesale local access market means that LLU operators 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. As discussed above, LLU operators are not planning significant entry into this market over the period of review. From December 2007 to June 2008 LLU operators have plans to expand only into a further 18 exchanges out of the 3,874 in this market⁵⁷.
- 4.88 Whatever the pre-entry wholesale broadband access price set by BT, 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 is such that an entrant would fail to recover the sunk costs of entry and if this entrant foresees this, then entry will not take place. 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. The effects of this deterrence can be seen by the lack of planned entry into this market.

⁵⁷ If this forecast expansion occurs by the completion of the market review, or is credibly expected to occur within the period of the market review, these exchanges would, consistent with the analytical framework set out in Section 3 for the definition of the geographic scope of the relevant market, be included in either Market 2 or Market 3. Which market would depend on the number of LLU operators present at the exchange and the size of the exchange.

Economies of scale, scope and density

- 4.89 The fixed costs associated with broadband enabling an exchange, in respect of BT and cable, or entering an exchange as an LLU operator 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 minimised on a per-unit basis if these backhaul links serve a large number of 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 lines as possible with backhaul infrastructure.
- 4.90 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 1,381 delivery points, whereas the national average is c.4,950 delivery points and the average for Market 2 and Market 3 is 6,812 and 16,745 delivery points respectively. Thus, if an operator using LLU believes that they can achieve (say) a 10% share of broadband services and the penetration of broadband services is (say) 60%, then the numbers of customers it will achieve in the average exchange in Market 1 is 83 ($1381 \times 0.6 \times 0.1$). This is in contrast with the numbers of customers it will achieve in the average exchange in Market 3 of 1005 ($16745 \times 0.6 \times 0.1$).
- 4.91 BT may have obtained certain scale economies in this market by being the first-mover and these may prove very difficult for other operators to achieve. 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. Similarly, in terms of backhaul, these areas do not offer the population density that might justify the building of significant additional backhaul capacity.
- 4.92 BT's economies of scale look to be a significant barrier to entry in Market 1. The small size and sparsely populated nature of the exchanges in this market lead to an efficient scale being more difficult to achieve thus cementing BT's first mover advantage.

Countervailing buying power

- 4.93 The European Commission states in its Horizontal Guidelines that even:
- “firms with very high market shares may not be in a position post-merger, to significantly impede effective competition, in particular by acting to an appreciable extent independently of their customers, if the latter possess countervailing buyer power. Countervailing buyer power in this context should be understood as the bargaining strength that the buyer has vis-à-vis the seller in commercial negotiations due to its size, its commercial significance to the seller and its ability to switch to alternative suppliers”.
- 4.94 Countervailing buyer power is not an absolute concept but, rather, refers to the relative strength of the buyer in its negotiations with the prospective seller for the

good or service in question. It exists when a particular purchaser (or group of purchasers) of a good or service is sufficiently important to its supplier to influence the price charged for that good or service.

- 4.95 Ofcom considers that in this context, the test to assess whether countervailing buyer power is sufficient to prevent the exercise of SMP is that set out in Article 14 (2) of the Framework Directive, namely: whether countervailing buyer power can constrain an undertaking from having the “power to behave to an appreciable extent independently of competitors, customers and ultimately consumers”
- 4.96 This position is informed by the OFT Guidelines which note that:
- “Size is not sufficient for buyer power. Buyer power requires the buyer to have choice.”
- 4.97 The OFT Guidelines set out a number of factors in assessing whether there is countervailing buyer power:
- the buyer is well informed about alternative sources of supply and could readily, and at little cost to itself, switch substantial purchases from one supplier to another while continuing to meet its needs;
 - the buyer could commence production of the item itself or ‘sponsor’ new entry by another supplier (e.g. through a long term contract) relatively quickly and without incurring substantial sunk costs;
 - the buyer is an important outlet for the seller (i.e. the seller would be willing to cede better terms to the buyer in order to retain the opportunity to sell to that buyer); and
 - the buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender.
- 4.98 These factors from the OFT Guidelines have limited relevance to Market 1, as there are no alternative sources of supply and the buyers of wholesale broadband access are unlikely to be able to commence production themselves. This renders the effective application of buyer power to counteract BT’s upstream market power unlikely in the foreseeable future in this market.

SMP proposals for Market 1

Single firm dominance

- 4.99 Ofcom concludes that BT possesses single firm SMP in the market for wholesale broadband access in Market 1. This finding is based on:
- BT’s current market share of 99%;
 - the further likelihood of this share to persist in the future given the absence of significant cable or LLU entry in this market;
 - the existence of significant entry barriers;
 - the existence of significant economies of scale and scope which cannot be replicated by other operators; and

- the lack of countervailing buyer power.

4.100 Ofcom considers that BT will retain SMP throughout the period of this review.

Collective dominance

4.101 Ofcom concludes that collective dominance is not evident in the market for wholesale broadband access in Market 1. By definition, BT has a market share of 99% in this market and therefore the potential for collective dominance is negligible, if not non-existent.

Market 2

4.102 Market 2 is composed of 643 exchange areas, within which there are (based on forecasts for December 2007) 2 or 3 Principal Operators and in some cases there are forecast to be 4 or more Principal Operators but in these cases the exchange serves less than 10,000 premises. These exchange areas cover 15.7% of all UK delivery points. As explained in Section 5 of the November consultation, Ofcom's preliminary conclusion was that BT had SMP in the provision of wholesale broadband access in Market 2.

Respondents' views

4.103 The November consultation asked the following question:

Question 10: Do respondents agree with the approach set-out by Ofcom for its market power assessment in Market 2 and its conclusion of finding BT to have SMP?

4.104 BT explained that as it did not agree with the thresholds used to identify separate geographic markets – particularly 4 Principal Operators and 10,000 end-users in Market 3 – it did not agree with the outcome that resulted from use of these thresholds. It suggested that a significant portion of Market 2 should have been included in Market 3 and added that it would have been simpler to share Market 2 between Markets 1 and 3.

4.105 Other respondents reiterated their views in relation to market definition and Market 1.

Ofcom's response

4.106 As explained in Section 3, Ofcom has revised its definition of the boundary between Market 2 and Market 3 such that exchange areas in which there are already 4 or more Principal Operators present, regardless of exchange size are now included in Market 3. This moves those exchanges with less than 10,000 end-users where there are 4 or more Principal Operators from Market 2 to Market 3. As also explained in Section 3, Ofcom continues to consider it appropriate to use the presence of 4 or more Principal Operators to define the boundary between Market 2 and Market 3 and that it is appropriate to define a separate Market 2.

4.107 In light of these changes and continued investment of LLU operators, Market 2 is composed of 643 exchange areas, within which there are (based on forecasts for December 2007) 2 or 3 Principal Operators and exchanges where (based on forecasts for December 2007) there are 4 or more Principal Operators but where the exchange serves less than 10,000 premises. These exchanges cover 15.7% of all UK delivery points.

Ofcom's assessment on SMP in Market 2

4.108 Ofcom continues to consider that BT has SMP in the provision of wholesale broadband access in Market 2. The reasons for this are set out below.

Market growth and market shares

Current market shares

4.109 Table 4.2 outlines the wholesale broadband access market shares in this market as of end July 2007, split between BT, Virgin Media and LLU operators.

Table 4.2: Market 2: WBA market shares, July 2007

	BT	Virgin Media	LLU operators
WBA volumes (000s)	1,708	350	140
Share of Market	77.7%	15.9%	6.4%

4.110 Whilst BT has ubiquitous coverage in this market, cable coverage is currently c.31% of all delivery points and this is not expected to change appreciably in the period of the review. Total LLU coverage is currently 71% of all delivery points with this coverage being fragmented between multiple operators.

Future shares

4.111 In terms of coverage, Ofcom's forecast based on information obtained from LLU operators is that by the end of December 2007 there will be at least one LLU operator which will be able to provide services from exchanges covering 86% of delivery points in Market 2, with this expected to increase to 87% of delivery points by June 2008.

4.112 Considering expected market shares, it is likely that in the period of the review the increased LLU coverage will result in the total LLU share of this market increasing and that this increase will be at the expense of both BT and Virgin Media. It is difficult to accurately predict future market shares, mainly because of the expansion of the coverage area of LLU operators. Nonetheless, Ofcom has developed a methodology which attempts to forecast future market shares with reference to a number of market dynamics and builds on the methodology used in the November consultation (paragraph 5.85 of the November consultation). The market dynamics include the mass migration by LLU operators of their customers from BT's wholesale broadband access products to LLU (in those exchanges where the LLU operator has rolled-out); the signed-up customer base of operators being activated on LLU-based broadband and an allowance for market growth. Ofcom's projected market shares for December 2007 and June 2008 are shown in Table 4.3.

Table 4.3: Projected WBA shares for Market 2⁵⁸

	BT	Virgin Media	LLU operators
March 2006	81%	19%	0.2%
July 2006	82%	18%	0.2%
July 2007	78%	16%	6%
December 2007	75% - 76%	16% - 17%	8% - 9%
June 2008	74% - 75%	16% - 17%	8% - 9%

Note: Percentages may not sum to 100% due to rounding.

4.113 Table 4.3 shows that BT's share of Market 2 is expected to fall slightly between July 2007 and June 2008. This decrease is primarily attributable to two dynamics. Firstly, LLU operators in Market 2 will continue to migrate their end-users that are currently being supplied using BT's IPStream and DataStream products onto their LLU platform. Secondly, LLU operators could be expected to take a greater share of new subscribers than BT, in part due to their ability to differentiate their products from those offered by BT based on IPStream or DataStream. However, due to the limited number of LLU operators that will be competing at each exchange in Market 2, Ofcom only expects a modest growth in LLU market share. Ofcom will revisit this for the Final Statement when more up-to-date information is available.

Barriers to Entry and Expansion

4.114 Ofcom believes 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

4.115 As outlined above in the discussion of Market 1, BT and Virgin Media have already incurred large sunk costs in being able to provide wholesale broadband access to the majority of customers within Market 2. The greater part of this sunk cost is in their possession of a local-access network. There has also been a smaller, but still significant sunk cost for BT in broadband-enabling its narrowband exchanges.

4.116 As noted in the discussion of Market 1, the LLU remedy imposed in the review of the wholesale local access market means that LLU operators 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, investment in exchange equipment and securing access to backhaul services.

4.117 Ofcom understands that LLU operators are planning some entry into this market by June 2008. However, even after this modest expansion, significant further sunk costs would need to be incurred by each LLU operator to provide comprehensive coverage throughout the market⁵⁹. Ofcom is consequently of the view that sunk costs will represent a significant barrier to entry in this market over the period of review.

⁵⁸ Note that the market shares are not directly comparable with those included in the November consultation as the precise market boundary of Market 2 has changed since then.

⁵⁹ To the extent that these projections have occurred by or are likely to occur following the Final Statement, these investments will be reflected in the final geographic market definitions.

Economies of scale/scope

- 4.118 As discussed above in relation to Market 1, the fixed costs associated with broadband enabling an exchange or entering an exchange using LLU are subject to significant economies of scale. On average, each exchange within Market 2 serves 6,812 delivery points, whereas the national average is c.4,950 delivery points and the average for Market 1 and Market 3 is 1,381 and 16,745 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 to enter this market appears to suggest that the operators do not believe that many of the exchanges in Market 2 present a viable investment opportunity, particularly when compared to those exchanges in Market 3.
- 4.119 However, it must be noted there is some degree of variation present in this market. Different operators (LLU and cable) are present in different exchanges included within Market 2. Even though some of these operators have access to significant capital, as evidenced by the substantial investments in LLU in certain geographic areas, they have not (in aggregate) chosen to adopt the same strategy in relation to the exchange areas included in Market 2, as they have done in Market 3. This may raise doubts about the level of competition that the exchange areas included in this market can be expected to sustain over the period of this review.

Countervailing buying power

- 4.120 The Commission states in the Horizontal Guidelines that even:

“firms with very high market shares may not be in a position post-merger, to significantly impede effective competition, in particular by acting to an appreciable extent independently of their customers, if the latter possess countervailing buyer power. Countervailing buyer power in this context should be understood as the bargaining strength that the buyer has vis-à-vis the seller in commercial negotiations due to its size, its commercial significance to the seller and its ability to switch to alternative suppliers”.

- 4.121 Countervailing buyer power is not an absolute concept but, rather, refers to the relative strength of the buyer in its negotiations with the prospective seller for the good or service in question. It exists when a particular purchaser (or group of purchasers) of a good or service is sufficiently important to its supplier to influence the price charged for that good or service.
- 4.122 Ofcom considers that in this context, the test to assess whether CBP is sufficient to prevent the exercise of SMP is that set out in Article 14 (2) of the Framework Directive, namely: whether CBP can constrain an undertaking from having the “power to behave to an appreciable extent independently of competitors, customers and ultimately consumers”
- 4.123 This position is informed by the OFT Guidelines which note that:
- “Size is not sufficient for buyer power. Buyer power requires the buyer to have choice.”
- 4.124 The OFT Guidelines set out a number of factors in assessing whether there is countervailing buyer power:

- the buyer is well informed about alternative sources of supply and could readily, and at little cost to itself, switch substantial purchases from one supplier to another while continuing to meet its needs;
- the buyer could commence production of the item itself or 'sponsor' new entry by another supplier (e.g. through a long term contract) relatively quickly and without incurring substantial sunk costs;
- the buyer is an important outlet for the seller (i.e. the seller would be willing to cede better terms to the buyer in order to retain the opportunity to sell to that buyer); and
- the buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender.

4.125 Ofcom considers these points with respect to Market 2.

A well-informed and price sensitive buyer

4.126 In Market 2, by definition, there are limited alternative source of supply for wholesale broadband access in each exchange area. Suppliers are limited to BT and one or two other providers⁶⁰, be that Virgin Media or LLU operators. Virgin Media does not currently offer wholesale supply to third parties. As for LLU operators, while there is currently limited third-party supply, it could be expected that a merchant market for wholesale broadband access could develop over the period of the review. Indeed evidence gained since the November consultation indicates that such a market is developing, with a number of LLU operators negotiating to provide wholesale broadband access services on a wholesale basis to third parties.

4.127 However, no single operator (LLU or cable) is in a position to offer a wholesale service from all exchanges included in Market 2. This means that in order for a purchaser of wholesale broadband access to offer a service throughout Market 2 it would need to contract with numerous providers. Alternatively, purchasers could invest in LLU in the exchanges included within Market 2, but as set out in Section 3 there are limited plans to do so. Further, as set out in paragraphs 4.114 to 4.119 there are significant barriers to entry present in Market 2. These issues mean that there are few alternative sources of supply within Market 2 for wholesale broadband access services.

Ability to self-supply

4.128 As explained in Section 3 and in the preceding paragraph, there is little scope for purchasers of wholesale broadband access in Market 2 to self-supply or to sponsor entry at the wholesale level.

The buyer as an important outlet for the seller

4.129 There are some ISPs which could be considered as important outlets for BT in this market, including those ISPs that have invested in LLU but which rely on wholesale broadband access products from BT to provide services in the geographic area covered by exchanges included in Market 2. However, BT's own downstream arm is

⁶⁰ With the exception of those exchanges that serve less than 10,000 end-users, which if there are forecast to be four or more Principal Operators these are included in Market 2.

the largest purchaser of wholesale broadband access in this market, limiting the ability of other purchasers to exert countervailing buying power.

Alternative sources of supply

- 4.130 By definition, purchasers of wholesale broadband access in Market 2 will have few, if any, effective alternatives to purchasing wholesale broadband access from BT.
- 4.131 Ofcom, in considering the four factors above, concludes that customers of BT's wholesale broadband access services will be unable to exercise significant countervailing buyer power in Market 2 during the period of the market review.

SMP proposals for Market 2

Single firm dominance

- 4.132 Ofcom concludes that BT possesses single firm SMP in the market for wholesale broadband access in Market 2 for the period of this market review. This finding is based on:
- BT's current (July 2007) market share of 78%;
 - uncertainty regarding the sustainability and expansion of LLU;
 - the existence of significant entry barriers;
 - the existence of significant economies of scale and scope; and
 - the lack of countervailing buyer power.
- 4.133 While recognising the growing and somewhat uncertain nature of this market Ofcom considers that BT will retain SMP throughout the period of this review.

Collective dominance

- 4.134 The criteria for assessing collective dominance in electronic communications markets are set out in Annex II to the Framework Directive. That provision sets out that two or more undertakings may be found to be in a joint dominant position if, even in the absence of structural links between them, they operate in a market the structure of which is considered to be conducive to coordinated effects. Annex II states that:

“Without prejudice to the case law of the Court of Justice on joint dominance, this is likely to be the case where the market satisfies a number of appropriate characteristics, in particular in terms of market concentration, transparency and other characteristics mentioned below:

- mature market,
- stagnant or moderate growth on the demand side,
- low elasticity of demand,
- homogeneous product,
- similar cost structures,

- similar market shares,
- lack of technical innovation, mature technology,
- absence of excess capacity,
- high barriers to entry,
- lack of countervailing buying power,
- lack of potential competition,
- various kinds of informal or other links between the undertakings concerned,
- retaliatory mechanisms,
- lack or reduced scope for price competition.”

4.135 This position is informed by paragraphs 86 to 106 of the SMP Guidelines which set out in greater detail the factors to be taken into account in assessing joint dominance. In particular, paragraph 99 of the SMP Guidelines provides that:

“In an oligopolistic market where most, if not all, of the abovementioned criteria are met, it should be examined whether, in particular, the market operators have a strong incentive to converge to a coordinated market outcome and refrain from reliance on competitive conduct. This will be the case where the long-term benefits of an anti-competitive conduct outweigh any short-term gains resulting from a resort to a competitive behaviour.”

4.136 Ofcom concludes that collective dominance is not evident in the market for wholesale broadband access in Market 2. Ofcom does not consider that the criteria of Annex II to the Framework Directive have been met to any appreciable extent. In particular, the market is developing and cannot be characterised as mature, demand side growth is not stagnant and technology is not yet mature. Whilst there may be high barriers to entry and a lack of countervailing buyer power, market shares vary greatly (with BT having up to 80% market share and its closest competitor, Virgin Media having less than 20%) and Ofcom is not aware of any kinds of informal or other links between undertakings present in the market. Ofcom considers that the market is best characterised by Virgin Media (and any LLU operators that may be present) seeking to compete with the SMP operator BT. Thus, Ofcom does not currently consider that there is joint dominance in this market. Ofcom’s assessment of each of the characteristics listed above in relation to Market 2 are set out in Table 4.4.

Table 4.4: Assessment of collective dominance characteristics

Characteristic	Relevance to Market 2
Mature market	The wholesale broadband access market is not yet mature
Stagnant or moderate growth on the demand side	There remains significant demand-side growth
Low elasticity of demand	Consumer research indicates that there are price-sensitive buyers
Homogeneous product	The wholesale broadband access product is relatively homogeneous but there is scope for differentiation
Similar cost structures	BT, Virgin Media and LLU operators have

	different business plans and underlying cost structures
Similar market shares	Market shares vary greatly
Lack of technical innovation, mature technology	Technology is not yet mature, with innovations continuing
Absence of excess capacity	Investment in capacity is continuing
High barriers to entry	High barriers to entry exist for new entrants but have been overcome by those that have already entered
Lack of countervailing buyer power	There is a lack of countervailing buyer power
Lack of potential competition	There is a lack of potential competition
Various kinds of other links between the undertakings concerned	Ofcom is not aware of such links, except where necessary for example when discussing product and interconnection standards
Retaliatory mechanisms	There do not appear to be any obvious retaliatory mechanisms
Lack or reduced scope for price competition	There exists very strong price competition

Market 3

4.137 Market 3 is composed of 1070 exchange areas, within which there are (based on actual data for July 2007) at least 4 Principal Operators or where there are (based on forecasts for December 2007) 4 or more Principal Operators but where the exchange serves 10,000 or more premises. These exchange areas cover 64.4% of all UK delivery points. Ofcom explained in the November consultation that competitive conditions in this market were changing rapidly and given that Ofcom was planning a second consultation document it decided that it was not appropriate or necessary to reach a firm conclusion on SMP in this market. While there currently remains activity in this market a clearer picture of the competitive landscape is now emerging.

Respondents' views

4.138 The November consultation asked the following question:

Question 11: Do respondents agree with the approach set-out by Ofcom for its market power assessment in Market 3?

4.139 BT explained that Ofcom forecast BT's market share to below 50% by January 2008 and therefore below the threshold at which market power may be presumed. It added that it believed that two operators would have covered the entirety of Market 3 by the middle of this year. This was contrary to the forecast set out in the November consultation which stated that the largest LLU operator would have 94% coverage of Market 3 by January 2008. Additionally, BT suggested that it would face strong competition from these and other providers who are likely to bundle internet access services with other products. These arguments, amongst others, indicated that BT would not have SMP in Market 3 on a forward-looking basis.

4.140 Other respondents were concerned that Ofcom had not indicated whether or not BT would be expected to have SMP in Market 3 and inferred from this that Ofcom would make a no-SMP finding. A number of respondents stated that there was strong evidence that BT had SMP in Market 3 and would retain SMP until there was

widespread availability of alternative providers willing to offer wholesale broadband access services. At present, there was no evidence to suggest that there was an emerging merchant market. One other respondent stated that premature withdrawal of regulation could cause significant consumer harm and therefore supported Ofcom's initial view that it may be desirable to retain certain obligations for a transitional period in the event of a no-SMP finding.

- 4.141 Another respondent reiterated its concerns that there was a lack evidence underpinning Ofcom's proposals that there were distinct geographic markets. It did not, therefore, support Ofcom's approach to its market power assessment in Market 3.

Ofcom's response

- 4.142 While market shares are an important indicator of whether an operator is found to have SMP, as explained above, market shares are only one indicator to be taken into account and it is possible for an operator to be found to have SMP even if its market share is below 50%. With market shares of between 40% and 50% dominance cannot be presumed but the SMP analysis needs to look beyond the static market shares. The analysis of forward-looking market shares and other SMP criteria set out below seeks to achieve this.
- 4.143 On BT's response about LLU operators' coverage of Market 3, Table 4.7 shows that no LLU operator is predicted to have full coverage of Market 3 by June 2008 (the largest having a coverage of 99%). However, this is likely to reflect the impact of the precise market boundary having changed from the November consultation due to LLU operators' forecast roll-out plans used to define the market boundary in the November consultation having changed.
- 4.144 Ofcom does not agree that there needs to be a merchant market for wholesale broadband access services to third parties for there to be sufficient constraints at the wholesale level. It is feasible for there to be a sufficient constraint from competition at the retail level where LLU operators and Virgin Media self supply wholesale services to their own retail divisions. Nevertheless, as noted above under the discussion of Market 2, there is evidence of a merchant market beginning to develop.
- 4.145 Ofcom has addressed the issues relating to the definition of local geographic markets in Section 3 and does not revisit these comments here.

Ofcom's assessment of SMP in Market 3

Market growth and market shares

Current market shares

- 4.146 Table 4.5 outlines the wholesale broadband access market shares in this market as of end July 2007, split between BT, Virgin Media and LLU operators

Table 4.5: Market 3: WBA market shares, July 2007

	BT	Virgin Media	LLU operators
WBA volumes (000s)	4,339	2,925	2,430
Share of Market	44.8%	30.2%	25.1%

Note: Percentages may not sum to 100% due to rounding.

4.147 BT currently has an overall market share of less than 50%. This is lower than the threshold of 50% above which dominance may be presumed according to established case-law⁶¹ and it is also lower than the national average share for BT of 59%. Virgin Media's share and the combined LLU operators' shares of the market are higher than their national averages of 23% and 18%. In addition, an undertaking with a large market share, such as BT, may also be presumed to have SMP if its market share has remained stable over time. The fact that an undertaking with a significant position in the market is gradually losing market share may well indicate that the market is becoming more competitive, but it does not preclude a finding of SMP⁶². Moreover, this decline of market share is occurring during a period when LLU operators are significantly expanding their roll-out in Market 3 and as such the rate of decline in BT's market share may be expected to significantly decrease over the period of the market review.

4.148 Market 3 has featured prominently in the roll-out plans of the LLU operators. The share held by LLU operators is growing. This is indicated in Table 4.6 by the recent growth in the shares of LLU operators from 5% of this market in March 2006 to a share of 8% in July 2006 and a current (July 2007) share of 25%.

Future shares

4.149 In an assessment of competitive conditions, the developing nature of this wholesale market must be taken into account. It is appropriate to consider the likely evolution of operators' market shares. As noted under the discussion of future market shares for Market 2, Ofcom has developed a methodology which attempts to forecast future market shares with reference to a number of market dynamics, see paragraph 4.112.

4.150 Table 4.6 shows Ofcom's projected market shares for December 2007 and June 2008 (together with the associated shares for March 2006, July 2006 and July 2007).

Table 4.6: Recent changes and projected WBA shares for Market 3

	BT	Virgin Media	LLU operators
March 2006	62%	34%	5%
July 2006	59%	33%	8%
July 2007	45%	30%	25%
December 2007	38% - 41%	30% - 31%	29% - 31%
June 2008	38% - 40%	29% - 30%	31% - 32%

Note: Percentages may not sum to 100% due to rounding.

4.151 The most striking development that can be observed from Table 4.6 is the significant observed and expected increases in the share of LLU and decline in BT's share. Initially much of this growth is expected to be fuelled by the mass migration of customers away from BT's wholesale broadband access products to LLU and Ofcom expects, as LLU roll-out continues, that BT's share of this market will continue to reduce, although this may be at a slower rate. However, because of the market developments and the associated uncertainties, it is difficult at this time to be precise on where a more steady state market share outcome will reside, although there is now less uncertainty than there was at the time of the November consultation.

⁶¹ SMP Guidelines, paragraph 75

⁶² SMP Guidelines, paragraph 75

- 4.152 Ofcom notes that it would not expect BT's wholesale market share to fall below BT's share of the associated retail market as Ofcom does not expect BT to make use of LLU-based wholesale inputs that may be provided by its rivals. In the geographic areas covered by Market 3, BT's share at the retail level is currently around 20%.
- 4.153 Ofcom expects that as competition based on LLU develops further, the competitive landscape of Market 3 will be different from that which is painted by the current market shares. With BT's market share reduced to potentially below 40%, a continued significant presence of Virgin Media and a continually growing LLU share of around 30%, the level of competition will be enhanced.
- 4.154 Ofcom also notes that within more disaggregated geographic areas within Market 3 e.g. individual premises, postcodes, postal sectors, exchange areas etc. there is likely to be a variation in operators' shares. Superficially this may seem to indicate that an operator with a high share in a more disaggregated geographic area may have market power in that area. However, despite such variations, as explained in Section 3, Ofcom has defined the geographic boundaries of the relevant markets on the basis of sufficiently homogeneous competitive conditions. Market 3 has been defined on the basis that competitive conditions in the exchange areas included in this market are sufficiently homogeneous given the number of operators that have already sunk, or can be expected to sink, considerable costs to enter these geographic areas. Therefore it is appropriate to consider the market shares within Market 3 as a whole, rather than on some more disaggregated geographic basis.
- 4.155 Although every exchange area in this market will be addressable by at least four firms able to offer wholesale broadband access, no single operator, apart from BT, is currently predicted to have complete coverage of all local exchanges included within this market by June 2008. From coverage information provided by Virgin Media and the roll-out forecasts provided by the Principal LLU Operators, the predictions given in Table 4.7 can be made regarding the number of exchanges where each operator will be active (out of the 1070 exchanges included within this market). Table 4.7 gives the range and average number of exchanges for the 6 Principal LLU operators.

Table 4.7: Exchange presence in Market 3

	BT	Virgin Media	LLU min	LLU max	LLU avg	LLU ops with >80% of exch	LLU ops with >90% of exch
Dec 07	1070	<i>removed</i>	587	1055	833	3	2
	100%	<i>removed</i>	61%	99%	82%		
Jun 08	1070	<i>removed</i>	587	1059	834	3	2
	100%	<i>removed</i>	61%	99%	82%		

- 4.156 On the basis of the figures set out in Table 4.7, by June 2008 two Principal LLU Operators will be able to address customers in more than 90% of the exchanges included in this market. A further three Principal LLU Operators will be able to address customers in over 80%.
- 4.157 No competitors to BT currently plan to enable all of the exchanges in Market 3 by June 2008. Therefore, based on current roll-out plans submitted to Ofcom, all of BT's competitors would have gaps in their coverage of this market. In the event of wholesale broadband access products not being provided to third-parties in Market 3, these operators would be faced with three options:

- i) continue with gaps in their coverage of this market;
- ii) fill in the areas in which they have no coverage by negotiating third-party access from one of the other operators, including BT or Virgin Media (NB: there are always at least 4 operators in each exchange); and/or
- iii) fill in these gaps by enabling additional exchanges

4.158 However, it must be noted that Ofcom's assessment of market power in this market is not the same as assessing the ability of an individual competitor to compete with BT. Instead Ofcom's assessment must consider whether competitive conditions are such that BT would be constrained from behaving to an appreciable extent independently of its competitors, customers and ultimately of consumers, in particular whether consumer detriment may arise as a result of BT's behaviour.

Barriers to Entry and Expansion

4.159 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. However, once operators have entered the market and incurred sunk costs these are irrelevant to the analysis of barriers to entry, but instead can become a barrier to market exit.

Sunk costs

4.160 As outlined above in the discussion of Market 1, BT and Virgin Media have already incurred large sunk costs in being able to provide wholesale broadband access to the majority of customers within Market 3. The greater part of this sunk cost is due to their ownership of a local-access network. There has also been a smaller, but still significant sunk cost for BT in broadband-enabling its narrowband exchanges.

4.161 As noted in the discussion of Market 1, the LLU remedy imposed in the review of the wholesale local access market means that LLU operators 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, investment in exchange equipment and securing access to backhaul services.

4.162 The LLU operators offering services in this market have already invested in the ability to provide DSL services and the relevant costs have already been 'sunk'. Therefore, these operators can expand their services to new customers without incurring further significant sunk costs in the exchanges in which they are present. However, the sunk costs associated with entry will still be relevant for those LLU operators that have not, at the time of completion of the market review, rolled-out to the exchanges included in Market 3. Thus, sunk costs could remain a barrier to further expansion.

Economies of scale/scope/density

4.163 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 are subject to significant economies of scale. On average, each exchange within Market 3 serves 17,745 delivery points, whereas the national average is c.4,950 delivery points and the average for Market 1 and Market 2 is 1,381 and 6,812 delivery points respectively. Thus Market 3 presents a greater opportunity for LLU operators compared to Market 1 and Market 2.

- 4.164 In the discussion of Market 1 and Market 2 above it was noted that BT is able to benefit from considerable economies of scale, scope and density that will not be available to many new operators. In particular, large economies of scale, scope and density are present in both the exchange and backhaul elements of asymmetric broadband access services. For example, this means that the greater number of end-users at the exchange level the lower the costs per end-user.
- 4.165 Since most of the exchanges that constitute Market 3 are large exchanges (with an average of 17,745 delivery points) there is greater scope for LLU entrants to achieve a lower unit cost per end-user in comparison to smaller exchanges. This is reflected in the significant LLU presence in this market and the recent marketing drives by many of these entrants to gain market share. As noted above, it is likely that the LLU operators will increase their share in this market once BT's procedures for mass migration of customers onto LLU are in place.
- 4.166 In the intervening period before this scale is achieved, the costs for the LLU operators are likely to be much higher than those faced by BT or Virgin Media. A number of operators new to the LLU market have informed Ofcom that they expect to be operating at a loss in this market until such time. However, it should also be noted that entry into any market generally requires upfront costs to be incurred, which the undertaking in question would seek to recover through future revenues.
- 4.167 BT and Virgin Media also benefit from significant economies of scope in the wholesale broadband access market, as they do in other wholesale fixed access markets. The economies of scope relate mainly to duct infrastructure that supports a range of other telecommunications access services. These economies of scope can act as a further barrier to entry to this market, as a new entrant would initially not have existing duct infrastructure in place. However, BT's economies of scope relating to access networks are also available to LLU operators as these are reflected in its regulated LLU charges.
- 4.168 Further, BT is able to benefit from economies of scope between each of the three markets in the UK (excluding the Hull area) in a way that Virgin Media and the LLU operators cannot as BT is the only operator that is present throughout each of those markets. A particular example of how BT could benefit from these economies of scope is that some of the infrastructure and much of the development required to deliver a bitstream service, for instance, product and system development cost, is common across the three markets. Further, BT will be able to offer a service with national coverage without needing to establish relationships with other providers.
- 4.169 However, a number of the LLU entrants into this market have their own scope advantages. Some of these operators specialise in the provision of voice calls and can be expected to use the unbundled access offered by LLU to further develop these services in addition to offering broadband internet access. Other LLU operators are specialist providers of television services and can be expected to aggressively compete in the delivery of video-on-demand and other value-added offerings. Further economies of scope are available to LLU operators in their ability to utilise already existing customer service and marketing functions into the wholesale broadband access market and also other essential inputs for downstream services e.g. content for the provision of television over broadband. In addition, all of the Principal Operators active in this market appear to have similar access to capital markets such that no one operator has an advantage over others.

SMP proposals for Market 3

Single firm dominance

4.170 Ofcom concludes that no firm possesses single firm SMP in the market for wholesale broadband access in Market 3 for the period of this market review. This finding is based on:

- BT's current (July 2007) market share of 45%, which has fallen from 62% in March 2006 and is predicted to fall further to between 38% and 40% by June 2008;
- The continuing growth in the provision of broadband services from LLU operators;
- LLU operators having already made significant sunk investments which mean that these operators can significantly expand their services to new consumers at relatively low incremental cost in the exchanges in which they are present; and
- BT, Virgin Media and LLU operators are all able to benefit from economies of scale, scope and density.

Collective dominance

4.171 The criteria for assessing collective dominance in electronic communications markets are set out in Annex II to the Framework Directive. That provision sets out that two or more undertakings may be found to be in a joint dominant position if, even in the absence of structural links between them, they operate in a market the structure of which is considered to be conducive to coordinated effects. Annex II states that:

“Without prejudice to the case law of the Court of Justice on joint dominance, this is likely to be the case where the market satisfies a number of appropriate characteristics, in particular in terms of market concentration, transparency and other characteristics mentioned below:

- mature market,
- stagnant or moderate growth on the demand side,
- low elasticity of demand,
- homogeneous product,
- similar cost structures,
- similar market shares,
- lack of technical innovation, mature technology,
- absence of excess capacity,
- high barriers to entry,
- lack of countervailing buying power,
- lack of potential competition,
- various kinds of informal or other links between the undertakings concerned,

- retaliatory mechanisms,
- lack or reduced scope for price competition.”

4.172 This position is informed by paragraphs 86 to 106 of the SMP Guidelines which set out in greater detail the factors to be taken into account in assessing joint dominance. In particular, paragraph 99 of the SMP Guidelines provides that:

“In an oligopolistic market where most, if not all, of the abovementioned criteria are met, it should be examined whether, in particular, the market operators have a strong incentive to converge to a coordinated market outcome and refrain from reliance on competitive conduct. This will be the case where the long-term benefits of an anti-competitive conduct outweigh any short-term gains resulting from a resort to a competitive behaviour.”

4.173 As set out above in relation to single firm dominance, Ofcom concludes that no operator has SMP in Market 3 at the present time. In addition, Ofcom concludes that collective dominance is not evident in the market for wholesale broadband access in Market 3. Ofcom does not consider that the criteria of Annex II to the Framework Directive have been met to any appreciable extent. In particular, the market is developing and cannot be characterised as mature, demand side growth is not stagnant and technology is not yet mature. The analysis of barriers to entry show that to the extent that these exist, they have already been overcome, illustrated by the entry that has occurred in the exchange areas included in Market 3. However, such barriers to entry may still remain for further additional potential entrants seeking to enter the market. In addition, Ofcom is not aware of any kinds of informal or other links between undertakings present in the market. Ofcom considers that the market is best characterised by BT, Virgin Media and the LLU operators seeking to compete with each other. Thus, Ofcom does not currently consider that there is joint dominance in this market. Ofcom’s assessment of each of the characteristics listed above in relation to Market 3 is set out in Table 4.8.

Table 4.8 – Assessment of collective dominance characteristics in Market 3

Characteristic	Relevance to Market 3
Mature market	The wholesale broadband access market is not yet mature
Stagnant or moderate growth on the demand side	There remains significant demand-side growth
Low elasticity of demand	Consumer research indicates that there are price-sensitive buyers
Homogeneous product	The wholesale broadband access product is relatively homogeneous but there is scope for differentiation
Similar cost structures	BT, Virgin Media and LLU operators have different business plans and underlying cost structures
Similar market shares	There exists variation in operators’ market shares
Lack of technical innovation, mature technology	Technology is not yet mature, with innovations continuing
Absence of excess capacity	Investment in capacity is continuing
High barriers to entry	High barriers to entry exist for new entrants

	but have been overcome by those that have already entered
Lack of countervailing buyer power	Countervailing buyer power has not been assessed as single firm dominance has not been established. However, Ofcom considers that it is likely to be similar to the conditions in Market 1 and Market 2 and therefore countervailing buyer power is likely to be limited.
Lack of potential competition	While there is substantial competition, there is a lack of further additional competition
Various kinds of other links between the undertakings concerned	Ofcom is not aware of such links, except where necessary for example when discussing product and interconnection standards
Retaliatory mechanisms	There do not appear to be any obvious retaliatory mechanisms
Lack or reduced scope for price competition	There exists very strong price competition

Countervailing buyer power

4.174 In the November Consultation, Ofcom did not reach a conclusion as to whether an operator had SMP in Market 3. Ofcom therefore conducted an assessment of the extent to which countervailing buyer power was present in that market in order to inform its analysis. However, in light of Ofcom's provisional conclusion set out above, that no operator has SMP in Market 3, it is not necessary to conduct an assessment of countervailing buyer power in Market 3.

Consultation questions on the proposed market power assessments

Question 2: Do respondents have any comments, additional to those made in their responses to the November consultation, on Ofcom's proposed market power findings for the Hull area, Market 1 or Market 2?

Question 3: Do respondents agree with the approach set out by Ofcom for its market power assessment in Market 3 and its conclusion that there is no-SMP?

Section 5

Regulatory Remedies

Introduction

5.1 In this section Ofcom considers the regulatory remedies that it should impose on KCOM in the Hull area and BT in Market 1 and separately in Market 2 as a result of its proposals that KCOM has SMP in the Hull area and BT has SMP in Market 1 and separately in Market 2. This section also considers the notice period that Communications Providers should be given prior to the revocation of all of the relevant SMP services conditions in Market 3 given that Ofcom considers that the market will become effectively competitive over the period covered by this review.

The regulatory remedies that apply presently

5.2 In the 2003/04 Review Ofcom concluded that there were three economic wholesale markets in the UK and these were:

- i) asymmetric broadband origination in the UK (excluding Hull);
- ii) asymmetric broadband origination in Hull; and
- iii) broadband conveyance in the UK.

5.3 On the basis of its analyses of the operation of these markets, Ofcom concluded that BT had SMP in the markets for asymmetric broadband origination in the UK (excluding Hull) and the market for broadband conveyance. KCOM was found to have SMP in the market for asymmetric broadband origination in Hull.

5.4 Ofcom therefore set regulatory remedies which were considered appropriate to address the SMP of BT and KCOM in the relevant markets. These remedies were designed to ensure that other Communications Providers could purchase wholesale broadband access services from BT and KCOM on non-discriminatory terms, although the exact remedies imposed on BT and KCOM differed slightly.

5.5 The conditions imposed on BT were:

- 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;
- Requests for new Network Access; and
- Requirement to have accounting separation.

- 5.6 In addition Ofcom also placed a specific obligation on BT to provide ATM interconnection. This was achieved through a direction ('the 2004 ATM Direction'), which was amended by Annex 3 of Ofcom's statement of 26 August 2004 on *Direction setting the margin between IPStream and ATM interconnection prices*.
- 5.7 The conditions imposed on KCOM were:
- 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;
 - Requirement to notify technical information; and
 - Requirement to have accounting separation

Respondents' views

- 5.8 The November consultation asked the following question:

Question 1 Do respondents consider that the regulatory remedies put in place in the 2003/04 market review were effective in counterbalancing BT's and Kingston's SMP in the relevant markets?

- 5.9 Respondents were not generally convinced that the regulatory remedies put in place in the 2003/04 Review were effective in counterbalancing BT's SMP. A number suggested that IPStream should have been subject to direct regulatory requirements.
- 5.10 Others respondents commented that competition in the provision of wholesale and retail broadband services has been driven by the Undertakings and the requirement for equivalence of inputs and the establishment of the Office of the Telecoms Adjudicator (OTA) rather than the regulatory rules put in place in the 2003/04 Review.
- 5.11 BT referred, more generally, to the successes of UK broadband and noted that broadband services are widely available and widely utilised.
- 5.12 KCOM stated that the measures put in place in the Hull area were not necessary and are damaging. In regard to BT, KCOM stated that regulation had gone some way to counterbalancing SMP but that further intervention (Undertakings, OTA) also played a significant role.

Ofcom's response

- 5.13 Since the completion of the 2003/04 Review there has been significant investment in broadband throughout the whole of the UK and this has resulted in increased availability, lower retail prices and improved product offerings in terms of characteristics such as speed. There has also been over a threefold increase in the take-up of broadband services, with broadband access now being used by over 55% of homes.

- 5.14 In the UK (excluding Hull), a highly competitive retail market has developed since the 2003/04 Review and the establishment of a strong retail presence has allowed certain Communications Providers to enter the market further upstream, using LLU.
- 5.15 In the Hull area, Ofcom recognises that there has not been any entry based on either KCOM's wholesale broadband products or LLU. However, the remedies placed on KCOM and BT are very similar, thereby creating the opportunity for alternative providers to enter the Hull area. Ofcom believes that where SMP is found at the wholesale level it is important that providers are given the opportunity to enter the market, thus ensuring that the market outcome is determined by the commercial decisions of the market players rather than the regulator.
- 5.16 Overall Ofcom believes that there have been significant positive developments in the broadband markets since the 2003/04 Review which have, and are, benefiting UK consumers. Whilst Ofcom agrees that other regulatory interventions, such as the Undertakings and the OTA, have played an important part in these successes it nevertheless believes that the regulatory remedies put in place in the 2003/04 Review have also played their part in delivering the market outcomes.

The need for *ex-ante* regulation

- 5.17 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.
- 5.18 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.
- 5.19 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.
- 5.20 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 in paragraphs 5.17 and 5.18.
- 5.21 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.

- 5.22 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.
- 5.23 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.
- 5.24 It is Ofcom's view that the SMP service conditions proposed for KCOM and BT in this section satisfy the relevant requirements specified in the Act and relevant Directives.

General considerations

- 5.25 Where markets are effectively competitive, *ex-post* competition law is used to deal with any competition issues that may arise. However, in markets where competition is not yet effective, there may be a need to actively promote the development of competition. This can be achieved through the imposition of *ex-ante* remedies.

Characteristics of communications markets

- 5.26 In general, the case for *ex-ante* regulation in communications markets is based on the existence of market failures which, individually or in combination, might mean that competition would not become established if the regulator relied solely on its *ex-post* competition law powers which tend to deal 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. The use of *ex-ante* regulation, which would be used to promote competition, might reduce the need for such regulation as markets become more competitive and in the longer-term, therefore, it might be possible to place greater reliance on *ex-post* competition law.
- 5.27 The Commission has stated that *ex-ante* regulation is justified:
- “[...] where the compliance requirements of an intervention to redress a market failure are extensive (e.g. the need for detailed accounting for regulatory purposes, assessments of costs, monitoring of terms and conditions [...])”⁶³
- 5.28 This is the case for many markets where persistent SMP leads to a risk of a firm abusing its position.

⁶³ See Section 2.2 of the Explanatory Memorandum

Aims of regulating wholesale broadband access

5.29 In Section 4, Ofcom explained why it considers that KCOM has SMP in the provision of wholesale broadband access services in the Hull area and BT has SMP in the provision of wholesale broadband access services in Market 1 and separately in Market 2. 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... “.

5.30 The Commission considers that in most cases it is preferable to apply regulation at the wholesale level⁶⁴. Ofcom agrees with the Commission’s view. Regulation at the wholesale level would serve a twofold purpose. First, it could be used to address SMP concerns in the relevant wholesale market. Second, this might, in turn, increase competition in the downstream markets that rely on these wholesale inputs.

5.31 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.

5.32 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 Ofcom 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 Communications Providers 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.

5.33 In assessing the appropriate level of regulation to be applied, Ofcom has 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.

5.34 Ofcom has 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 Directives⁶⁵. These describe the circumstances in which Ofcom would consider the imposition of wholesale access obligations to be appropriate, give guidance on the nature of the wholesale products Ofcom 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.

⁶⁴ For example see the Explanatory Memorandum

⁶⁵ These guidelines can be found at http://www.ofcom.org.uk/static/archive/oftel/publications/ind_guidelines/acce0902.htm

5.35 In addition, Ofcom has considered the Revised ERG Common Position on the approach to Appropriate remedies in the electronic communication networks and services (ECNS) regulatory framework⁶⁶ (“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.”⁶⁷

5.36 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.

5.37 The Revised 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:

- 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.

5.38 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*⁶⁸ (“the ERG Bitstream Position”). The ERG Bitstream Position sets out a methodology for dealing with remedies in the wholesale broadband access market. In particular, the ERG Bitstream Position sets out remedies which are designed to achieve the following objectives:

- assurance of access;
- level playing field;
- avoidance of unfair first-mover advantage;
- transparency of terms and conditions;

⁶⁶ See http://erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

⁶⁷ See page 9. Note: the number of markets has been reduced to 7 in the Recommendation (second edition)

⁶⁸ See http://erg.eu.int/doc/publications/erg_06_69rev1_wba_cp.pdf

- reasonableness of technical parameters of access;
 - fair and coherent access pricing;
 - reasonable quality of access products;
 - assurance of efficient and convenient switching processes;
 - assurance of backhaul from the point of delivery of the bitstream service to a reasonable point of handover to the alternative provider; and
 - assurance of co-location at delivery points.
- 5.39 The ERG Bitstream Position further suggests the types of remedy that might be employed to address the above concerns.
- 5.40 Ofcom has considered each of the suggested remedies in the ERG Remedies Position and the ERG Bitstream Position and its proposals are set out below.
- 5.41 Ofcom has considered the regulatory remedies that it considers are appropriate to address KCOM's position of SMP in the provision of wholesale broadband access in the Hull area and the regulatory remedies that it considers are appropriate to address BT's SMP in the provision of wholesale broadband access in Market 1 and separately in Market 2. It has also considered whether it could rely on competition law to generate the best outcomes for UK citizens and consumers. The November consultation considered three options for levels of regulation in each of these markets. Ofcom has summarised those options in this section and set out its preferred option in each case and explained in detail why the various remedies are needed.
- 5.42 The first option considered in each market was the option not to impose *ex-ante* regulation and rely on competition law. It is necessary to consider the option of not applying any regulation as citizens and consumers might achieve a better outcome as a result of non-intervention. The second option considered was one in which the principal regulation applied would take the form of access and non-discrimination obligations. The third option considered was one in which price controls, and cost orientation, would be applied to KCOM's and BT's charges in the relevant markets in addition to the requirements set out in respect of the second option.
- 5.43 The aim of regulation in each market would be to further the interests of citizens and consumers by promoting competition in the provision of downstream (retail) broadband services.

Remedies considered – the Hull area

- 5.44 As explained in Section 6 of the November consultation, Ofcom considered three options in relation to the regulation of the provision of wholesale broadband access in the Hull area. The three options were characterised as an option not to regulate (Option 1), an option to impose access and non-discrimination obligations (Option 2), and an option to set price controls (Option 3).
- 5.45 Ofcom explained that it had discounted Option 1 because its preliminary view was that KCOM had SMP in the Hull area and that *ex-ante* regulation was required to ensure that the benefits of competition in terms of price, product differentiation,

choice of supplier and quality were optimised for citizens and consumers in the Hull area (see paragraphs 6.35 to 6.37 of the November consultation).

- 5.46 Ofcom also explained that it had discounted Option 3 because in a developing market characterised by growth and innovation, such as broadband, there is a risk of setting the price control at an inappropriate level. In particular, in such a situation there is a risk a price control could result in a reduced level of investment in the market, which would ultimately be to the detriment of UK citizens and consumers. Ofcom explained, however, that it had not ruled out the imposition of price controls in future (see paragraphs 6.91 to 6.99 of the November consultation).
- 5.47 For the reasons set out above, Ofcom considers that Option 2 (access and non-discrimination obligations) is the most appropriate option. Option 2 consisted of the remedies set out below.

Requirement to provide Network Access on reasonable request

- 5.48 Ofcom considers that it is appropriate to impose a requirement on KCOM as a result of its SMP to meet reasonable requests for Network Access. Ofcom considers that, in the absence of such a requirement, KCOM might have an incentive not to provide such access.
- 5.49 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.
- 5.50 The definition of access and the way in which Ofcom might assess reasonable demands for access is set out in the Access Guidelines. Ofcom considers that it is appropriate in cases where a Communications Provider has SMP to impose an access obligation on that provider requiring it to meet all reasonable requests for Network Access within the relevant wholesale market, irrespective of the technology required, on fair and reasonable terms and conditions.
- 5.51 As the market analysis in Section 4 has shown, 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 Communications Providers to build direct access networks in the Hull area on a sufficient scale to provide a viable alternative to KCOM. Therefore, Ofcom is currently of the view that a requirement on KCOM to provide access to its network in the Hull area is appropriate as it would be likely to facilitate competition in downstream markets by enabling Communications Providers to compete without the need to invest in a network which might not be economically viable.
- 5.52 Ofcom has considered the Community requirements detailed in Section 4 of the Act. In particular, Ofcom considers that the proposed obligation satisfies the Community requirements, set out in Sections 4(3), 4(7) and 4(8) of the Act. That is, the proposed obligation 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.

- 5.53 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2. Additionally, 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 it is clear that the condition is designed to achieve access to KCOM's network in order to facilitate competition.
- 5.54 Finally, Ofcom considers that the proposed obligation meets the requirements of Section 84(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 they must be technically and economically viable, and feasible. As set out in paragraph 4.25 of the Access Guidelines, Ofcom has taken account of the technical and economic viability of installing and using facilities; and the need to ensure effective competition in the long term.

Requirement not to unduly discriminate

- 5.55 Ofcom believes that it is appropriate to impose a requirement on KCOM 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, KCOM would have an incentive to give preferential treatment to its downstream business. In reaching this conclusion Ofcom has taken account of the Access Guidelines which provide that: "an obligation on a vertically integrated operator with SMP to provide access will nearly always be accompanied by a requirement to do so on a non-discriminatory basis."
- 5.56 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.
- 5.57 The requirement not to unduly discriminate is intended, principally, to prevent dominant providers from discriminating in favour of their own retail activities and to ensure that competing providers purchasing wholesale products from the dominant provider are placed in an equivalent position to the dominant provider's retail arm.
- 5.58 Where dominant providers are vertically integrated, like KCOM, they may have an incentive to provide wholesale services on terms and conditions that favour their own retail activities, in a way that would have a material adverse effect on competition. In particular, they may charge competing providers more than the amount charged (through transfer charging) to their own retail activities for wholesale services, thereby increasing the costs of competing providers and giving themselves an unfair competitive advantage. They might also provide services on different terms and conditions, for example with different delivery timescales, which would disadvantage their retail competitors and in turn consumers.

- 5.59 In the absence of an obligation designed to prevent undue discrimination, Ofcom could be called upon to investigate alleged breaches of the Competition Act/EC Competition Law prohibitions on anti-competitive agreements and abuses of a dominant position, and might be required to resolve successive complaints. Imposing an *ex-ante* condition might reduce the potential regulatory costs that emanate from multiple or successive complaints related to discrimination.
- 5.60 It could be argued that the Competition Act/EC Competition Law might provide adequate provision to address allegations or evidence of discriminatory behaviour. However, Ofcom considers that at the wholesale level sectoral regulation provides a faster and more secure means of giving effect to decisions and determinations. In addition, it allows Ofcom to place a greater emphasis on promoting competition (for example by restricting the ability of an SMP operator to target segments of the retail market). A no undue discrimination obligation would therefore ensure that parties were treated on an equitable basis.
- 5.61 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.
- 5.62 A prohibition of discrimination might have disadvantages if it prevented discrimination that was economically efficient or justified. However, the proposed obligation would prevent discrimination that was undue only.
- 5.63 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.
- 5.64 Ofcom has considered its duties under Section 3 of the Act and all the Community requirements set out in Section 4. 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.
- 5.65 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 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. Finally, the proposed obligation is transparent in that it is clear in its intention to ensure that KCOM does not discriminate unduly. In addition, Ofcom has given guidance as to how it might treat undue discrimination in the Discrimination Guidelines.

- 5.66 Furthermore, Ofcom considers that the proposed obligation would satisfy the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose an obligation in the interests of effective competition, as it would ensure that other operators could make effective use of wholesale inputs and offer products based on these wholesale inputs to compete with KCOM in downstream markets.

Requirement to publish a Reference Offer

- 5.67 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 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. The publication of a RO would therefore help to ensure stability in markets and ensure that incentives to invest would not be undermined.
- 5.68 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.
- 5.69 Ofcom considers that it is appropriate for the published RO to 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.
- 5.70 The publication of a RO would allow for speedier negotiations and might avoid possible disputes. Together with the no undue-discrimination requirement, the publication of a RO would give confidence to those purchasing wholesale services that they were being provided on non-discriminatory terms.
- 5.71 Ofcom has considered all the European Community requirements set out in Sections 3 and 4 of the Act. In particular, a requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability and secure freedom of choice for the customers of Communications Providers. 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. Finally, the proposed obligation would make it easier for Ofcom and KCOM's competitors to monitor any instances of discrimination.
- 5.72 Ofcom considers that the requirement to publish a RO meets the Community requirements set out in Section 4 of the Act. In particular, the proposed obligation meets the requirements of Section 4(3) of the Act in that it promotes competition and Sections 4(7) and 4(8) of the Act in that it 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 Communications Providers. The publication of a RO would mean that other Communications Providers would have the necessary information readily available to allow them to make informed decisions about entry into the market.
- 5.73 Ofcom considers that the proposed obligation satisfies the tests set out in Section 47(2) of the Act. 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 KCOM and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 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 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 it is clear that the obligation would be designed to ensure that potential competitors have sufficient information to make investment decisions about entry into this market.

Requirement to notify charges, terms and conditions

- 5.74 Ofcom believes 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 Communications Providers 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.

- 5.75 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).
- 5.76 Ofcom proposes that, as this is a market in which KCOM has SMP it should give 28 days notice before any proposed changes would be permitted to come into effect and this would represent a sufficient notification period. Ofcom considers that this will help to ensure that any emerging downstream competitors have sufficient time to change their offerings in response to a change in their inputs.
- 5.77 Ofcom considers that the notice should include the following information:
- current charge or other relevant term and condition;
 - proposed change and effective date or period;
 - location of terms and conditions within the published RO; and
 - information pertaining to other service charges that would be directly affected by the proposed change.
- 5.78 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.
- 5.79 Ofcom considers that the proposed obligation meets the tests set out in Section 47(2) of the Act. 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 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2. In addition, KCOM is the only operator which has been provisionally found to hold SMP in the Hull area and therefore other providers' behaviour would not be capable of having a materially adverse effect on competition. The proposed obligation is proportionate, as SMP exists and therefore 28 days notification is considered a reasonable period in such circumstances and gives other providers a suitably sufficient period to plan for changes to terms, conditions and charges and adjust their own offerings accordingly.
- 5.80 Ofcom has considered its duties under Section 3 of the Act and all the Community requirements set out in Section 4. 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 Communications Providers. 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.

- 5.81 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. Ofcom considers that it is fair and reasonable to require KCOM to notify competitors of changes to charges, terms or conditions in the interests of effective competition in the long term, by ensuring Communications Providers have access to transparent information that would enable them to make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with KCOM.

Requirement to publish technical information

- 5.82 Ofcom believes that it is appropriate to impose a requirement on KCOM, as a result of its SMP, to publish technical information. The main benefit of this in wholesale markets is that other Communications Providers could ensure that their systems are interoperable with any changes to technical specifications that would be likely to affect their business.
- 5.83 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.
- 5.84 The proposed obligation would require KCOM to publish a RO for Network Access and this would, amongst other things, contain a description of that Network Access. This would need to include:
- technical characteristics;
 - the location of the points of Network Access; and
 - technical standards for Network Access.
- 5.85 The proposed obligation in relation to the reference offer would set out the number of days within which a reference offer, or amendments to that reference offer, must be published. For example, KCOM would be required to give 90 days notice before it would be permitted to change the RO. The proposed technical information obligation would include additional obligations to publish new technical information at least 90 days in advance of entering into a contract to provide the new Network Access, or amendments to existing technical terms and conditions at least 90 days before those amended terms and conditions would be permitted to come into effect.
- 5.86 The information that KCOM would be required to publish under the proposed obligation would include the need to publish new or amended technical characteristics (including information on network configuration where necessary to make effective use of the Network Access), locations of the points of Network Access and technical standards (including any usage restrictions and other security issues). Relevant information about network configuration may include information about the function and connectivity of points of access, for example the connectivity of exchanges to end-users and other exchanges.

- 5.87 The proposed obligation would be important in that it would ensure that Communication Providers' systems could interoperate with KCOM's systems and therefore make effective use of the Network Access that KCOM would be required to provide. For example, a competing provider may have to introduce new equipment or modify existing equipment to support a new or changed technical interface. Similarly, a competing provider may need to make changes to their network in order to support changes in the points of Network Access or configuration.
- 5.88 Ofcom's view is that 90 days' notification is the minimum time that competing providers would need to modify their network to support a new or changed technical interface or support a new point of access or network configuration. Therefore, Ofcom's view is that in the market for wholesale broadband access in the Hull area, KCOM 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 KCOM either entering into a contract to provide new Network Access or making technical changes to existing Network Access unless Ofcom consents otherwise.
- 5.89 Ofcom considers that the proposed obligation meets the tests set out in the Act. Ofcom has considered all the Community requirements in Section 4. In particular, Ofcom has considered the requirement to promote competition and to encourage service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefits for consumers by ensuring that providers have sufficient notification of technical changes to KCOM's network to enable them to compete.
- 5.90 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. 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 KCOM and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 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 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 in that it is clear in its intention that KCOM should notify technical information as set out above.
- 5.91 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose the obligation in the interests of effective competition in the long term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with KCOM.

Requirement to account separately

- 5.92 Ofcom believes that it is appropriate to impose a requirement on Communications Providers 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 Communications Providers 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.
- 5.93 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.

Implementation of regulatory financial reporting conditions

- 5.94 On 22 July 2004, Ofcom published a statement on the regulatory financial reporting obligations on BT and KCOM: accounting separation and cost accounting systems. In that statement, Ofcom imposed SMP services conditions for regulatory financial reporting on BT (Conditions OA1 to OA34) and KCOM (Conditions OB1 to OB33) 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).
- 5.95 Ofcom considers that, in the event that it is appropriate to impose an SMP services condition on KCOM 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.
- 5.96 Sections 3 and 4 of the Act sets out the Community requirements for regulation. Ofcom has considered all of the criteria in Section 4 of the Act. 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 Communications Providers. 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.
- 5.97 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 and KCOM is the only operator which has been provisionally found to hold SMP in the Hull area.

- 5.98 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose an obligation in the interests of effective competition in the long-term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with KCOM and in the knowledge that they are charged on an equitable basis.

Respondents' views

- 5.99 The November consultation asked the following question:

Question 12: Do respondents agree with Ofcom's proposed regulatory remedies on Kingston in relation to the market for wholesale broadband access in the Hull area?

- 5.100 KCOM stated that it does not consider the proposed remedies to be necessary or appropriate. Instead, it suggested that it should be required to publish its prices for wholesale broadband access services, with no advanced notice of changes and provide services on a non-discriminatory basis to Altnets and ISPs. It suggested that these obligations would reduce its regulatory burden and would enable Ofcom and downstream competitors to detect anti-competitive behaviour and would also deter such behaviour in the first place. It suggested that a regulatory regime that placed onerous requirements on it might affect its ability to invest and innovate.
- 5.101 BT stated that any remedies applied should be the same as those applied in markets in which it has been found to have SMP. Other respondents agreed more generally that the regulatory remedies were appropriate.
- 5.102 A number of consumers in the Hull area expressed concern that they did not have a choice of retail provider, like in the rest of the UK.

Ofcom's response

- 5.103 Ofcom considers that the package of regulatory remedies set out in the November consultation are consistent with a finding of market power and does not consider that the proposed regime would increase KCOM's regulatory burden. The regulatory remedies proposed are consistent with the regime that currently applies in the Hull area and this has not prevented KCOM from delivering broadband services in the Hull area. Ofcom would not wish to impose remedies that affected KCOM's ability to invest in its network and does not believe that the proposed remedies would do that.
- 5.104 Ofcom does not believe that KCOM's proposed 'reduced' remedy regime would, on its own, be appropriate, as this would marginalise any potential entry into duplicating KCOM's products. This is why Ofcom believes it is important to have the requirement to provide Network Access on reasonable request. Further, without a requirement to provide notice on changes in charges, terms and conditions and technical information potential entrants would be at risk of having their business model(s) constantly undermined. Such uncertainty is likely to deter entry.
- 5.105 Of course, there is nothing to stop KCOM from proposing a particular wholesale product and if this satisfies Communications Providers who want to operate in the

Hull area then it is likely to limit further requests for Network Access. However, it is also open for Communications Providers to request other products which may satisfy the access condition.

- 5.106 Ofcom agrees with BT to the extent that, in markets in which competitive conditions are homogenous, the regulatory remedies applied should be broadly similar. This does not necessarily mean that they need to be the same. For instance, Ofcom might vary regulatory remedies should SMP be less pronounced and not likely to be enduring in a particular market. In setting SMP services conditions, Ofcom is required by section 47 of the Act to ensure that such conditions are objectively justifiable, not such as to discriminate unduly, proportionate and transparent. Ofcom considers that the application of remedies consistently across markets meets the requirement not to discriminate unduly against particular persons. Ofcom also notes that in the 2003/04 review it did not impose a requirement on KCOM to provide transparency as to the quality of service information (which was a requirement imposed on BT). The reasons given at that time were that such a condition applies only where there is sufficient demand for the wholesale service in question such that the data provided will be statistically meaningful. KCOM did not at that time supply wholesale asymmetric broadband origination services. This remains the case in this market review, but Ofcom has placed a requirement on KCOM to publish quality of service information in the event that that demand from third parties was to materialise.
- 5.107 In terms of the concerns expressed by a number of consumers in the Hull area, Ofcom recognises that there is a lack of direct and indirect competition in the provision of broadband services in the Hull area. Ofcom has, nonetheless, provided opportunities for entry in the Hull area in that KCOM has been required to provide service on terms which are not unduly discriminatory and Ofcom proposes to continue to require KCOM to do so. Whether or not any Communications Provider chooses to enter the market is, however, a commercial decision.

Account taken of the ERG Bitstream Position

- 5.108 Table 5.1 summarises how Ofcom has taken into account the ERG Bitstream Position, referred to in paragraph 5.38 above, in proposing the package of remedies to be imposed in the Hull area.

Table 5.1: Account taken of the ERG Bitstream Position – the Hull area

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 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 considers that it would be inappropriate, at this time, to impose charge controls and cost orientation as this has the potential to undermine incentives for efficient investment.
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 Communications Providers."
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.

Ofcom's proposed remedies in the Hull area

- 5.109 Ofcom considers that the remedies proposed in the November consultation are those that should be applied to KCOM in the Hull area as a result of Ofcom's provisional finding that KCOM retains SMP in the market for wholesale broadband access in the Hull area. Ofcom considers 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.
- 5.110 The proposed regulatory remedies may not, however, secure competition in the provision of downstream broadband services in the Hull area in the event that other Communications Providers do not consider it to be economically viable to supply customers in the Hull area. Nonetheless, the regulatory remedies proposed would enable other Communications Providers to enter the Hull area and compete with KCOM, should they choose to do so.
- 5.111 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 Communications Providers in the Hull area. Survey evidence has shown that consumers place a high level of importance on service quality and reliability⁶⁹.

⁶⁹ <http://www.ofcom.org.uk/consult/condocs/wbamr/research.pdf>

5.112 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 Communications Providers 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.

Transparency as to quality of service

5.113 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. The condition imposed by Ofcom in Annex 1 (EB5) requires KCOM to publish such information in the manner and form required by Ofcom in the event that demand for wholesale broadband access services from third parties materialises. This obligation requires KCOM to publish certain information relating to the quality of the service it delivers in providing services falling within the wholesale broadband access markets.

5.114 Where KCOM has significant market power in a specific wholesale market, it has the potential to leverage this into downstream markets, by providing a different quality of service to different wholesale customers. This could have a material impact on competition in retail markets, ultimately to the detriment of retail customers.

5.115 Ofcom considers that Condition EB5 meets the tests set out in the Act. Ofcom has considered its duties under section 3 of the Act and all the Community requirements set out in section 4. In particular, the Condition encourages the provision of network access and service interoperability for the purpose of securing the maximum benefit for the persons who are customers of Communications Providers and of persons who make such facilities available. It promotes competition and thereby the interests of end-users in downstream markets, by denying KCOM as the dominant provider in this market the opportunity to discriminate in the quality of service it provides to customers.

5.116 The full list of regulatory obligations that Ofcom proposes to impose on KCOM in the Hull area and Ofcom's reasoning for proposing to impose each remedy is set out below and in the draft Notification set out at Annex 1. The proposed remedies are:

- i) Requirement to provide Network Access on reasonable request – a provider having SMP might refuse to supply Network Access or meet reasonable requests for Network Access in the absence of a requirement to do so. The absence of supply might restrict competition in downstream markets;
- ii) Requirement not to unduly discriminate – a provider having SMP might have an incentive to offer favourable terms including price to its own operations unless it was prevented from doing so. The availability of differing terms might create a barrier to entry;
- iii) Requirement to publish a Reference Offer – a provider having SMP might have little incentive to encourage entry and therefore would be unlikely to set out the basis on which other Communications Providers could obtain service in the absence of a requirement to do so. This might increase the cost of entry to the market and create a barrier to entry;
- iv) Requirement to notify charges, terms and conditions – a provider having SMP might have little incentive to encourage entry and therefore might be unlikely to set out the charges, terms and conditions on which other Communications

Providers could obtain service in the absence of a requirement to do so. This might increase the cost of entry because potential entrants might have to enter into negotiations before securing access and create a barrier to entry;

- v) Transparency as to quality of service – a provider having SMP might have little incentive to set out comparable internal and external service quality in the absence of a requirement to do so. This might make it difficult to monitor any potential anti-competitive practices and create a barrier to entry;
- vi) Requirement to publish technical information – a provider having SMP might have little incentive to encourage entry and therefore might be unlikely to set out the technical characteristics of the service or the means of interconnection in the absence of a requirement to do so. This might increase the cost of entry to the market and create a barrier to entry; and
- vii) Requirement to account separately – a provider having SMP might have little incentive to set out the internal transfer charges and external charges in the absence of a requirement to do so. This might make it difficult to monitor any potential anti-competitive practices and create a barrier to entry.

5.117 KCOM is currently required to account separately for asymmetric broadband origination by SMP services conditions OB1 to OB27, OB31 and OB32⁷⁰. Those conditions set out the accounting procedures to be followed by KCOM in respect of a number of markets in which Ofcom has determined that KCOM should be required to account separately. Those conditions currently apply to KCOM in respect of the market for asymmetric broadband origination in the Hull area. As a result of the change to the market definition as set out in Section 3, Ofcom is proposing to amend the list of markets to which SMP services conditions OB1 to OB27, OB31 and OB32 apply to remove the reference to “asymmetric broadband origination in the Hull area” and to replace it with “wholesale broadband access in the Hull area”.

Remedies considered – Market 1

5.118 As explained in Section 6 of the November consultation, Ofcom considered three options in relation to the regulation of the provision of wholesale broadband access in Market 1. The three options were characterised as an option not to regulate (Option 1), an option to impose access and non-discrimination obligations (Option 2), and an option to set price controls (Option 3).

5.119 Ofcom explained that it had discounted Option 1 because its preliminary view was that BT had SMP in Market 1 and that *ex-ante* regulation was required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality were optimised for citizens and consumers in Market 1 (see paragraphs 6.101 to 6.103 of the November consultation).

5.120 Ofcom also explained that it had discounted Option 3 because in a developing market characterised by growth and innovation, such as broadband, there is a risk of setting the price control at an inappropriate level. In particular, in such a situation there is a risk a price control could result in a reduced level of investment in the market, which would ultimately be to the detriment of UK citizens and consumers.

⁷⁰ See “*The regulatory financial reporting obligations on BT and Kingston Communications Final statement and notification*” available at http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/finance_report.pdf

Ofcom explained, however, that it had not ruled out the imposition of price controls in future (see paragraphs 6.157 to 6.165 of the November consultation).

- 5.121 For the reasons set out above, Ofcom considers that Option 2 (access and non-discrimination obligations) is the most appropriate option. Option 2 consisted of the remedies set out below.

Requirement to provide Network Access on reasonable request

- 5.122 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 might have an incentive not to provide such access.
- 5.123 Section 87(3) of the Act authorises the setting of an SMP services condition requiring the dominant provider to provide such 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.
- 5.124 The definition of access and the way in which Ofcom might assess reasonable demands for access are set out in the Access Guidelines. Ofcom considers that it is appropriate in cases where a Communications Provider has SMP to impose an access obligation on that provider requiring it to meet all reasonable requests for Network Access within the relevant wholesale market, irrespective of the technology required, on fair and reasonable terms and conditions.
- 5.125 As the market analysis in Section 4 has shown, 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 Communications Providers 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 Communications Providers to compete without the need to invest in a network which might not be economically viable.
- 5.126 Ofcom has considered the Community requirements detailed in Section 4 of the Act. In particular, Ofcom considers that the proposed obligation satisfies the Community requirements set out in Sections 4(3), 4(7) and 4(8) of the Act. That is, the proposed obligation 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.
- 5.127 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 BT's network and will therefore foster competition. The obligation does not discriminate unduly between providers, as it is imposed on BT and Ofcom is considering similar

measures to counteract the SMP of BT in Market 2 and KCOM in the Hull area. Additionally, BT is the only operator which has been provisionally found to hold SMP 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 it is clear that the condition is designed to achieve access to BT's network in order to facilitate competition.

- 5.128 Finally, Ofcom considers that the proposed obligation meets the requirements of Section 84(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 they must be technically and economically viable, and feasible. As set out in paragraph 4.25 of the Access Guidelines, Ofcom has taken account of the technical and economic viability of installing and using facilities; and the need to ensure effective competition in the long-term.

Requirement not to unduly discriminate

- 5.129 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 an incentive to give preferential treatment to its downstream business.
- 5.130 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.
- 5.131 The requirement not to unduly discriminate is intended, principally, to prevent dominant providers from discriminating in favour of their own retail activities and to ensure that competing providers purchasing wholesale products from the dominant provider are placed in an equivalent position to the dominant provider's retail arm.
- 5.132 Where dominant providers are vertically integrated, like BT, they may have an incentive to provide wholesale services on terms and conditions that favour their own retail activities, in a way that would have a material adverse effect on competition. In particular, they may charge competing providers more than the amount charged (through transfer charging) to their own retail activities for wholesale services, thereby increasing the costs of competing providers and giving themselves an unfair competitive advantage. They might also provide services on different terms and conditions, for example with different delivery timescales, which would disadvantage their retail competitors and in turn consumers.
- 5.133 In the absence of an obligation designed to prevent undue discrimination, Ofcom could be called upon to investigate alleged breaches of the Competition Act/EC Competition Law prohibitions on anti-competitive agreements and abuses of a dominant position, and might be required to resolve successive complaints. Imposing an *ex-ante* condition might reduce the potential regulatory costs that emanate from multiple or successive complaints related to discrimination.
- 5.134 It could be argued that the Competition Act/EC Competition Law might provide adequate provision to address allegations or evidence of discriminatory behaviour. However, Ofcom considers that at the wholesale level, sectoral regulation provides a faster and more secure means of giving effect to decisions and determinations. In

addition, it allows Ofcom to place a greater emphasis on promoting competition (for example by restricting the ability of an SMP operator to target segments of the retail market). A no undue discrimination condition would therefore ensure that parties were treated on an equitable basis.

- 5.135 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.
- 5.136 A prohibition of discrimination might have disadvantages if it prevented discrimination that was economically efficient or justified. However, the proposed obligation would prevent discrimination that was undue only.
- 5.137 Ofcom has considered how it will treat undue discrimination in 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.
- 5.138 Ofcom has considered its duties under Section 3 of the Act and the Community requirements set out in Section 4. 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 1, 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.
- 5.139 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and KCOM in the Hull area and BT is the only operator which has been provisionally found to hold SMP in Market 1. The proposed obligation is proportionate since it only prevents behaviour which is unduly discriminatory. Finally, the proposed obligation is transparent in that it is clear in its intention to ensure that BT does not unduly discriminate. In addition, Ofcom has given guidance as to how it might treat undue discrimination in the Discrimination Guidelines.
- 5.140 Furthermore, Ofcom considers that the proposed obligation would satisfy the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose this condition in the interests of effective competition, as it

would ensure that other operators could make effective use of wholesale inputs and offer products based on these wholesale inputs to compete with BT in downstream markets.

Requirement to publish a Reference Offer

5.141 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. The publication of a RO would therefore help to ensure stability in markets and ensure that incentives to invest would not be undermined.

5.142 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.

5.143 Ofcom considers that it is appropriate for the published RO to 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.

5.144 The publication of a RO would allow for speedier negotiations and might avoid possible disputes. Together with the no undue discrimination requirement, the publication of a RO would give confidence to those purchasing wholesale services that they were being provided on non-discriminatory terms.

- 5.145 Ofcom has considered all the European Community requirements set out in Sections 3 and 4 of the Act. In particular, a requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability and secure freedom of choice for the customers of Communications Providers. 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.
- 5.146 Ofcom considers that the requirement to publish a RO meets the Community requirements set out in Section 4 of the Act. In particular, the proposed obligation meets the requirements of Section 4(3) of the Act in that it promotes competition and Sections 4(7) and 4(8) of the Act in that it 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 Communications Providers. The publication of a RO would mean that other Communications Providers would have the necessary information readily available to allow them to make informed decisions about entry into the market.
- 5.147 Ofcom considers that the proposed obligation satisfies the tests set out in Section 47(2) of the Act. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and KCOM in the Hull area and BT is the only operator which has been provisionally found to hold SMP 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 it is clear that the obligation would be designed to ensure that potential competitors have sufficient information to make investment decisions about entry into this market.

Requirement to notify charges, terms and conditions

- 5.148 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 Communications Providers 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.
- 5.149 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).
- 5.150 Ofcom proposes that, as this is a market in which BT has SMP it should give 28 days notice before any proposed changes would be permitted to come into effect and this would represent a sufficient notification period. Ofcom considers that this will help to ensure that any emerging downstream competitors have sufficient time to change their offerings in response to a change in their inputs.

5.151 Ofcom considers that the notice should include the following information:

- current charge or other relevant term and condition;
- proposed change and effective date or period;
- location of terms and conditions within the published RO; and
- information pertaining to other service charges that would be directly affected by the proposed change.

5.152 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.

5.153 Ofcom considers that the proposed obligation meets the tests set out in Section 47(2) of the Act. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and KCOM in the Hull area. In addition, BT is the only operator which has been provisionally found to hold SMP in Market 1 and therefore other providers' behaviour would not be capable of having a materially adverse effect on competition. The proposed obligation is proportionate, as SMP exists and therefore 28 days notification is considered a reasonable period in such circumstances and gives other providers a suitably sufficient period to plan for changes to terms, conditions and charges and adjust their own offerings accordingly.

5.154 Ofcom has considered its duties under Section 3 of the Act and all the Community requirements set out in Section 4. 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 Communications Providers. 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.

5.155 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. Ofcom considers that it is fair and reasonable to require BT to notify competitors of changes to charges, terms or conditions in the interests of effective competition in the long term, by ensuring Communications Providers have access to transparent information that would enable them to make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with BT.

Requirement to publish technical information

- 5.156 Ofcom believes that it is appropriate to impose a requirement on BT, as a result of its SMP, to publish technical information. The main benefit of this in wholesale markets is that other Communications Providers could ensure that their systems are interoperable with any changes to technical specifications that would be likely to affect their business.
- 5.157 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.
- 5.158 The proposed obligation would require BT to publish a RO for Network Access and this would, amongst other things, contain a description of that Network Access. This would need to include:
- technical characteristics;
 - the location of the points of Network Access; and
 - technical standards for Network Access.
- 5.159 The proposed obligation in relation to the reference offer would set out the number of days within which a reference offer, or amendments to that reference offer, must be published. For example, BT would be required to give 90 days' notice before it would be permitted to change the RO. The proposed technical information obligation would include additional obligations to publish new technical information at least 90 days in advance of entering into a contract to provide the new Network Access, or amendments to existing technical terms and conditions at least 90 days before those amended terms and conditions would be permitted to come into effect.
- 5.160 The information that BT would be required to publish under the proposed obligation would include the need to publish new or amended technical characteristics (including information on network configuration where necessary to make effective use of the Network Access), locations of the points of Network Access and technical standards (including any usage restrictions and other security issues). Relevant information about network configuration may include information about the function and connectivity of points of access, for example the connectivity of exchanges to end-users and other exchanges.
- 5.161 The proposed obligation would be important in that it would ensure that Communication Providers' systems could interoperate with BT's systems and therefore make effective use of the Network Access that BT would be required to provide. For example, a competing provider may have to introduce new equipment or modify existing equipment to support a new or changed technical interface. Similarly, a competing provider may need to make changes to their network in order to support changes in the points of Network Access or configuration.
- 5.162 Ofcom's view is that 90 days' notification is the minimum time that competing providers would need to modify their network to support a new or changed technical interface or support a new point of access or network configuration. Therefore, Ofcom's view is that in the market for wholesale broadband access 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.

- 5.163 Ofcom considers that the proposed obligation meets the tests set out in the Act. Ofcom has considered all the Community requirements in Section 4. In particular, Ofcom has considered the requirement to promote competition and to encourage service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefits for consumers by ensuring that providers have sufficient notification of technical changes to BT's network to enable them to compete.
- 5.164 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and KCOM in the Hull area and BT is the only operator which has been provisionally found to hold SMP 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 in that it is clear in its intention that BT should notify technical information as set out above.
- 5.165 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose the obligation in the interests of effective competition in the long term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with BT.

Requirement to account separately

- 5.166 Ofcom believes that it is appropriate to impose a requirement on Communications Providers 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 Communications Providers 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.
- 5.167 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.

Implementation of regulatory financial reporting conditions

- 5.168 On 22 July 2004, Ofcom published a statement on the regulatory financial reporting obligations on BT and KCOM: accounting separation and cost accounting systems. In that statement, Ofcom imposed SMP services conditions for regulatory financial reporting on BT (Conditions OA1 to OA34) and KCOM (Conditions OB1 to OB33) 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).
- 5.169 Ofcom considers that, in the event that it is appropriate to impose an SMP services condition on BT requiring accounting separation in relation to Market 1, the SMP services conditions set out above would apply in respect of the details of such accounting. However, this would be the first time that the regulatory accounting regime had been applied to geographic markets and the basis of preparation of the regulatory financial statements along with the underlying cost attribution methodologies would require significant enhancement to meet these accounting separation obligations. This would also apply to the demonstration of non-discriminatory treatment of downstream retail markets where purchases of similar services could be made from three different wholesale markets.
- 5.170 Sections 3 and 4 of the Act set out the Community requirements for regulation. Ofcom has considered the criteria in Section 4 of the Act. 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 Communications Providers. 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.
- 5.171 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. 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 Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and KCOM in the Hull area and BT is the only operator which has been provisionally found to hold SMP in Market 1.

- 5.172 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose an obligation in the interests of effective competition in the long-term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with BT and in the knowledge that they are charged on an equitable basis.

Respondents' views

- 5.173 The November consultation asked the following question:

Question 13: Do respondents agree with Ofcom's proposed regulatory remedies on BT in relation to the market for wholesale broadband access in Market 1 and if so are there any particular implementation or compliance issues that you believe needs to be considered?

- 5.174 BT explained that, notwithstanding its position in relation to the market definition and market power assessment, the remedies proposed (Option 2) were appropriate. It agreed that it would be inconsistent with the requirements of the Framework Directive not to impose remedies and considered that, given the dynamics of the market, price controls were not warranted. It suggested that it would be difficult for price controls to keep pace with changing market conditions. BT also suggested that Ofcom would need to review wholesale broadband access markets at regular intervals because rapidly changing competitive conditions are likely to move the boundary used to distinguish geographic areas covered by Markets 2 and 3.
- 5.175 A number of other respondents suggested that price controls or cost-orientation requirements should be imposed. One respondent suggested that voluntary commitments were not sufficient or an adequate response to SMP. This view was echoed by a further respondent. It suggested that the requirement to ensure that charges were cost-oriented was, in particular, important in Market 1 given that competition would be unlikely to develop. Respondents suggested that in the absence of a requirement to set cost-oriented price a dominant provider might be able to leverage its dominance to adjacent markets.
- 5.176 A number of respondents also wished to know whether Ofcom intended to specify the form of access that should be provided.

Ofcom's response

- 5.177 Ofcom agrees with BT that the package of regulatory remedies set out in the November consultation would represent an appropriate response to a finding of SMP in Market 1. Ofcom considers that it is inappropriate at this point in time to impose charge controls or cost-orientation obligations in Market 1 because growth in the market and developments in the service offerings make it difficult to determine the underlying costs. Total market demand for network resources is key when establishing charge controls.

5.178 In terms of specifying exactly the form that network access should take, Ofcom does not consider that it is necessary or appropriate to do so. Nor has Ofcom chosen to re-apply the SMP services condition in relation to new network access. Proposed SMP services condition EA1 would require BT to meet all reasonable requests for network access. Additionally, Ofcom expects that BT will continue to consider all 'statement of requirements' for new network access in line with present arrangements.

Account taken of the ERG Bitstream Position

5.179 Table 5.2 summarises how Ofcom has taken into account the ERG Bitstream Position, referred to in paragraph 5.38 above, in proposing the package of remedies to be imposed in Market 1.

Table 5.2: Account taken of the ERG Bitstream Position – Market 1

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 considers that it would be inappropriate, at this time, to impose charge controls and cost orientation as this has the potential to undermine incentives for efficient investment. Further, BT has made certain pricing commitments to increase transparency.
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	Ofcom's product definition includes "...any backhaul to allow interconnection with other

reasonable point of handover to the alternative provider	Communications Providers.”
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.

Ofcom’s proposed remedies in Market 1

- 5.180 Ofcom considers that the remedies proposed in the November consultation are those that should be applied to BT in Market 1 as a result of Ofcom’s provisional finding that BT has SMP in the market for wholesale broadband access. Ofcom considers 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 Market 1 might not develop.
- 5.181 Ofcom considers, however, that the potential for entry might be enhanced should BT be required to show that it does not discriminate in the level of service offered to its downstream business and other Communications Providers in Market 1. Survey evidence has shown that consumers place a high level of importance on service quality and reliability⁷¹ and therefore Ofcom considers it would be beneficial for it to be able to require BT to publish quality of service information in any manner that Ofcom considers appropriate. Ofcom has not presently specified what form this might take.

Transparency as to quality of service

- 5.182 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. The condition imposed by Ofcom in Annex 1 (EA5) requires BT to publish such information in the manner and form required by Ofcom. This obligation requires BT to publish certain information relating to the quality of the service it delivers in providing services falling within the wholesale broadband access markets.
- 5.183 Where BT has significant market power in a specific wholesale market, it has the potential to leverage this into downstream markets, by providing a different quality of service to different wholesale customers. This could have a material impact on competition in retail markets, ultimately to the detriment of retail customers.
- 5.184 Ofcom considers that Condition EA5 meets the tests set out in the Act. Ofcom has considered its duties under section 3 of the Act and all the Community requirements set out in section 4. In particular, the Condition encourages the provision of network access and service interoperability for the purpose of securing the maximum benefit for the persons who are customers of Communications Providers and of persons who make such facilities available. It promotes competition and thereby the interests of end-users in downstream markets, by denying BT as the dominant provider in this market the opportunity to discriminate in the quality of service it provides to customers.

⁷¹ <http://www.ofcom.org.uk/consult/condocs/wbamr/research.pdf>

- 5.185 The full list of regulatory obligations that Ofcom proposes to impose on BT in Market 1 and Ofcom's reasoning for proposing to impose each remedy is set out below and in the draft Notification set out at Annex 1. The proposed remedies are:
- i) Requirement to provide Network Access on reasonable request – a provider having SMP might refuse to supply Network Access or meet reasonable requests for Network Access in the absence of a requirement to do so. The absence of supply might restrict competition in downstream markets;
 - ii) Requirement not to unduly discriminate – a provider having SMP might have an incentive to offer favourable terms including price to its own operations unless it was prevented from doing so. The availability of differing terms might create a barrier to entry;
 - iii) Requirement to publish a Reference Offer – a provider having SMP might have little incentive to encourage entry and therefore would be unlikely to set out the basis on which other Communications Providers could obtain service in the absence of a requirement to do so. This might increase the cost of entry to the market and create a barrier to entry;
 - iv) Requirement to notify charges, terms and conditions – a provider having SMP might have little incentive to encourage entry and therefore might be unlikely to set out the charges, terms and conditions on which other Communications Providers could obtain service in the absence of a requirement to do so. This might increase the cost of entry because potential entrants might have to enter into negotiations before securing access and create a barrier to entry;
 - v) Transparency as to quality of service – a provider having SMP might have little incentive to set out comparable internal and external service quality in the absence of a requirement to do so. This might make it difficult to monitor any potential anti-competitive practices and create a barrier to entry;
 - vi) Requirement to publish technical information – a provider having SMP might have little incentive to encourage entry and therefore might be unlikely to set out the technical characteristics of the service or the means of interconnection in the absence of a requirement to do so. This might increase the cost of entry to the market and create a barrier to entry; and
 - vii) Requirement to account separately – a provider having SMP might have little incentive to set out the internal transfer charges and external charges in the absence of a requirement to do so. This might make it difficult to monitor any potential anti-competitive practices and create a barrier to entry.
- 5.186 BT is currently required to account separately for asymmetric broadband origination and broadband conveyance by SMP services conditions OA1 to OA28, OA29 to OA31 and OA34⁷². Those conditions set out the accounting procedures to be followed by BT in respect of a number of markets in which Ofcom has determined that BT should be required to account separately. Those conditions currently apply to BT in respect of the markets for asymmetric broadband origination in the UK excluding the Hull area and broadband conveyance in the UK.. As a result of the change to the market definitions as set out in section 3 and Ofcom's proposal that BT

⁷² See "The regulatory financial reporting obligations on BT and Kingston Communications Final statement and notification" available at http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/finance_report.pdf

should be required to account separately for wholesale broadband access in Market 1, Ofcom is proposing to amend the list of markets to which SMP services conditions OA1 to OA28, OA29 to OA31 and OA34 apply to remove the references to “asymmetric broadband origination in the UK excluding the Hull area” and “broadband conveyance in the UK”. In respect of Market 1, Ofcom proposes to amend the list of markets to which those SMP services conditions apply to include Market 1.

- 5.187 This new market definition implies that BT will need to prepare regulatory financial statements on a geographic basis for the first time. Ofcom has already indicated that the preparation of these statements along with the underlying cost attribution methodologies will require significant enhancement for the results to be robust on this new basis. For example, this approach will require BT to be able to locate and value specific assets on a geographic basis. Therefore the current design of the published financial statements and supporting data provided to Ofcom may not be sufficient for compliance monitoring purposes. Ofcom will consider BT’s proposals for enhancing its capability to report on a geographic basis and if necessary consult on changes to BT’s reporting obligations separately to ensure that compliance with its non-discrimination obligations can be effectively monitored.

Remedies considered – Market 2

- 5.188 As explained in Section 6 of the November consultation, Ofcom considered three options in relation to the regulation of the provision of wholesale broadband access in Market 2. The three options were characterised as an option not to regulate (Option 1), an option to impose access and non-discrimination obligations (Option 2), and an option to set price controls (Option 3).
- 5.189 Ofcom explained that it had discounted Option 1 because its preliminary view was that BT had SMP in Market 2 and that *ex-ante* regulation was required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality were optimised for citizens and consumers in Market 2 (see paragraphs 6.167 to 6.169 of the November consultation).
- 5.190 Ofcom also explained that it had discounted Option 3 because in a developing market characterised by growth and innovation, such as broadband, there is a risk of setting the price control at an inappropriate level. In particular, in such a situation there is a risk a price control could result in a reduced level of investment in the market, which would ultimately be to the detriment of UK citizens and consumers. Ofcom explained, however, that it had not ruled out the imposition of price controls in future (see paragraphs 6.173 and 6.174 of the November consultation).
- 5.191 For the reasons set out above, Ofcom considers that Option 2 (access and non-discrimination obligations) is the most appropriate option. Option 2 consisted of the remedies set out below. The reasons for proposing each remedy are the same as those discussed in relation to Market 1, see paragraphs 5.122 to 5.172.
- i) Requirement to provide Network Access on reasonable request;
 - ii) Requirement not to discriminate unduly;
 - iii) Requirement to publish a Reference Offer;
 - iv) Requirement to notify charges, terms and conditions;

- v) Requirement to publish technical information; and
- vi) Requirement to account separately.

Respondents' views

5.192 The November consultation asked the following question:

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

5.193 BT and other respondents reiterated the views that they expressed in relation to Market 1 (see paragraphs 5.174 to 5.176) and therefore they have not been repeated here.

Ofcom's response

5.194 Ofcom's view in relation to the remedies that should be applied in Market 2 is the same as its view in relation to Market 1 (see paragraphs 5.177 and 5.178) and therefore it has also not been repeated here.

Account taken of the ERG Bitstream Position

5.195 Table 5.3 summarises how Ofcom has taken into account the ERG Bitstream Position, referred to in paragraph 5.38 above, in proposing the package of remedies to be imposed in Market 2.

Table 5.3: Account taken of the ERG Bitstream Position – Market 2

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 considers that it would be inappropriate, at this time, to impose charge controls and cost orientation as this has the

	potential to undermine incentives for efficient investment. Further, BT has made certain pricing commitments to increase transparency.
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 Communications Providers."
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.

Ofcom's proposed remedies in Market 2

- 5.196 Ofcom considers that the remedies proposed in the November consultation are those that should be applied to BT in Market 2 as a result of Ofcom's provisional finding that BT has SMP in the market for wholesale broadband access. Ofcom considers 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 Market 2 might not develop.
- 5.197 Ofcom also considers it appropriate to impose a Transparency as to quality of service requirement on BT in Market 2. The reasons for proposing this remedy are the same as those discussed in relation to Market 1, see paragraphs 5.180 to 5.184.
- 5.198 The full list of regulatory obligations that Ofcom proposes to impose on BT in Market 2 and Ofcom's reasoning for proposing to impose each remedy is set out below and in the draft Notification set out at Annex 1. The proposed remedies are:
- i) Requirement to provide Network Access on reasonable request – a provider having SMP might refuse to supply Network Access or meet reasonable requests for Network Access in the absence of a requirement to do so. The absence of supply might restrict competition in downstream markets;
 - ii) Requirement not to discriminate unduly – a provider having SMP might have an incentive to offer favourable terms including price to its own operations unless it was prevented from doing so. The availability of differing terms might create a barrier to entry;
 - iii) Requirement to publish a Reference Offer – a provider having SMP might have little incentive to encourage entry and therefore would be unlikely to set out the

basis on which other Communications Providers could obtain service in the absence of a requirement to do so. This might increase the cost of entry to the market and create a barrier to entry;

- iv) Requirement to notify charges, terms and conditions – a provider having SMP might have little incentive to encourage entry and therefore might be unlikely to set out the charges, terms and conditions on which other Communications Providers could obtain service in the absence of a requirement to do so. This might increase the cost of entry because potential entrants might have to enter into negotiations before securing access and create a barrier to entry;
- v) Transparency as to quality of service – a provider having SMP might have little incentive to set out comparable internal and external service quality in the absence of a requirement to do so. This might make it difficult to monitor any potential anti-competitive practices and create a barrier to entry;
- vi) Requirement to publish technical information – a provider having SMP might have little incentive to encourage entry and therefore might be unlikely to set out the technical characteristics of the service or the means of interconnection in the absence of a requirement to do so. This might increase the cost of entry to the market and create a barrier to entry; and
- vii) Requirement to account separately – a provider having SMP might have little incentive to set out the internal transfer charges and external charges in the absence of a requirement to do so. This might make it difficult to monitor any potential anti-competitive practices and create a barrier to entry.

5.199 BT is currently required to account separately for asymmetric broadband origination and broadband conveyance by SMP services conditions OA1 to OA28, OA29 to OA31 and OA34⁷³. Those conditions set out the accounting procedures to be followed by BT in respect of a number of markets in which Ofcom has determined that BT should be required to account separately. Those conditions currently apply to BT in respect of the markets for asymmetric broadband origination in the UK excluding the Hull area and broadband conveyance in the UK.. As a result of the change to the market definitions as set out in section 3 and Ofcom's proposal that BT should be required to account separately for wholesale broadband access in Market 2, Ofcom is proposing to amend the list of markets to which SMP services conditions OA1 to OA28, OA29 to OA31 and OA34 apply to remove the references to "asymmetric broadband origination in the UK excluding the Hull area" and "broadband conveyance in the UK". In respect of Market 2, Ofcom proposes to amend the list of markets to which those SMP services conditions apply to include Market 2.

5.200 This new market definition implies that BT will need to prepare regulatory financial statements on a geographic basis for the first time. Ofcom has already indicated that the preparation of these statements along with the underlying cost attribution methodologies will require significant enhancement for the results to be robust on this new basis. For example, this approach will require BT to be able to locate and value specific assets on a geographic basis. Therefore the current design of the published financial statements and supporting data provided to Ofcom may not be sufficient for compliance monitoring purposes. Ofcom will consider BT's proposals for enhancing

⁷³ See "*The regulatory financial reporting obligations on BT and Kingston Communications Final statement and notification*" available at http://www.ofcom.org.uk/consult/condocs/fin_reporting/fin_report_statement/finance_report.pdf

its capability to report on a geographic basis and if necessary consult on changes to BT's reporting obligations separately to ensure that compliance with its non-discrimination obligations can be effectively monitored.

Notice of withdrawal of SMP services conditions – Market 3

5.201 As set out in section 4, Ofcom's provisional conclusion is that BT does not have SMP in Market 3. Pursuant to section 84(4) of the Act, Ofcom would therefore have to revoke the SMP services conditions presently applied to BT in that market. Ofcom indicated in the November consultation that, in the event that BT were found not to have SMP in Market 3, it would consider whether a maintenance of existing regulation is necessary for a transitional period prior to the formal revocation of those conditions.

Legal Basis

5.202 Article 16(3) of the Framework Directive provides that:

“where a national regulatory authority concludes that the market is effectively competitive, it shall not impose or maintain any of the specific regulatory obligations referred to in paragraph 2 of this Article. [i.e. SMP Conditions] In cases where sector specific regulatory obligations already exist, it shall withdraw such obligations placed on undertakings in that relevant market. An appropriate period of notice shall be given to parties affected by such a withdrawal.”

5.203 Section 84(4) of the Act also provides that:

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

5.204 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 provides further guidance on the notice period to be offered to affected parties at paragraph 5.6.2 where it is stated that:

“When considering the removal of an obligation, it is of course necessary to take into account whether removal would cause a material adverse effect on competition in the relevant market. It is equally necessary to consider the effect of that obligation in related markets, especially downstream. It would not be appropriate to remove obligations which were a pre-requisite for effective competition in the related markets.

Before concluding that an existing SMP remedy should be removed or replaced by a different one, NRAs should consider the disruptive effects on the market players of changing remedies and the consequential risk to achievement of the objectives of the framework. As above, NRAs should consider not only the effects in

the market in which SMP has been established but in all related markets.

When an NRA removes an obligation or replaces one obligation with another, it should give an appropriate period of notice before the change takes effect, in order to avoid undue disruption to the market players.”

- 5.205 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

- 5.206 The revocation of the SMP services conditions in Market 3 could potentially affect parties other than BT, as well as BT itself. Ofcom considers that the parties most likely to be affected by such a revocation of SMP services conditions in Market 3 would be Communications Providers who currently purchase wholesale broadband access products from BT and their customers, including end-users.
- 5.207 Ofcom’s concern is that, where BT is no longer required to provide Network Access on reasonable request, it may decide to stop supplying wholesale broadband access products. In such an event Communications Providers who currently rely on BT would need to make alternative arrangements for their customers. Given this, Ofcom considers that it is appropriate to provide affected parties with a period of notice prior to the removal of certain SMP services conditions in Market 3. This would ensure that Communications Providers 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.
- 5.208 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 a several possibilities for alternative arrangements. However, one possibility is that the Communications Provider 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 Communications Provider 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

- 5.209 As set out above, Ofcom considers 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 Ofcom’s objectives in providing a period of notice, Ofcom is only proposing to maintain those SMP service conditions necessary to ensure that undesired market consequences can be avoided. For each of the current SMP services conditions in place, EA1 to EA7, Ofcom therefore considers whether they need to be maintained in Market 3, for a defined period. This is set out in detail below.

Condition EA1

- 5.210 Ofcom's view is that Condition EA1 which requires BT to provide Network Access on reasonable request should be maintained in Market 3 for a short period following the conclusion of this market review. Ofcom's aim in maintaining Condition EA1 is 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.
- 5.211 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 Market 3. BT would not therefore be required to provide new Network Access where requested by a third party.
- 5.212 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.
- 5.213 Ofcom has considered whether the contractual arrangements in place between BT and its customers would offer sufficient protection to wholesale broadband access customers. Ofcom notes in this respect that Condition 18 of the Conditions for BT DataStream Service⁷⁴ provides that "*BT may terminate this Contract on 12 months notice to the Customer*". In principle, therefore, there is a 12 month notice period for BT's wholesale broadband access customers built in to the contractual framework.
- 5.214 However, Condition 20.2 provides that BT may change the charges payable under the Contract at any time on 28 days' notice. BT therefore has control over increases in the price charged for wholesale broadband access. In the absence of a requirement to provide Network Access upon reasonable request and on fair and reasonable terms and conditions, it would be possible for BT to raise charges for its wholesale broadband access products to a level at which it would be prohibitive for customers to purchase such products. Were this to be the case, the remedies available to the customer under the contract would be those set out in Condition 13.8 and Condition 16 pursuant to which the operator may dispute the invoice and, ultimately have the matter referred to a mediator.
- 5.215 In the absence of agreement, the ultimate recourse for a Communications Provider in the event of a prohibitive price increase for wholesale broadband access products would be to terminate the contract on 3 months notice pursuant to Condition 18. Alternatively the customer may terminate the contract on 7 days notice where the price increase notified by BT is greater than 5% above the rise in RPI over the preceding 12 month period.
- 5.216 Thus, if BT were to raise prices to a prohibitive level, a wholesale broadband access customer would only be able to terminate the contract and would not be able to guarantee continuity of service pending a change of supplier for a sufficient period

⁷⁴ available at

http://www.btwholesale.com/content/binaries/broadband_community/datastream_documentation/datastream_tandc/Datastream_Conditions_Issue29.pdf

without incurring significant costs in maintaining supply with BT. As a result, Ofcom does not consider that the contractual provisions in place would necessarily prevent undesired market consequences resulting from an immediate revocation of SMP services condition EA1 in respect of Market 3.

- 5.217 Ofcom is therefore of the view that the revocation of SMP services condition EA1 in respect of 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.

Condition EA2

- 5.218 SMP service condition EA2 imposes a requirement upon BT not to unduly discriminate in relation to matters connected with Network Access. Ofcom is of the view that, in order to achieve Ofcom's aim of ensuring continued supply for existing WBA customers in Market 3, it would be appropriate to maintain Condition EA2 in place during the relevant period of notice. 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 Market 3 will be able to obtain supply on reasonable terms during the notice period.

Conditions EA3 and EA7

- 5.219 SMP services conditions EA3 and EA7 impose a requirement on BT to publish a reference offer (Condition EA3) and to provide transparency in relation to requests for new Network Access (Condition EA7).
- 5.220 In providing a period of notice to parties affected by the withdrawal of SMP services conditions in Market 3, Ofcom's aim is to ensure continued supply for existing wholesale broadband access customers of BT for a sufficient period to allow those customers to obtain alternative sources of supply should BT decide not to provide a wholesale product in Market 3. As set out at paragraph 5.208 above, Ofcom considers that this aim is limited to ensuring supply for *existing* customers. Conditions EA3 and EA7 relate to ensuring transparency for requests for new Network Access as to the product to be supplied and the form of and procedure for such requests. Requests could be from new or existing customers. Ofcom does not consider that, in providing a notice period for affected parties, BT should be required to meet requests for new Network Access. In consequence, Ofcom is proposing that no period of notice is required prior to the revocation of Conditions EA3 and EA7.

Conditions EA4 and EA6

- 5.221 SMP services conditions EA4 (notification of charges terms and conditions), EA5 (QoS transparency) and EA6 (notification of technical information) impose requirements on BT to provide transparency as to the terms and conditions under which BT supplies WBA products.
- 5.222 Ofcom considers that, in order to secure its objective of maintaining supply for existing customers on reasonable terms in 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 applicable in Market 3 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 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 EA4 to EA6 are not revoked until the end of the notice period.

Revocation of the 2004 ATM Direction

- 5.223 In the 2003/04 Review Ofcom made a distinction between ATM delivered and IP delivered broadband services, with the former being the main focus of that review. Given this, and to provide more certainty, Ofcom decided to place a specific obligation on BT to provide ATM interconnection ('the 2004 ATM Direction'). The 2004 ATM Direction essentially carried forward existing requirements on BT to provide ATM interconnection.
- 5.224 On 26 August 2004 Ofcom issued a direction amending the 2004 ATM Direction and setting the margin between IPStream and ATM interconnection prices ('the Margin Direction'). The margin set in this direction was done so on the basis of a national market (excluding Hull) definition.
- 5.225 However, as discussed in this consultation document, developments in products and technology since the 2003/04 Review means that there is no longer a clear distinction between ATM delivered and IP delivered broadband services. Also, given that Ofcom is proposing to conclude that there is no longer a national market (excluding Hull) it considers that the Margin Direction will no longer reflect the prevailing market conditions. Further, the rollout of next generation networks, the bulk of which is expected to occur during the period covered by this review, will remove ATM from the network altogether. Given these developments Ofcom does not believe that it is necessary or appropriate to impose a 'new' ATM direction under this review. Ofcom has therefore proposed to revoke the 2004 ATM Direction. Ofcom does not consider it appropriate to maintain the 2004 ATM Direction for the duration of the Notice Period.

Summary of Ofcom's proposals

- 5.226 Ofcom proposes to impose the following regulatory remedies on KCOM in the Hull area:
- 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;
 - requirement to notify technical information; and
 - requirement to have accounting separation

5.227 Ofcom proposes to impose the following regulatory remedies on BT in Market 1 and separately in 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;
- requirement to notify technical information;
- requirement to have accounting separation; and
- transparency as to quality of service.

Consultation questions on the proposed regulatory remedies

Question 4: Do respondents have any comments, additional to those made in their response to the November consultation, on Ofcom's proposed regulatory remedies for the Hull area, Market 1 or Market 2?

Question 5: Do respondents agree with Ofcom's proposals in relation to providing affected parties with a period of notice prior to the removal of certain SMP services conditions in Market 3? In particular do respondents agree with the proposed notice period and the proposed SMP service conditions to which the notice period applies?

Section 6

Responding to this Consultation

How to respond

- 6.1 Ofcom invites written views and comments on the issues raised in this document, to be made by 5pm on 7 February 2008.
- 6.2 Ofcom strongly prefers to receive responses as e-mail attachments, in Microsoft Word format, 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 10), among other things to indicate whether or not there are confidentiality issues. The cover sheet can be downloaded from the 'Consultations' section of our website.
- 6.3 Please can you send your response to: david.clarkson@ofcom.org.uk
- 6.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

David Clarkson
Competition Group
4th Floor
Riverside House
2A Southwark Bridge Road
London SE1 9HA
Fax: 020 7783 4109

- 6.5 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.
- 6.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 11. It would also help if you can explain why you hold your views.

Further information

- 6.7 If you have any wish to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact David Clarkson using the contact details given above.

Confidentiality

- 6.8 Ofcom thinks 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.
- 6.9 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 which are marked as confidential, in order to meet legal obligations.

- 6.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use, to meet its legal requirements. Ofcom's approach on intellectual property rights is explained further on its website, at http://www.ofcom.org.uk/about_ofcom/gov_accountability/disclaimer.

Next steps

- 6.11 Following the end of the consultation period, Ofcom intends to publish a Final Statement around June 2008.
- 6.12 Please note that you can register to get automatic notifications of when Ofcom documents are published, at http://www.ofcom.org.uk/static/subscribe/select_list.htm.

Ofcom's consultation processes

- 6.13 Ofcom is keen to make responding to consultations easy, and has published some consultation principles which it seeks to follow, including on the length of consultations.
- 6.14 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.
- 6.15 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 1

Notification

Proposals for the revocation of notifications, identification of markets, the making of market power determinations and the setting of SMP services conditions in relation to BT

1. The Office of Communications (OFCOM) in accordance with sections 48(2) and 80 of the Communications Act 2003 (the “Act”) 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 conditions”).
2. OFCOM is proposing to identify in accordance with section 79 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.
3. OFCOM is proposing in accordance with section 79 of the Act to make market power determinations that the following persons have significant market power in relation to the markets referred to in paragraph 2 above:
 - (a) in relation to the markets set out in paragraphs 2(a) and 2(b) above, BT; and
 - (b) in relation to the market set out in paragraph 2(d), KCOM.
4. OFCOM is proposing to set SMP conditions on the persons referred to in paragraph 3 above as set out in Schedules 1 to 3 to this Notification.
5. The effect of, and OFCOM's reasons for, making the proposals to identify the markets set out in paragraph 2 above are contained in section 3 of the explanatory statement published with this Notification.
6. The effect of, and OFCOM's reasons for, making the proposals to make the market power determinations set out in paragraph 3 above are contained in section 4 of the explanatory statement published with this Notification.
7. The effect of, and OFCOM's reasons for making, the proposals to set the SMP conditions set out in the Schedule to this Notification are contained in section 5 of the explanatory statement published with this Notification.
8. Ofcom is also proposing to amend Part 1 of Schedule 1 to the Notification dated 22 July 2004 setting further SMP services conditions on BT in relation to regulatory accounting in respect of various markets by removing the reference at paragraphs 12 and 13 to “Asymmetric broadband origination in the UK excluding the Hull Area” and “Broadband conveyance in the UK” to be replaced with “Wholesale Broadband Access in Market 1 [as defined in the Final Statement]” and “Wholesale Broadband Access in Market 2 [as defined in Final Statement]”. Ofcom is further proposing to amend Part 1 of Schedule 1 to the

Notification dated 22 July 2004 setting further SMP services conditions on KCOM in relation to regulatory accounting in various markets by removing the reference at paragraph 8 to “Asymmetric broadband origination in the Hull Area” to be replaced with “Wholesale Broadband Access in the Hull Area”.

9. The notifications at Annex E of the *Wholesale broadband access market review*, published by OFCOM on 13 May 2004, and any subsequent modifications to the SMP services conditions set by those Notifications shall be revoked by this proposed Notification in accordance with paragraphs 10 and 12 below.

10. Insofar as the notifications at Annex E of the *Wholesale broadband access market review* published by Ofcom on 13 May 2004 relate to the markets set out at paragraph 2 above, those notifications shall be revoked by this proposed Notification when it takes effect under sections 48(1) and 79(4) of the Act.

11. Insofar as Conditions EA1, EA2, EA4, EA5 and EA6 of Schedule 1 to the notifications at Annex E of the *Wholesale broadband access market review* published by Ofcom on 13 May 2004 relate to Market 3, those Conditions shall be revoked by this proposed 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. Conditions EA3 and EA7 of Schedule 1 to the notifications at Annex E of the *Wholesale broadband access market review* published by Ofcom on 13 May 2004 shall, insofar as they relate to Market 3, be revoked by this proposed notification when it takes effect under sections 48(1) and 79(4) of the Act.

12. The direction at Annex F of the *Wholesale broadband access market review*, published by OFCOM on 13 May 2004, as amended by Annex 3 of Ofcom’s statement of 26 August 2004 on *Direction setting the margin between IPStream and ATM interconnection prices* shall be revoked by this proposed Notification when it takes effect under sections 48(1) and 79(4) of the Act.

13. In identifying and analysing the markets referred to in paragraph 2 above, and in considering whether to make the proposals set out in this Notification, OFCOM has 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 or analysis, as required by section 79 of the Act.

14. OFCOM considers that the proposed SMP services conditions referred to in paragraph 4 above comply with the requirements of sections 45 to 50 and sections 78 to 92 of the Act, as appropriate and relevant to each such SMP services condition.

15. In making all of the proposals referred to in paragraphs 2, 3, and 4 of this Notification OFCOM has considered and acted in accordance with the six Community requirements in section 4 of the Act as well as performed their duties under section 3 of the Act;

16. Representations may be made to OFCOM about the proposals set out in this Notification and the accompanying explanatory statement by 7 February 2008. Respondents are asked to provide representations in the manner set out in Section 6 of the explanatory statement accompanying this Notification.

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.

18. Save for the purposes of paragraph 2 of this Notification and except as otherwise defined in this Notification, words or expressions used shall have the same meaning as in the Act.

19. In this Notification:

“**Act**” means the Communications Act 2003;

“**BT**” means British Telecommunications plc whose registered company number 1800000, and including any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989;

“**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 KCOM Group plc;

“**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 736 of the Companies Act 1985, as amended by the Companies Act 1989;

“**Ofcom**” means the Office of Communications;

“**Third Party**” means either:

- (a) a person providing a Public Electronic Communications Network; or
- (b) a person providing a Public Electronic Communications Service.

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

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

“**Market 3**” means the area covered by the BT exchanges set out at Appendix 3 to Schedule 1 of to this Notification;

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



Gareth Davies
Competition Policy Director

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

15 November 2007

Schedule 1

[DRAFT] The conditions imposed on BT in Market 1 under sections 45, 87 and 88 of the Communications Act 2003 as a result of the analysis of the wholesale broadband access markets in which BT has been found to have significant market power (“SMP condition”)

Part 1: Application, definitions and interpretation of these conditions

1. These conditions shall apply to the markets for wholesale broadband access in Market 1 (“the Market”).
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the Markets, the following definitions shall apply:
 - “Access Charge Change Notice” has the meaning given to it in Condition EA4.2;
 - “Access Contract” means a contract for the provision of Network Access;
 - “Dominant Provider” means BT; and
 - “Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract.
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 conditions

Condition EA1 – Requirement to provide Network Access on reasonable request

- EA1.1** 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.
- EA1.2** The provision of Network Access in accordance with Condition EA1.1 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.
- EA1.3** The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EA2 – Requirement not to unduly discriminate

- EA2.1** 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.
- EA2.2** 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 EA3 – Requirement to publish a reference offer

- EA3.1** 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.
- EA3.2** Subject to Condition EA3.8 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 or location of masts); and
- (n) the standard terms and conditions for the provision of Network Access.

EA3.3 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 Third Party;
or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other Third Party,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other Third Party, 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 Condition EA3.2 (a)-(n)

EA3.4 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.

EA3.5 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.

- EA3.6** 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.
- EA3.7** 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).
- EA3.8** The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.
- EA3.9** 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.
- EA3.10** The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EA4 – Requirement to notify charges, terms and conditions

- EA4.1** 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.
- EA4.2** Save where otherwise provided in Condition EA6, the Dominant Provider shall send to Ofcom and to every Third Party with which it has entered into an Access Contract covered by Condition EA1 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.
- EA4.3** 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").
- EA4.4** The Dominant Provider shall not apply any new charge, term or condition identified in an Access Charge Change Notice before the effective date.
- EA4.5** 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 EA4.3(a)-(c).

Condition EA5 – Transparency as to quality of service

EA5.1 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.

EA5.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition EA5.

Condition EA6 – Requirement to notify technical information

EA6.1 Save where Ofcom consents otherwise, where the Dominant Provider:

- (a) proposes to provide Network Access covered by Condition EA1, 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 EA1 by modifying the terms and conditions listed in Condition EA6.1(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.

EA6.2 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").

EA6.3 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.

EA6.4 Publication referred to in paragraph EA6.1 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 Third Party at that Third Party's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every Third Party with which the Dominant Provider has entered into an Access Contract covered by Condition EA1. The provision of such a copy of Notice may be subject to a reasonable charge.

Schedule 2

[DRAFT] The conditions imposed on BT in Market 2 under sections 45, 87 and 88 of the Communications Act 2003 as a result of the analysis of the wholesale broadband access markets in which BT has been found to have significant market power (“SMP condition”)

Part 1: Application, definitions and interpretation of these conditions

1. These conditions shall apply to the markets for wholesale broadband access in Market 2 (“the Market”).
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the Market, the following definitions shall apply:

“Access Charge Change Notice” has the meaning given to it in Condition EA4.2;

“Access Contract” means a contract for the provision of Network Access;

“Dominant Provider” means BT; and

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

Condition EA7 – Requirement to provide Network Access on reasonable request

- EA7.1** 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.
- EA7.2** The provision of Network Access in accordance with Condition EA7.1 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.
- EA7.3** The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EA8 – Requirement not to unduly discriminate

- EA8.1** 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.
- EA8.2** 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 EA9 – Requirement to publish a reference offer

- EA9.1** 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.
- EA9.2** Subject to Condition EA9.8 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 or location of masts); and
- (n) the standard terms and conditions for the provision of Network Access.

EA9.3 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 Third Party; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other Third Party,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other Third Party, 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 Condition EA9.2 (a)-(n)

EA9.4 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.

EA9.5 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.

EA9.6 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.

EA9.7 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).

EA9.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.

EA9.9 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.

EA9.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EA10 – Requirement to notify charges, terms and conditions

EA10.1 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.

EA10.2 Save where otherwise provided in Condition EA12, the Dominant Provider shall send to Ofcom and to every Third Party with which it has entered into an Access Contract covered by Condition EA7 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.

EA10.3 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").

EA10.4 The Dominant Provider shall not apply any new charge, term or condition identified in an Access Charge Change Notice before the effective date.

EA10.5 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 EA10.3(a)-(c).

Condition EA11 – Transparency as to quality of service

EA11.1 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.

EA11.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition EA11.

Condition EA12 – Requirement to notify technical information

EA12.1 Save where Ofcom consents otherwise, where the Dominant Provider:

- (a) proposes to provide Network Access covered by Condition EA7, 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 EA7 by modifying the terms and conditions listed in Condition EA12.1(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.

EA12.2 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").

EA12.3 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.

EA12.4 Publication referred to in paragraph EA12.1 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 Third Party at that Third Party's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every Third Party with which the Dominant Provider has entered into an Access Contract covered by Condition EA7. The provision of such a copy of Notice may be subject to a reasonable charge.

NERHB, NERM, NERN, NESAC, NESBY, NESDP, NESEH, NESFE, NESG, NESGT, NESHB, NESH, NESK, NESLN, NESLS, NESLY, NESNS, NESSDS, NESTA, NESUT, NETI, NETL, NETMN, NETP, NETW, NEUL, NEULM, NEWAU, NEWF, NEWGM, NEWH, NEWHD, NEWHY, NEWLF, NEWLL, NEWLW, NEWNS, 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, NIBNH, NIBO, NIBRA, NIBRN, NIBRS, NIBSB, NIBT, NIBW, NIBWR, NIBY, NICA, NICB, NICD, NICDN, NICDY, NICE, NICG, NICGR, NICH, NICI, NICK, NICL, NICLK, NICM, NICMG, NICMN, NICRH, NICRS, NICSD, NICS, NICUS, NICW, NIDBO, NIDD, NIDG, NIDK, NIDL, NIDM, NIDMA, NIDMR, NIDNM, NIDO, NIDOD, NIDP, NIDPT, NIDQ, NIDR, NIDRY, NIDV, NIDY, NIDYN, NIEG, NIEK, NIFCT, NIFH, NIFIN, NIFN, NIFY, NIGF, NIGFD, NIGM, NIGN, NIGT, NIGVA, NIGWY, NIGY, NIHB, NIHO, NIIM, NIIT, NIJP, NIKA, NIKH, NIKI, NIKL, NIKN, NIKS, NIKTS, NIKVY, NIKY, NIKYL, NILA, NILGL, NILI, NIMA, NIME, NIMF, NIMFD, NIMH, NIMM, NIMO, NIMOY, NIMR, NIMTN, NIMZ, NINB, NINE, NINH, NINS, NIPE, NIPP, NIPR, NIPS, NIPT, NIPVE, NIPY, NIRD, NIRL, NIRLN, NIRLN, NIRN, NIRS, NIRT, NISD, NISE, NISEA, NISF, NISM, 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, NSBDS, NSBEA, NSBEN, NSBER, NSBET, NSBFD, NSBFR, NSBIG, NSBIR, NSBIX, NSBKI, 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, NSCTR, 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, NSELG, NSERI, NSEVA, NSEVI, NSFAG, NSFAR, NSFET, NSFEE, NSFEN, NSFIS, NSFOC, NSFOW, NSFRA, NSFRR, NSFRL, NSFSE, NSFSE, NSFSS, NSFST, NSFWM, NSFYV, NSGAI, NSGBD, NSGBT, NSGDL, NSGFN, NSGIL, NSGKD, NSGLA, NSGLG, NSGLV, NSGMT, NSGMY, 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, NSIMD, NSINS, NSISL, NSIUR, 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, NSLOS, 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, NSPET, NSPIT, NSPLO, NSPMH, NSPON, NSPOO, NSPOY, NSPPS, NSPPW, NSPSY, NSPTR, NSRAA, NSREY, NSRHL, NSRHT, NSRHY, NSRMY, NSRNM, NSROG, NSROU, NSRST, 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, 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, NSTUR, NSTVS, NSUDN, NSUIG, NSULL, NSURR, NSUYE, NSVID, NSVOE, NSWAL, NSWAR, NSWDL, NSWEI, NSWFC, NSWHL, NSWIC, NSWNS, NSWR, NSWRV, NSWSW, NSWTT, NSYTH, SDBLCMB, SDBLNY, SDBRCKL, SDBRCMB, SDBRDHM, SDBRGHS, SDBRY, SDBSHM, SDCHLGR, SDCHLLR, SDCLBRN, SDCLHM, SDCMTH, SDCWFLD, SDFNDN, SDFTTLW, SDFYGT, SDGDSHL, SDGLYND, SDGRFFH, SDGTWCK, SDHMBLD, SDHND, SDHND, SDHNFLD, SDHRSTM, SDHRSTP, SDHRTNG, SDHSSCK, SDHWKLY, SDKRDFR, SDLDSWR, SDLFRST, SDLNDFL, SDLWRBD, SDLXWD, SDMDDLT, SDMDHRS, SDNRWDH, SDNTN, SDNWPRT, SDPGHM, SDPLBRG, SDPLGT, SDPLMPT, SDPLSTW, SDPRTRD, SDPRVTT, SDPTCHN, SDPTWRT, SDPVNSM, SDPYNNG, SDRDGCW, SDRDNGL, SDRGT, SDRNDL, SDRNGMR, SDRP, SDRSPR, SDRWLND, SDSCYNS, SDSDSLH, SDSHNGT, SDSLNDN, SDSLNFL, SDSLSY, SDSNGLT, SDSTDN, SDSTMN, SDSTMRD, SDSTRGT, SDSTTN, SDWCKHM, SDWRNNG, SDWSBRG, SDWSTCH, SDWSTMN, SDWTTNB, SDWVLSF, SDYPTN, SDYRMT, SLAF, SLASH, SLBAR, SLBAS, SLBB, SLBBY, SLBHY, SLBLY, SLBMB, SLBNB, SLBNN, SLBOB, SLBSM, SLBUS, SLBWH, SLCBY, SLCL, SLCLPL, SLCRM, SLCTR, SLDUA, SLED, SLEK, SLEP, SLETF, SLFGY, SLFU, SLGD, SLGMN, SLHC, SLHD, SLHFT, SLHLY, SLHO, SLHS, SLHSN, SLHW, SLHX, SLKHE, SLKKB, SLKL, SLLAU, SLLH, SLMC, SLMDH, SLMIM, SLMIS, SLMK, SLMFL, SLMT, SLMTN, SLNBS, SLNCU, SLNL, SLNSS, SLNTY, SLNVB, SLOMR, SLOWF, SLPKX, SLRAM, SLRK, SLRU, SLRXN, SLSAS, SLSAU, SLSAY, SLSCA, SLSCCK, SLSGO, SLSPD, SLSPK, SLSRB, SLSTU, SLSTW, SLSU, SLSWB, SLSWL, SLSWY, SLTE, SLTF, SLTLB, SLTX, SLWCY, SLWEL, SLWG, SLWHT, SLWIT, SLWKY, SLWKY, SLWOO, SLWSP, SLXDS, SMAC, SMAD, SMAN, SMATL, SMAW, SMBDG, SMBEN, SMBG, SMBH, SMBL, SMBNC, SMBRD, SMBRL, SMBRS, SMBTH, SMBTN, SMBWY, SMBZ, SMCA, SMCBY, SMCD, SMCDU, SMCHH, SMCHN, SMCHO, SMCHY, SMCI, SMCN, SMCNR, SMCR, SMCRP, SMCRT, SMCTN, SMCWD, SMDD, SMEB, SMEG, SMENS, SMEY, SMFB, SMFH, SMFI, SMFN, SMFRD, SMFW, SMGA, SMGB, SMGBL, SMGG, SMGMT, SMGN, SMGT, SMGUD, SMHA, SMHDM, SMHE, SMHN, SMHO, SMHPR, SMHS, SMHZ, SMICK, SMIMN, SMKBN, SMKX, SMKP, SMLC, SMLD, SMLF, SMLGN, SMLN, SMLR, SMLSN, SMLW, SMMC,

WWPSCO, WWPTRE, WWPTWN, WWPURI, WWRACK, WWRILL, WWROCH, WWRUMF, WWSAGN, WWSALC, WWSAMP, WWSBNT, WWSBUR, WWSCAN, WWSCHD, WWSCIL, WWSCLM, WWSCOL, WWSDAY, WWSDOM, WWSEAT, WWSENN, WWSFLM, WWGAB, WWGEN, WWGER, WWSHAL, WWSHAU, WWSHEB, WWSHER, WWSHIR, WWSIDB, WWSIDM, WWSILV, WWSJUS, WWSKEV, WWSMAB, WWSMER, WWSMOL, WWSMWG, WWSMWS, WWSOME, WWSOWT, WWSPAX, WWSTAL, WWSTAR, WWSTAV, WWSTEN, WWSTIC, WWSTIT, WWSTOC, WWSTOG, WWSTUD, WWSUTT, WWSWIM, WWTAVI, WWTEDB, WWTEMP, WWTHRE, WWTIMB, WWTINT, WWTLIZ, WWTORX, WWTOTN, WWTPNT, 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, WWYELV, WWYEOV, WWYETM, WWZELA

Appendix 3

BT exchanges covering Market 3

1070 BT exchanges

CLBER, CLBIS, CLCAN, CLCLE, CLCOV, CLEUS, CLFAR, CLHOL, CLKEN, CLKLG, CLKXX, CLLOW, CLMON, CLNEW, CLSHO, CLSOU, CLSTE, CLUPP, CLWAL, CLWAP, CMACO, CMASTX, CMBEAC, CMBEAR, CMBED, CMBIL, CMBIN, CMBIR, CMBLAC, CMBNW, CMBRO, CMBRU, CMBYL, CMCAL, CMCAN, CMCAS, CMCEN, CMCGF, CMCHAP, CMCHEL, CMCHY, CMCRA, CMDD, CMDRU, CMDUN, CMEARD, CMEAS, CMEDG, CMERD, CMEXH, CMFAL, CMFOL, CMFOR, CMFOU, CMGREB, CMHALE, CMHARBO, CMHEA, CMHED, CMHIGH, CMHIGW, CMHOR, CMKEN, CMKING, CMKWD, CMLEA, CMLGS, CMLIC, CMLYE, CMNUN, CMNUN, CMPEL, CMPEL, CMPRI, CMRAD, CMREC, CMRUB, CMRUGB, CMSED, CMSEL, CMSHEL, CMSHI, CMSME, CMSOL, CMSOUB, CMSPR, CMSTB, CMSTE, CMSTRA, CMSTRE, CMSUT, CMTET, CMTIL, CMTIP, CMVIC, CMWAL, CMWARW, CMWDGT, CMWED, CMWESB, CMWIL, CMWL, CMWV, EABAS, EABCY, EABEL, EABIS, EABOR, EABRW, EABSE, EACAM, EACHE, EAELN, EACOL, EACRH, EACVI, EAELY, EAELD, EAFEL, EAFIX, EAGOR, EAGRA, EAHAV, EHLW, EAHTF, EAHWD, EAIPS, EAKLN, EALAI, EALGH, EALOW, EAMAL, EAMRN, EANCC, EANCN, EANCW, EARST, EASBF, EASBW, EASND, EASTF, EASTM, EATHP, EATLB, EAVAN, EAWAR, EAWFD, EAWHI, EAWTH, EMALLES, EMALVAS, EMARKWR, EMARNOL, EMAYLES, EMASFO, EMBEAUM, EMBEEST, EMBELGR, EMBRAUN, EMBULWE, EMBURTO, EMCASSTL, EMCENTL, EMCHALF, EMCHAPE, EMCOALV, EMCRRBY, EMDAVEN, EMDRRBB, EMDUSTO, EMEASWI, EMEDWAL, EMERRSS, EMFAZEL, EMGDDLI, EMGLNFI, EMGRETO, EMGRHAM, EMGSCTE, EMHARRO, EMHINCK, EMHNDON, EMHUCKN, EMILKES, EMKINGS, EMKIRKB, EMKTTT, EMLANGL, EMLEABR, EMLGHBO, EMLONGB, EMLONGE, EMMELTN, EMMICKL, EMMNSFI, EMMONTF, EMMOULT, EMMRKTH, EMNARBO, EMNEWAR, EMNORTH, EMODDBY, EMORTON, EMPETER, EMPINXT, EMPRTRE, EMRDDIN, EMRUSHD, EMSANDI, EMSHRWO, EMSTBBS, EMSTIVE, EMSTNEO, EMSTNYG, EMSUTTI, EMSWADL, EMTHRNB, EMTMWOR, EMTRENT, EMWELLI, EMWERRI, EMWESSW, EMWESTO, EMWHITT, EMWILLO, EMWOLLA, EMWSBCH, EMWSTWO, ESABB, ESBAT, ESBRF, ESBRO, ESCLA, ESCOR, ESCOW, ESCRA, ESCTN, ESDAL, ESDAV, ESDEA, ESDON, ESDUF, ESFAI, ESFAL, ESFOU, ESGLC, ESGRA, ESKIR, ESLAR, ESLEI, ESLEV, ESLIB, ESLVB, ESLVS, ESMAY, ESMOR, ESMUS, ESNEW, ESPAR, ESPCK, ESPEN, ESPER, ESPOL, ESPOR, ESROS, ESSTI, ESWAV, ESWHA, LCACC, LCAIM, LCAOR, LCASB, LCATH, LCBAB, LCBAL, LCBLP, LCBOL, LCBUR, LCCAR, LCCHO, LCCHU, LCCLV, LCDAR, LCDAU, LCFAR, LCFOM, LCFUL, LCHEW, LCHIG, LCHIN, LCHOR, LCLAN, LCLAY, LCLEI, LCLEY, LCLIT, LCMAT, LCNEL, LCNSH, LCCOR, LCPEW, LCPOU, LCPRE, LCRIB, LCROC, LCROS, LCSSH, LCSOU, LCSSH, LCSTA, LCSTD, LCWES, LCWIG, LNADK, LNBAR, LNBKG, LNBPK, LNCED, LNCHF, LNCLA, LNDAG, LNEDE, LNENF, LNFIN, LNGDM, LNGHL, LNHAC, LNHAI, LNHT, LNHOD, LNHOR, LNHPK, LNILC, LNILN, LNING, LNLEY, LNLOU, LNLVY, LNMED, LNMUS, LNNFN, LNNWS, LNPGN, LNPN, LNPOP, LNPOT, LNRAI, LNROM, LNSOK, LNSTA, LNSTB, LNSTF, LNTOT, LNUPK, LNUPM, LNWCR, LNWFD, LNWGN, LNWIN, LNWSD, LNWITH, LSADD, LSASH, LSBAL, LSBEC, LSBEU, LSBEX, LSBKM, LSBRO, LSBURH, LSHYF, LSCHER, LSCHES, LSCHI, LSCLPM, LSCOB, LSCRAY, LSCRO, LSCTFD, LSCTHM, LSDAR, LSDEP, LSDOW, LSDUL, LSELT, LSEPSM, LSERI, LSESH, LSEWE, LSFARB, LSFOR, LSGIP, LSGRNW, LSGRO, LSHAY, LSKID, LSKIN, LSLEA, LSLEE, LSLODH, LSMAL, LSMPEK, LSMIT, LSMOL, LSMOR, LSNCHM, LSNOR, LSORP, LSPUR, LSPUT, LSRED, LSREI, LSRIC, LSRUS, LSSAN, LSSID, LSSLA, LSSTR, LSSUN, LSSUR, LSSUT, LSSWA, LSSYD, LSTED, LSTHDT, LSTHMD, LSTHO, LSTUL, LSUWAR, LSWAL, LSWAN, LSWAY, LSWIM, LSWLTN, LSWOO, LSWOR, LSWWKM, LVAIN, LVALL, LVANF, LVARR, LVBIR, LVBOO, LVBRO, LVCHI, LVCLA, LVCRE, LVELL, LVGAT, LVGRE, LVHES, LVHOO, LVHUN, LVHUY, LVIRB, LVLAR, LVLVY, LVMAG, LVMOU, LVMSX, LVNET, LVNLW, LVPAD, LVPEN, LVPRE, LVRNE, LVRNM, LVROC, LVROY, LVSAI, LVSEF, LVSIM, LVSKE, LVSTA, LVSTK, LVSTO, LVWAL, LVWAR, LVWAT, LVWID, LWACT, LWASH, LWBUS, LWCHI, LWCOL, LWCRI, LWEAL, LWEDG, LWEGH, LWELS, LWFEL, LWGAR, LWGOL, LWGRE, LWHAM, LWHARL, LWHARR, LWHAT, LWHAY, LWHEN, LWHOU, LWISL, LWKGRE, LWKIN, LWKLAN, LWKNE, LWKROA, LWMIL, LWNEDG, LWNOR, LWNWEM, LWNWOO, LWPER, LWPIN, LWRIC, LWRUI, LWSHAR, LWSHE, LWSKY, LWSOU, LWSTAI, LWSTAN, LWTWI, LWUXB, LWWAT, LWWDRA, LWWEM, LWWIL, MRALT, MRASH, MRBLA, MRBRA, MRBRO, MRBUR, MRBUX, MRCHE, MRCHO, MRCOL, MRCON, MRDEN, MRDID, MRDRO, MREAS, MRECC, MRFAI, MRGAT, MRGLO, MRHAR, MRHEA, MRHUL, MRHYD, MRIRL, MRLON, MRMAC, MRMAR, MRMER, MRMID, MRMOS, MRMSL, MRNOR, MROLD, MRPEN, MRPOY, MRPRE, MRRAD, MRRIN, MRRUS, MRSAL, MRSTA, MRSTE, MRSTO, MRSWI, MRTRA, MRURM, MRWAL, MRWHI, MRWIL, MRWIN, MRWOO, MRWYT, MYACO, MYADE, MYARM, MYBAT, MYBD, MYBIN, MYBRG, MYCAS, MYCHA, MYCLE, MYCSG, MYDEW, MYDHS, MYELL, MYGRF, MYHAL, MYHAX, MYHBK, MYHEA, MYHEC, MYHGT, MYHHL, MYHLT, MYHMF, MYHOB, MYHSF, MYHUD, MYIDL, MYKEI, MYKNO, MYLAI, MYLOF, MYLOW, MYLS, MYMAN, MYMIL, MYMIR, MYMOO, MYMOR, MYMSG, MYNMN, MYPON, MYPUD, MYQUE, MYROT, MYRWD, MYSAN, MYSEA, MYSEL, MYSEM, MYSHI, MYSRB, MYUND, MYWAK, MYYO, NDASF, NDBEX, NDBHI, NDBLH, NDCAN, NDCRO, NDDEA, NDDOV, NDEGR, NDFOL, NDGIL, NDGRA, NDHAS, NDMAI, NDMED, NDOXT, NDRAI, NDSEV, NDSIT, NDSTR, NDTON, NDTWE, NDWMA, NEAT, NEAYC, NEB, NEBA, NEBDT, NEBH, NEBO, NEBR, NECM, NECN, NECT, NED, NEDB, NEDL, NEDU, NEEC, NEEHN, NEESG, NEF, NEG, NEG, NEG, NEG, NEHAL, NEHLS, NEHT, NEILB, NEJ, NEJW, NEK, NEKI, NEL, NELF, NELIN, NEMI, NEMTN,

NENN, NENS, NENT, NENTE, NENTW, NEPTE, NERC, NES, NESAI, NESHM, NESS, NESTN, NESU, NESUN,
 NESVL, NEW, NEWB, NEWHP, NEWK, NIBA, SDBGNRR, SDBGSS, SDCHCHS, SDCRWLY, SDCSHM,
 SDESTBR, SDFRHM, SDGSPRT, SDHRLY, SDHRNDN, SDHRSHM, SDHV, SDHVNT, SDHYWRD,
 SDKMPTW, SDLNCNG, SDLTTLH, SDLWS, SDMSWRT, SDPCNTC, SDPNRTH, SDPRTSL, SDRSTNG,
 SDRTTNG, SDRYD, SDSFRD, SDSHRHM, SDWCNTR, SDWSWND, SDWTHDN, SDWTRLV, SDWWST,
 SLAC, SLADK, SLBAL, SLBC, SLBH, SLBY, SLBYD, SLCBR, SLCD, SLDC, SLDCN, SLDF, SLDIO, SLDR,
 SLEF, SLGTP, SLHY, SLIN, SLLI, SLMBY, SLMEX, SLMOS, SLRF, SLRH, SLRHN, SLRN, SLRWM, SLSEK,
 SLSF, SLSW, SLSY, SLWB, SLWD, SLWKZ, SLWL, SLWW, SMAI, SMAM, SMAY, SMBA, SMBCD, SMBF,
 SMBI, SMBK, SMBT, SMBY, SMCO, SMCSH, SMDB, SMDC, SMHD, SMHH, SMHI, SMHR, SMHUR, SMHY,
 SMLBD, SMLEA, SMLH, SMLT, SMNP, SMOF, SMSM, SMSSF, SMSU, SMSX, SMTR, SMWN, SMWV,
 SSBBN, SSBED, SSBIS, SSBWD, SSCHI, SSCLE, SSCMN, SSCSY, SSDOW, SSEAS, SSEAV, SSFIS, SSFLT,
 SSFRO, SSGLR, SSHEN, SSKMD, SSKWD, SSMEL, SSMID, SSNAI, SSNOR, SSPOR, SSRAD, SSRED,
 SSSOU, SSSSM, SSSTO, SSSWN, SSTRO, SSWAR, SSWES, SSWHI, SSWOR, SSWOT, SWSM,
 STANDVR, STBDSTN, STBNMTH, STBOSMB, STBOTLY, STCFORD, STCHRCH, STEASTL, STFAWLY,
 STHMPTN, STHYTHE, STLOCKH, STLYMTN, STMRHLL, STNEWMN, STNTHBN, STPOOLE, STPRKST,
 STROMSY, STRWNMS, STSALIS, STSHRLY, STSOTON, STTOTTN, STWIMBN, STWINCH, STWINTN,
 STWLSTN, STWSTBN, SWAA, SWBIG, SWBNP, SWCAB, SWCFATE, SWCFK, SWCJ, SWCRS, SWCUV,
 SWGBY, SWKKGH, SWLJ, SWLJZ, SWLLD, SWLLO, SWLNI, SWMDE, SWMLZ, SWMT/EX, SWNE/EX, SWNM,
 SWNVW, SWPBM, SWPN, SWPP, SWPTB, SWQJA, SWRTH, SWSKJ, SWSX, SWSZX, SWWWXC, THAD,
 THAS, THATN, THBEN, THBK, THBN, THBO, THBR, THBZ, THC, THCV, THCW, THDK, THEAR, THFB, THFJ,
 THFT, THGG, THGI, THGX, THHT, THIP, THLL, THM, THML, THNU, THRG, THS, THSL, THT, THTF, THTT,
 THWDY, THWK, THWL, THWM, THWO, THY, WEWBAY, WEWBLO, WEWHAM, WEWLOR, WEWMAI,
 WEWMAR, WEWMAY, WEWNPN, WEWPAD, WEWPRI, WEWSOH, WMBID, WMBPZ, WMBUR, WMCIT,
 WMDIM, WMDRO, WMFER, WMHAS, WMHX, WMIPS, WMKD, WMKDG, WMLON, WMNAN, WMNEW, WMRJ,
 WMRUG, WMSBH, WMSPA, WMSTJ, WMSTK, WMSTP, MMWLN, MMWR, WNCSC, WNCNS, WNDEE,
 WNOAK, WNSTI, WNWEL, WNWX, WRBATT, WRBEL, WRBRIX, WRCHL, WRECT, WRFULM, WRKGDN,
 WRNELMS, WRPGRN, WRPIM, WRSKEN, WRSLO, WRSTHBK, WRVAUX, WRWHI, WRWKEN, WRWMIN,
 WSAIR, WSALE, WSBAL, WSBAR, WSBEA, WSBEH, WSBEL, WSBS, WSBLA, WSBRI, WSCAM, WSCEN,
 WSCLY, WSCOA, WSCRA, WSCRO, WSCUM, WSDOU, WSDRU, WSDUM, WSDUT, WSEKI, WSERS,
 WSGIF, WSGOV, WSHAL, WSHAM, WSHOL, WSIBR, WSJOH, WSKIL, WSKIR, WSKIY, WSLAA, WSLAN,
 WSMAR, WSMER, WSMIL, WSMOT, WSNEW, WSPAI, WSPOL, WSREN, WSRUT, WSSCO, WSSHE,
 WSSPR, WSTHO, WSUDD, WSWES, WSWIS, WWBURN, WWBWAT, WWCRWN, WWDPRT, WWEXTR,
 WWNABB, WWPAIG, WWPSTK, WWPYTH, WWSBUD

Schedule 3

[DRAFT] The conditions imposed on KCOM under sections 45, 87 and 88 of the Communications Act 2003 as a result of the analysis of the wholesale broadband access markets in which KCOM has been found to have significant market power (“SMP condition”)

Part 1: Application, definitions and Interpretation of these conditions

1. These conditions shall apply to the market for wholesale broadband access in the Hull Area by the Dominant Provider (“the Market”).
2. For the purpose of interpreting the conditions imposed on the Dominant Provider following a review of the Market the following definitions shall apply:
 - “Access Charge Change Notice” has the meaning given to it in Condition EB4.2;
 - “Access Contract” means a contract for the provision of Network Access;
 - “Dominant Provider” means KCOM; and
 - “Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Contract.
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 conditions

Condition EB1 – Requirement to provide Network Access on reasonable request

- EB1.1** 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.
- EB1.2** The provision of Network Access in accordance with Condition EB1.1 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.
- EB1.3** The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EB2 – Requirement not to unduly discriminate

- EB2.1** 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.
- EB2.2** 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 EB3 – Requirement to publish a reference offer

- EB3.1** 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.
- EB3.2** Subject to Condition EB3.8 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 or location of masts); and
- (n) the standard terms and conditions for the provision of Network Access.

EB3.3 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 Third Party; or
- (ii) may be used for a purpose that is the same, similar or equivalent to that provided to any other Third Party,

in a manner that differs from that detailed in a Reference Offer in relation to Network Access provided to any other Third Party, 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 Condition EA3.2 (a)-(n)

EB3.4 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.

EB3.5 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.

- EB3.6** 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.
- EB3.7** 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).
- EB3.8** The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.
- EB3.9** 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.
- EB3.10** The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition EB4 – Requirement to notify charges, terms and conditions

- EB4.1** 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.
- EB4.2** Save where otherwise provided in Condition EB5, the Dominant Provider shall send to Ofcom and to every Third Party with which it has entered into an Access Contract covered by Condition EB1 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.
- EB4.3** 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").
- EB4.4** The Dominant Provider shall not apply any new charge, term or condition identified in an Access Charge Change Notice before the effective date.
- EB4.5** 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 EB4.3(a)-(c).

Condition EB5 – Transparency as to quality of service

EB5.1 Where the Dominant Provider is providing Network Access to Third Parties it 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.

EB5.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition EA5.

Condition EB6 – Requirement to notify technical information

EB6.1 Save where Ofcom consents otherwise, where the Dominant Provider:

- (a) proposes to provide Network Access covered by Condition EB1, 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 EB1 by modifying the terms and conditions listed in Condition EB6.1(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.

EB6.2 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").

EB6.3 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.

EB6.4 Publication referred to in paragraph EB6.1 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 Third Party at that Third Party's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every Third Party with which the Dominant Provider has entered into an Access Contract covered by Condition EB1. The provision of such a copy of Notice may be subject to a reasonable charge.

Annex 2

Retail Marketing Information

A2.1 This Annex sets out some retail marketing information, as of July 2007, from a selection of the main broadband providers in the UK.



www.sky.com

On the Sky broadband website (<http://broadband.sky.com/>) under the heading 'HOW DO WE COMPARE?' sky notes that:

"There are so many broadband offers available in the market place today, so rather than having to search the web for the best deals, we have come up with an easy to use comparison tool."

This comparison tool (<http://broadbandcomparison.sky.com/>) makes comparisons between Sky and: BT, Virgin, AOL, Orange and Tiscali. Sky, whose broadband products are based on ADSL, is therefore directly comparing itself with cable and ADSL providers.



www.talktalk.co.uk

On the TalkTalk broadband website⁷⁵, TalkTalk compares itself with BT, Tiscali and NTL/Virgin. TalkTalk, whose broadband products are based on ADSL, is therefore directly comparing itself with cable and ADSL providers.



www.bt.com

On the BT broadband website under 'Why choose BT Total Broadband?' BT invites potential customers to 'Compare us' (www.comparebroadband.bt.com/compare.asp). BT makes the following comment:

"Once you've compared us like for like with our competitors, we're certain you'll choose BT - because, we think you'll agree, you get a more complete broadband package with BT Total Broadband."

It then gives potential customers the choice about which of its competitors it is compare to. The competitors available for comparison are: AOL, Orange, Sky, TalkTalk, Tiscali and Virgin Media. BT, whose broadband products are based on ADSL, is therefore directly comparing itself with cable and ADSL providers.

⁷⁵ www.talktalk.co.uk/talktalk/servlet/gben-server-PageServer?article=MAIN.UK.TALKTALK.STATIC.TESTHUB



www.virginmedia.co.uk

On the Virgin Media broadband website under 'Why choose us?' (<http://allyours.virginmedia.com/whychooseus/index.html>) Virgin Media makes comparisons between itself and: BT, AOL and Tiscali. Virgin Media, whose broadband products are mainly based on cable, is therefore directly comparing itself with ADSL providers.

Virgin Media has also launched a marketing campaign that aims to educate consumers about the virtues of its cable network over ADSL (www.areyouuptospeed.com).

Annex 3

Independent Consumer Information

A3.1 This Annex sets out some independent information sources that are available to consumers to assist them when selecting a broadband provider.

Broadband | checker

www.broadbandchecker.co.uk/

Easy comparison of broadband services from UK Internet service providers.

Broadband Checker performs a live availability check for broadband **ADSL**, **Cable** and **Satellite**. Compare offers from several major service providers including **Tiscali**, **BT**, **Orange**, **Virgin**, **AOL**, **Be Broadband** and more. We now also check for LLU broadband services from several specialist providers.

By entering a postcode and telephone number⁷⁶ this checker will list all the options available to consumers, irrespective of technology.

TOP 10
broadband

www.top10-broadband.co.uk/

Find Your Broadband, Your Way

- ✓ Welcome to the UK's favourite broadband comparison website
- ✓ Check your available providers and broadband speed
- ✓ Find your best broadband deal in seconds and save £200+
- ✓ ADSL or cable - get connected or switch in minutes!

This site compares broadband packages and providers, both cable and ADSL. It also provides an availability checker (by postcode) and shows consumers how they can switch between different providers.

cable.co.uk
compare cable, broadband & digital tv

www.cable.co.uk/

To find and compare UK Cable TV, Broadband, ADSL, Satellite, Digital TV & Telephone availability in your area, enter your postcode and/or your BT telephone number.

This site compares broadband packages and providers. It also provides an availability checker (by postcode).

⁷⁶ optional



www.broadband-finder.co.uk

This site compares broadband packages and providers, both cable and ADSL. It also provides an availability checker (by postcode) and shows consumers how they can switch between different providers.



www.netgear.co.uk

Net Gear is a manufacture of networking products, eg home wireless broadband routers. Under 'home product explanations' it addresses the questions 'what is broadband?' (www.netgear.co.uk/home_newnetwork_broadband.php). Within the explanation Net Gear notes:

The Two Flavours of UK Broadband Through Your Phone Line (i.e. BT Line)

DSL (Digital Subscriber Line) is a broadband technology for bringing large amounts of information through ordinary telephone lines (i.e. BT telephone line) to home and small businesses.

Through Your Cable Company (i.e. NTL or Telewest)

Cable Internet is now a popular way to interact with the World Wide Web and other new forms of multimedia information and entertainment services - available in the UK from Telewest or NTL.



www.pcworld.co.uk

PC World is a major high street and internet based supplier of computer products.

It provides consumers with the following 'Jargon Buster' description of broadband:

High speed access to the internet usually at a transfer speed of over 1MB per second. Usually provided by ADSL or cable modems by internet service providers (ISP's) such as AOL

Annex 4

Geographic Data Analysis

- A4.1 Ofcom analysed 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). This Annex describes in more detail the process and results of the geographic analysis undertaken by Ofcom.
- A4.2 The principal purpose of the geographic data analysis described in this Annex is to update the market definitions proposed in the November consultation taking into account the latest data available to Ofcom and assess the impact that revised market definition criteria have on the markets.
- A4.3 KCOM is the only fixed network provider in the Hull area and currently no other operator is using or plans to use LLU in the Hull area. Accordingly, the geographic data analysis is centred on the UK excluding the Hull area. However, similar information relating to the Hull area was requested from CPs and analysed.
- A4.4 The analysis conducted for this consultation document is identical to that conducted for the November consultation. However, more up-to-date information, both actual and forecast, has been used. Ofcom has analysed the data at three points in time; actual data from July 2007 and forecast data for December 2007 and June 2008. As in the November consultation, Ofcom has defined the geographic market boundaries using the first forecast date (end of December 2007).

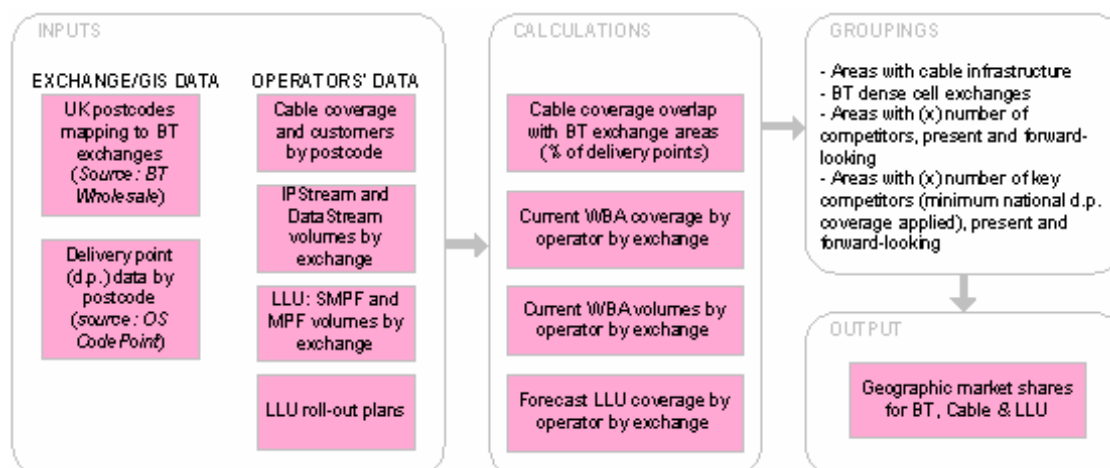
Geographic unit

- A4.5 As concluded in Section 3, Ofcom is 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 network⁷⁷.

Overview of the model structure

- A4.6 The model structure used for the UK (excluding the Hull area) geographic analysis is illustrated in Figure A4.1. Ofcom also collected data from operators in relation to the Hull area.

⁷⁷ This figure includes Main Distribution Frames (MDF) but does not include Active Street Cabinets (ASC).

Figure A4.1: Model structure for the Geographic Data Analysis in the UK (excl. the Hull area)

Data provided by BT and Virgin Media

A4.7 The data provided by BT and Virgin Media is summarised in Table A4.1.

Table A4.1: 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

A4.8 In February 2007 LLU operators were asked to identify which exchanges they had enabled and which exchanges they planned to enable along with the planned date at which they would be in a position to offer broadband services from these exchanges. Ofcom also asked for estimates of the volumes of services, based on LLU, which they intend to provide and the type of LLU (shared or full) that will support the services.

A4.9 Specifically, the request was sent to the LLU operators classified as “Principal LLU Operators”⁷⁸ in the November consultation document (Carphone Warehouse, Cable

⁷⁸ Accordingly to the November 2006 consultation: “LLU operators who plan to compete in the broadband internet access market and who intend to unbundle at exchanges able to serve at least 10% of homes and businesses in the UK by January 2008”. There were eight such operators at the time of the November consultation. Whereas at

and Wireless Access, Sky, O2, Tiscali and Orange). The request was also sent to Pipex. Pipex did not qualify as a Principal LLU Operator in the November consultation. However, in September 2006 Pipex bought Bulldog's⁷⁹ retail customer base and in light of this Ofcom considers it appropriate to have visibility of Pipex's LLU plans when conducting this review.

A4.10 Furthermore, in July 2007 Tiscali acquired Pipex and this has been taken into account in the analysis.

Other input data

A4.11 Other source data for the geographic analysis included information from BT and KCOM on their mapping of postcodes to exchanges and Ordnance Survey data for the number of delivery points within each UK postcode.

Exchange size calculations

A4.12 The first step in this analysis was to map all the delivery points in the UK, as provided in the Ordnance Survey data, to the local exchange that serves it. This resulted in Ofcom estimating the size of each individual exchange in terms of the total number of residential and business delivery points served.

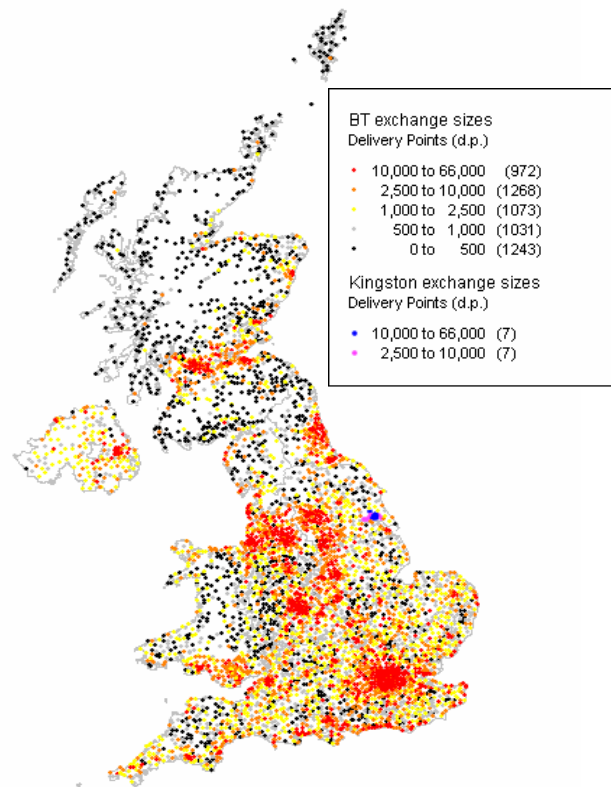
A4.13 Ordnance Survey delivery point data for UK postcodes was combined with the incumbents' data that maps UK postcodes to each exchange. The small degree of data loss resulting from this exercise was compensated by uplifting the delivery points by a factor determined by the number of postcodes 'dropped' on an exchange-by-exchange basis. Overall, 98% of the exchange postcodes were matched successfully and the median postcode loss per exchange was 1.17%.

A4.14 The distribution of exchanges by their size is illustrated in Figure A4.2 and the results summarised in Table A4.2.

A4.15 As would be expected, the large exchanges are situated around major urban centres. Note that each point represents the location of the exchange itself and not the precise area served by the exchange.

the end of July 2007 there are six Principal LLU operators due to the merger and acquisition activities that took place in 2006.

⁷⁹ Bulldog was an LLU operator that was purchased by Cable and Wireless and branded as Cable and Wireless Access. The Bulldog brand however was retained at the retail level.

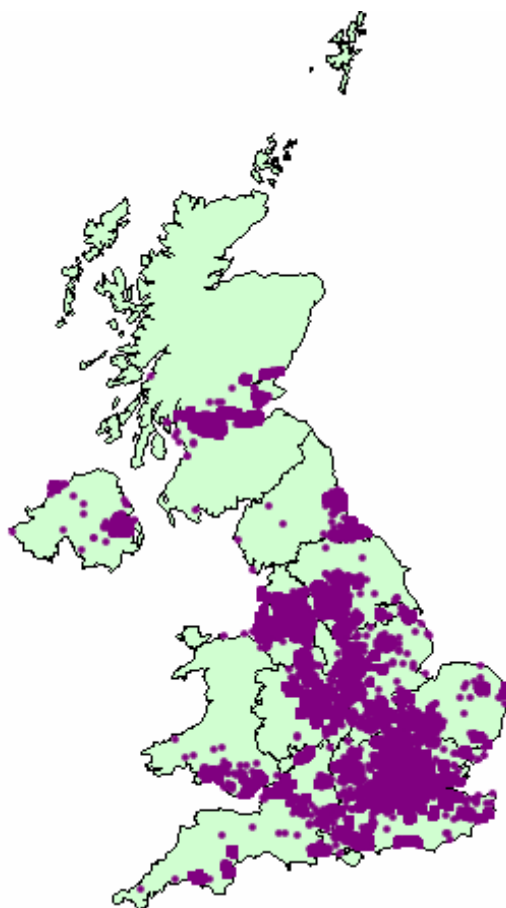
Figure A4.2: Local exchanges by size (delivery points)**Table A4.2: Breakdown of local exchanges by size**

Exchange size (DP)	10,000+	2,500-10,000	1,000-2,500	500-1,000	up to 500
BT exchanges	972	1,268	1,073	1,031	1,243
	17%	23%	19%	18%	22%
KCOM exchanges	7	7	0	0	0
	50%	50%	-	-	-

Cable overlap calculations

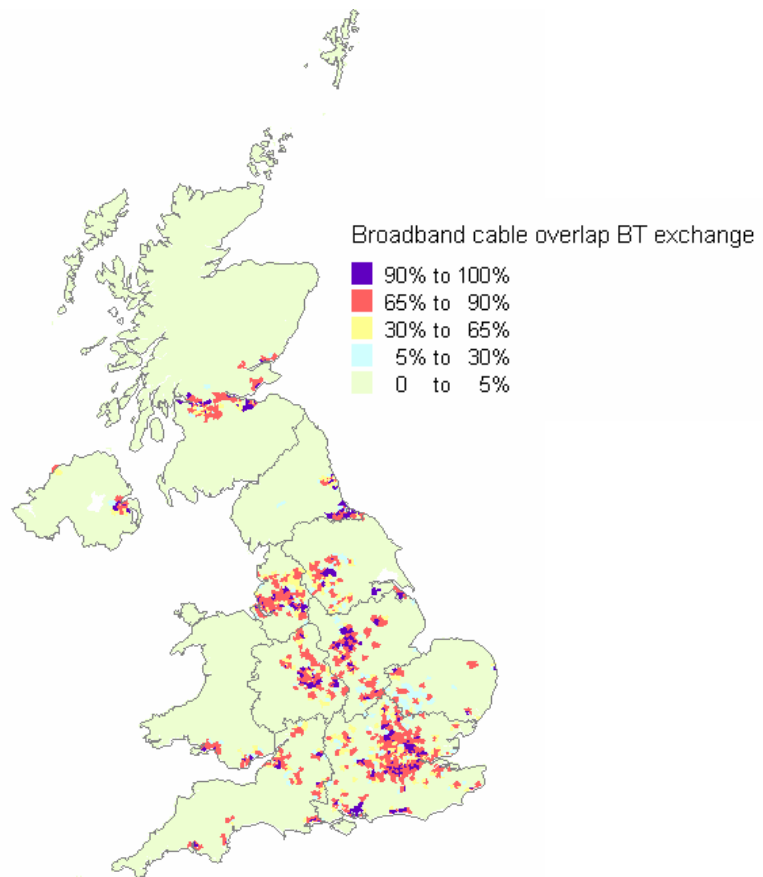
A4.16 Virgin Media provided data on their broadband cable coverage at postcode level. Ofcom's procedure maps this to the delivery point data for the UK postcodes and then maps the postcodes to BT exchanges. Figure A4.3 shows Virgin Media's broadband network coverage at the end of July 2007.

Figure A4.3: July 07 broadband cable network coverage



- A4.17 As the cable network does not necessarily align with BT's exchange footprints, Ofcom proposed that the overlap at which cable is considered to provide a competitive constraint in an exchange is set at 65% of the total number of premises covered by the BT exchange. At the end of July 2007 there are 929 exchanges in which the cable operator is considered to be present and these 929 exchanges serve 48.3% of delivery points in the UK.
- A4.18 Figure A4.4 shows the broadband cable areas overlapped onto BT's exchange areas which are coloured in accordance with cable delivery point coverage values.

Figure A4.4: Broadband cable overlap with BT exchange footprints



LLU Coverage

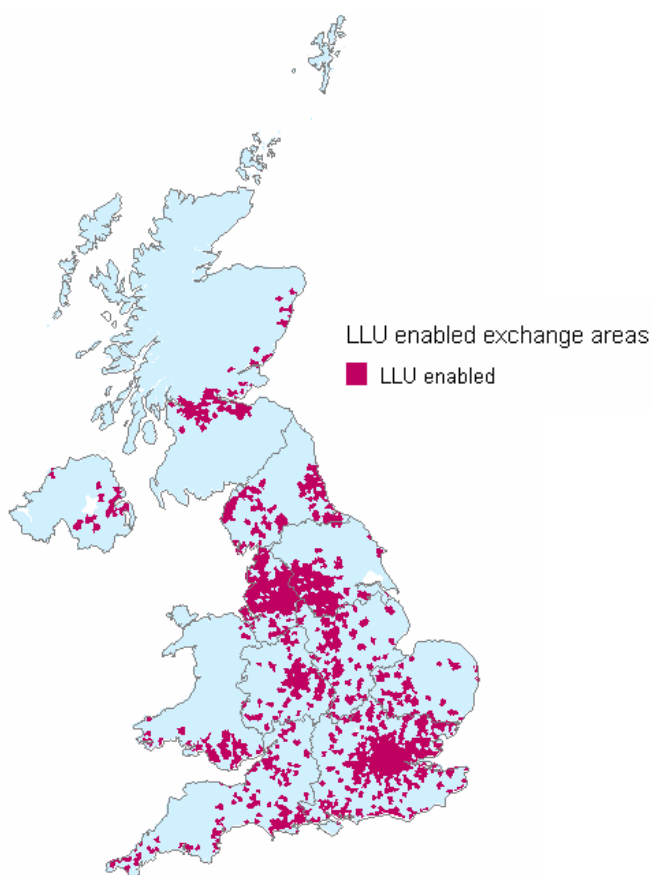
A4.19 Analysis of the July 2007 LLU data indicates that there are 20 active (non-BT) LLU operators⁸⁰.

A4.20 Specifically, 1,636 BT exchanges (78.3% 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 A4.5 shows the location of these exchange areas⁸¹.

⁸⁰ This figure excludes LLU test beds

⁸¹ These figures refer to all the 20 active LLU operators

Figure A4.5: July 2007 LLU enabled exchange areas



A4.21 As outlined in Table A4.3, the coverage of individual LLU operators varies considerably, with many operators focusing on narrow areas representing less than 10% coverage. As of the end July 2007 there are 6 LLU operators with over 30% coverage and the same operators will have coverage of over 40% by December 2007.

Table A4.3: Breakdown of all non-BT operators by their planned coverage

Coverage	Jul 07	Dec 07	Jun 08
up to 10%	20	20	20
up to 20%	6	6	6
up to 30%	6	6	6
up to 40%	6	6	6
up to 50%	5	6	6
up to 60%	3	5	5
up to 70%	2	2	2
up to 80%	0	1	1

A4.22 As in the November consultation, Ofcom's approach is to include only those LLU operators who plan to have at least 10% coverage (by June 2008) for the purpose of the geographic market assessment. These 6 LLU operators are referred to as the "Principal LLU Operators".

The Principal LLU Operators

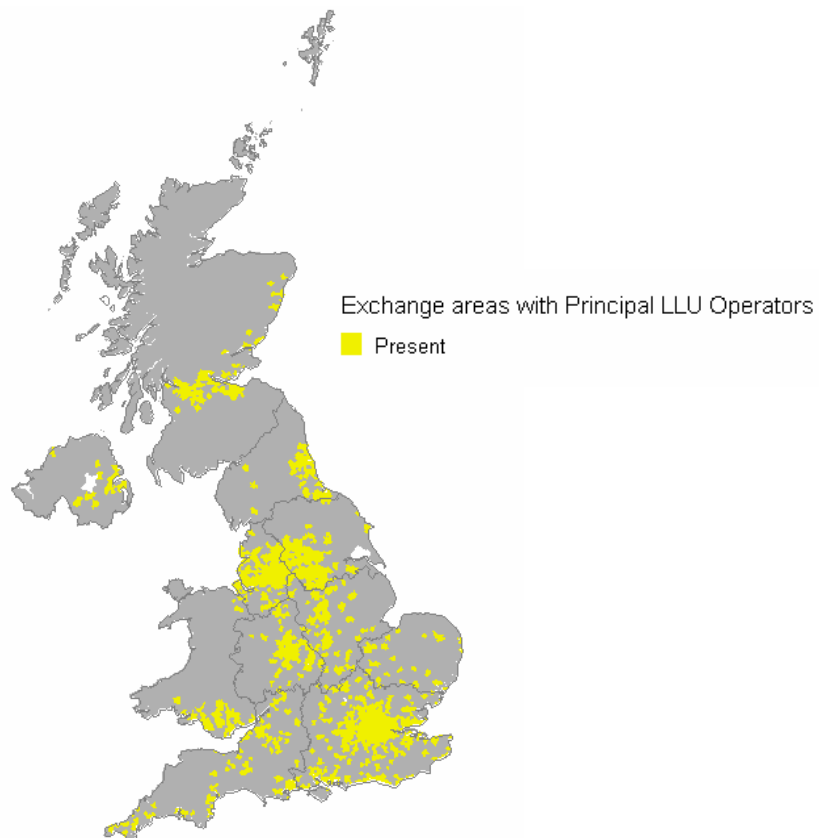
A4.23 Table A4.4 outlines the increase in coverage expected by the Principal LLU Operators to June 2008. This represents the combined coverage of these operators. Ofcom analysis predicts a 2% increase in coverage for the Principal LLU Operators during the first five months of its forecast period. Increase in coverage is predicted to be minimal between January 2008 and June 2008.

Table A4.4: Current and forecast delivery point coverage for the Principal LLU Operators

	July 07	Dec 07	Jun 08
Coverage	76%	78%	79%
No. exchanges	1,478	1,566	1,589

A4.24 Figure A4.6 shows the 1,478 exchange areas where Principal LLU Operators are present at the end of July 07.

Figure A4.6: Exchange areas enabled by Principal LLU Operators (July 2007)



The Principal Operators

A4.25 If BT and Virgin Media are added to the Principal LLU Operators then there is a total of 8 operators (“the Principal Operators”) upon which the geographic market assessment can be based.

A4.26 Table A4.5 provides a breakdown of the number of exchanges (and the percentage of home/business they cover) by the number of the Principal Operators within each exchange footprint. As mentioned before, Ofcom has analysed the data at three points in time: end of July 2007 (actual data), end of December 2007 (forecast data) and end of June 2008 (forecast data).

Table A4.5: Exchange breakdown by number of operators in exchange footprint⁸²

No. of Principal Operators	Jul 07		Dec 07		Jun 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	3,958	21.6%	3,874	19.4%	3,856	19.0%
2	382	7.9%	394	7.7%	397	7.6%
3	196	7.0%	215	7.2%	229	7.6%
4	195	8.0%	186	7.1%	185	7.1%
5	177	9.5%	189	9.5%	188	9.3%
6	175	9.9%	172	9.8%	175	10.1%
7	280	19.2%	276	18.2%	276	18.2%
8	224	16.9%	281	21.0%	281	21.0%

Grouping exchanges

A4.27 The next stage of the analysis was to assess the scope for consolidating geographic areas, starting from the base unit of individual exchanges, to inform the definition of the geographic market boundaries.

A4.28 The aim was to define groups of exchanges based on the factors that could be indicative of differing competitive conditions in different geographic areas, and define where the possible breaks in homogeneity of competitive conditions might occur. This could be driven by competition from cable and/or the LLU operators.

A4.29 Ofcom believes that defining groups based on the number of operators within each exchange footprint, as illustrated in Table A4.5, is the most appropriate starting point for this analysis to capture the different competitive conditions that could exist during the period of the review.

Table A4.6: Three exchange groups using number of Principal Operators within each exchange footprint

No. of Principal Operators	Jul 07		Dec 07		Jun 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	3,958	21.6%	3,874	19.4%	3,856	19.0%
2 or 3	578	14.9%	609	14.9%	626	15.2%
4 or more	1051	63.5%	1104	65.7%	1105	65.7%

A4.30 Ofcom, as discussed in Section 3, has created three groupings of exchanges using the number of Principal Operators providing services from the exchange: BT only, 2

⁸² Note this part of the analysis does not include the Hull area

or 3 operators, 4 or more operators. The size of these groups and their respective UK delivery point coverage are provided in Table A4.6.

- A4.31 In the November consultation Ofcom also used exchange size (i.e. whether the exchange serves 10,000 premises or more) when assessing competitive conditions. Ofcom used this exchange size threshold as an indication about the sustainability of competitive entry.
- A4.32 If Ofcom were to proceed with exactly the same approach as that use in the November consultation, but using the forecast data as of end December 2007, the resulting exchange groups would be as detailed in Table A4.7.

Table A4.7: Exchange groupings based on November consultation criteria

Market	No. Exchs	Coverage
BT only exchanges	3874	19.4%
Exchanges with 2 or 3 Principal Operators AND exchanges with 4 or more Principal Operators where the exchange serves less than 10,000 homes and businesses	842	21.6%
Exchanges with 4 or more Principal Operators where the exchange serves 10,000 or more homes and businesses	871	59.0%

- A4.33 However, as discussed in Section 3, Ofcom believes that it is necessary to slightly modify the grouping criteria. Specifically, Ofcom believes that exchanges where 4 or more Principal Operators are already providing services should be included in Market 3, irrespective of the exchange size.
- A4.34 As of end July 2007 there were 199 exchanges where 4 or more Principal Operators are already providing services but where the exchange services less than 10,000 premises. These exchanges cover 5.8% of premises in the UK (excluding the Hull area). The change of criteria thus results in these exchanges being moved from Market 2 and into Market 3.
- A4.35 The proposed geographic markets are shown in Table A4.8 along with the number of exchanges and the delivery point coverage in each market.

TableA4.8: Proposed geographic market (excluding the Hull area)

Market	No. Exchs	Coverage ⁸³
BT only exchanges	3874	19.4%
Exchanges where there are 2 or 3 Principal Operators present (actual and forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises	643	15.8%
Exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises	1070	64.8%

⁸³ Coverage figures refer to delivery points in the UK (excluding Hull)

Wholesale broadband access markets

A4.36 Table A4.9 shows the four proposed markets with the number of exchanges and percentage of the UK delivery point.

Table A4.9: WBA proposed geographic market definition (including the Hull area)

Market	No. Exchs	Coverage ⁸⁴
KCOM only exchanges	14	0.7%
BT only exchanges	3874	19.2%
Exchanges where there are 2 or 3 Principal Operators present (actual and forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises	643	15.7%
Exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises	1070	64.4%

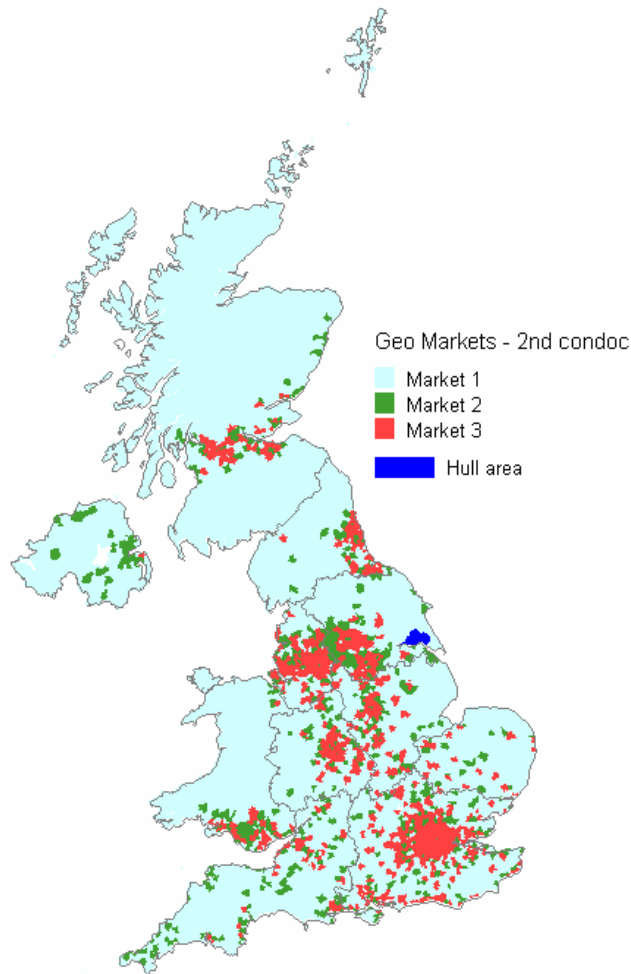
A4.37 Figure A4.7 shows the following proposed geographic markets on a map⁸⁵:

- those geographic areas covered by exchanges where KCOM is the only operator (“the Hull area”);
- those geographic areas covered by exchanges where BT is the only operator (“Market 1”);
- those geographic areas covered by exchanges where there are 2 or 3 Principal Operators present (actual and forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises (“Market 2”); and
- those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises (“Market 3”).

⁸⁴ Coverage figures refer to delivery points in the UK

⁸⁵ Exchange areas are coloured accordingly to the geographic market that they belong to. Exchange boundaries have been omitted.

Figure A4.7: Proposed geographic markets on a map



Sensitivity analysis

A4.38 In order to identify the geographic market boundaries it has been necessary for Ofcom to make a number of subjective assessments. In particular, the exchange size factor (10,000), the minimum number of Principal Operators in an exchange (4) and the amount of cable overlap required within an exchange footprint (65%). 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 as a reference (as shown in Table A4.9).

A4.39 Tables A4.10 below show the results of sensitivity analysis carried out on the exchange size factor (10,000).

Table A4.10: Sensitivity to changes in the exchange size factor (X)

	X=8,000		X=10,000		X=12,000		X=14,000	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	3,874	19.2%	3,874	19.2%	3,874	19.2%	3,874	19.2%
Market 2	629	15.3%	643	15.7%	650	16.0%	658	16.4%
Market 3	1,084	64.8%	1,070	64.4%	1,063	64.1%	1,055	63.7%

- A4.40 Changes in the exchange size factor affect Market 2 and Market 3 only; increasing exchange size factor shifts exchanges from Market 3 to Market 2, and vice versa. Between exchange size values of 8,000 and 14,000, the largest variation in the size of any one market is about 1%.
- A4.41 Changes in the number of Principal Operators required in an exchange footprint only affects Market 2 and Market 3. As the number of Principal Operators used to distinguish between Market 2 and Market 3 is increased Market 2 becomes bigger whereas Market 3 becomes smaller, and vice versa. Between values of 3 and 6, the largest variation in the size of any one market is about 22%. Results are shown in the Table A4.11 where the percentage of delivery points is referred to the UK (including the Hull area).

Table A4.11: Sensitivity to changes in the number of Principal Operators required in an exchange footprint

	min Principal Op = 3		min Principal Op = 4		min Principal Op = 5		min Principal Op = 6	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	3,874	19.2%	3,874	19.2%	3,874	19.2%	3,874	19.2%
Market 2	451	9.1%	643	15.7%	816	22.5%	992	31.6%
Market 3	1,262	71.0%	1,070	64.4%	897	57.6%	721	48.5%

- A4.42 Change in the minimum cable overlap value has an effect on all the three markets. In particular a lower overlap threshold will move some exchanges from Market 1 into Market 2 and Market 3, and vice versa. Between overlap values of 55% and 85%, the largest variation in the size of any one market is about 1.7%. Results are shown in the Table A4.12 where the percentage of delivery points is referred to the UK (including the Hull area).

Table A4.12: 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	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	3,850	19.0%	3,874	19.2%	3,906	19.6%	3,963	20.3%
Market 2	658	15.7%	643	15.7%	622	15.7%	592	16.0%
Market 3	1,079	64.7%	1,070	64.4%	1,059	64.0%	1,032	62.9%

Exchange Lists for the UK geographic markets

- A4.43 The list of exchanges (MDF code only) that fall within Market 1, Market 2 and Market 3, as defined using Ofcom's proposed methodology for defining the geographic boundaries of the wholesale broadband access market, are listed in Annex 1, Appendix 1, 2 and 3. Ofcom has also provided this information in a supplementary spreadsheet.

Market definitions – comparison with November consultation

- A4.44 Table A4.13 gives a direct comparison of the market definitions (expressed in terms of number of exchanges and the percentage of delivery points) based on January

2007 and December 2007 forecast dates. The table shows that market developments and Ofcom's slightly modified methodology has resulted in the coverage of Market 1 and Market 2 reducing and the coverage of Market 3 increasing.

Table A4.13: Comparison between the previous and the current proposed geographic markets

	January 07 (November consultation)		December 07 (present consultation)	
	Exchange	Coverage	Exchange	Coverage
Market 1	4,074	24.1%	3,874	19.4%
Market 2	729	21.5%	643	15.8%
Market 3	784	54.4%	1,070	64.8%

A4.45 Table A4.14 shows how these changes materialise at the exchange level. Overall, a total of 5,028 exchanges remain in the same market as per the January 2007 forecast. They cover 82.95% of the total UK delivery points (excluding Hull).

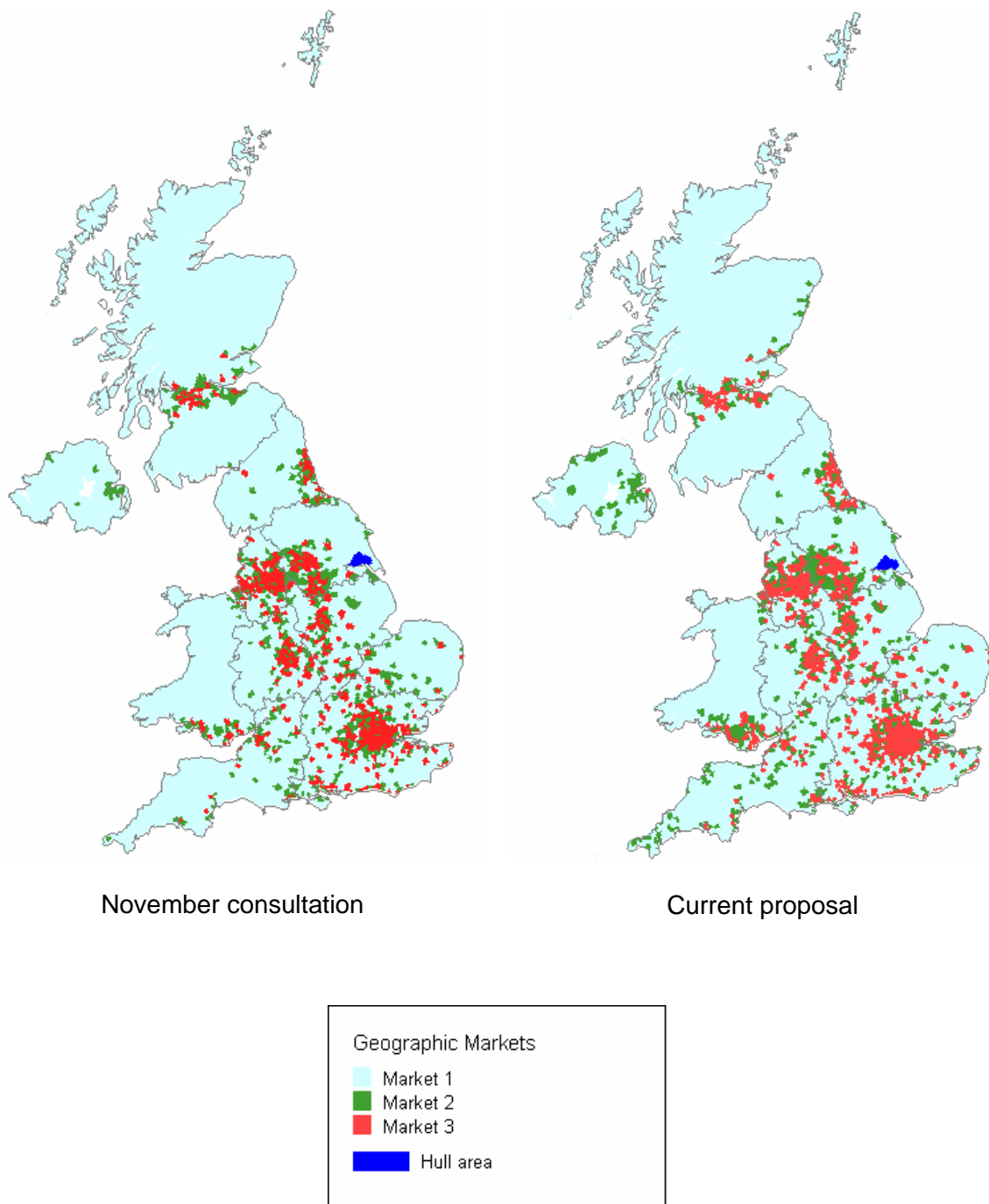
Table A4.14: Variation of market definition at the exchange level

	No. exchanges	% DPs
No change in market	5,028	82.95%
Market 1 unchanged	3,837	18.53%
Market 2 unchanged	411	10.31%
Market 3 unchanged	780	54.11%
Market 1 to Market 2	288	5.32%
Market 1 to Market 3	9	0.33%
Market 2 to Market 1	37	0.82%
Market 2 to Market 3	281	10.36%
Market 3 to Market 1	0	0.00%
Market 3 to Market 2	4	0.21%
Total	5587	100%

A4.46 It is important to note that 199 of the 281 exchanges that are now included in Market 3, instead of Market 2, were reassigned as a result of Ofcom's slightly modified methodology.

A4.47 Figure A4.8 makes a visual comparison between the markets areas as defined in the November consultation and the ones proposed by this document. The two figures outline that what were predominantly Market 1 (Market 2) areas in the first consultation document have now seen the rise of nearby Market 2 (Market 3) areas. The phenomenon is evident in the Northern Ireland, South West coast and on the North West and Yorkshire and Humberside border. The same applies to the main cities.

Figure A4.8: Geographic markets comparison defined in the Ofcom's WBA consultation documents



Annex 5

Assessment of January 2007 data

Introduction

- A5.1 In the November consultation, Ofcom specified the geographic market boundaries based on actual data from July 2006 and forecast data for January 2007. Ofcom also forecast future market shares for each of the markets identified in its assessment of SMP. This Annex assesses what actually happened and then compares this with the forecasts.
- A5.2 The assessment shows that whilst LLU operators slightly under achieved on the number of exchanges that they planned to unbundled, the volume of unbundled lines was at the higher end of the forecast range.

LLU operators roll-out plans – Forecast v Actual (January 2007)

- A5.3 LLU operators' coverage is an important determining factor in the Ofcom's geographic market definition. Table A5.1 shows the LLU operators' actual coverage at the end of January 2007 against the forecast coverage.

Table A5.1: LLU operators' coverage⁸⁶

January 2007 Coverage	January 07 No. LLU Operators (actual)	January 07 No. LLU Operators (forecast)
up to 10%	22	22
up to 20%	6	8
up to 30%	6	8
up to 40%	5	7
up to 50%	3	5
up to 60%	3	3
up to 70%	0	0

- A5.4 In the November consultation, Ofcom grouped BT's exchanges by the number of Principal Operators present in each BT exchange footprint. Table A5.2 shows a direct comparison between the January 2007 forecast data and the actual data.

⁸⁶ The total number of Principal LLU Operators reduced from eight to six between July 2006 and January 2007 due to M&A activities.

Table A5.2: Exchange breakdown by number of Principal Operators⁸⁷

No. Principal Operators	January 07 - Actual		January 07 - Forecast	
	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	4,191	27.9%	4,074	24.1%
2	415	10.9%	363	8.8%
3	193	8.5%	201	7.7%
4	159	8.7%	159	7.3%
5	153	9.3%	135	7.8%
6	135	9.0%	131	7.2%
7	202	14.8%	119	7.4%
8	139	10.9%	153	10.6%
9	0	0.0%	172	12.7%
10	0	0.0%	80	6.4%

A5.5 Table A5.3 shows the three exchange groups based on the number of Principal Operators present.

Table A5.3: Exchange groups based on the number Principal Operators present⁸⁸

No. Principal Operators	January 07 - Actual		January 07 - Forecast	
	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	4,191	27.9%	4,074	24.1%
2 or 3	608	19.4%	564	16.6%
4 or more	788	57.2%	949	59.3%

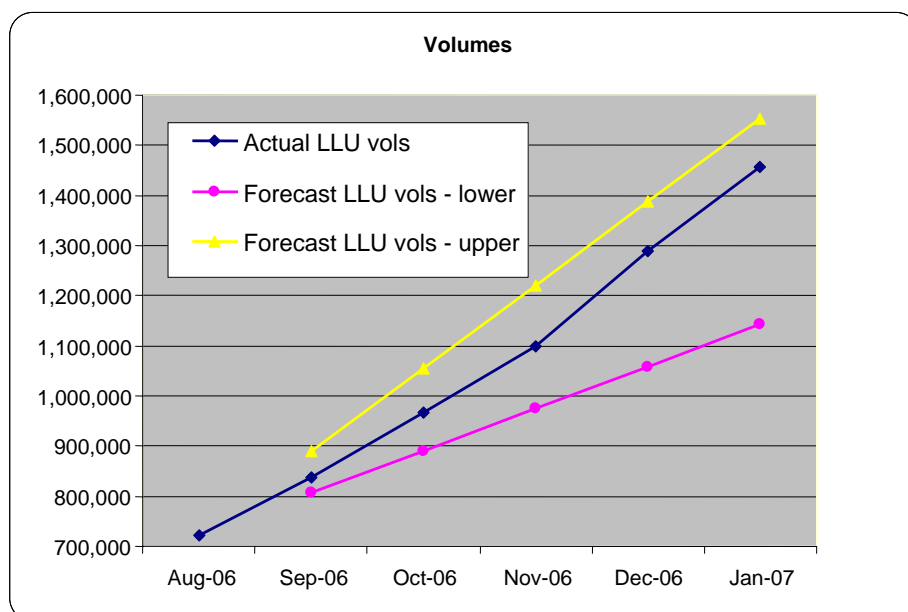
A5.6 Table A5.3 shows that the January 2007 forecast overestimated the total number of exchanges where 4 or more Principal Operators would be present. However, it is important to note that between June 2006 and January 2007 the number of Principal LLU Operators was reduced from eight to six due to merger and acquisitions activity and thus the number of Principal Operators was reduced from ten to eight.

LLU volumes – Forecast v Actual (January 2007)

A5.7 In the November consultation Ofcom made a prediction about future market shares in each of the geographic markets identified. To do this Ofcom needed to predict how the market would develop. An important part of this was the prediction about the growth of unbundled lines. Figure A5.1 shows Ofcom's lower and upper forecast for LLU volumes and the actual volume achieved.

⁸⁷ The total number of Principal Operators reduced from ten to eight between July 2006 and January 2007 due to M&A activities.

⁸⁸ The total number of Principal Operators reduced from ten to eight between July 2006 and January 2007 due to M&A activities.

Figure A5.1: Monthly LLU growth forecast v actual

A5.8 Whilst LLU operators unbundled slightly fewer exchanges than forecast, the volume of unbundled lines was at the higher end of the forecast range. This would imply that the intensity of competition from LLU was significantly higher than forecast.

Market shares – Forecast v Actual (January 2007)

A5.9 Table A5.4 compares the forecast and actual market shares for January 2007.

Table A5.4: Market shares for Market 2 and Market 3

Market 2 shares	BT	Virgin Media	LLU Operators
January 07- Actual	72.5%	24.2%	3.3%
January 07- Forecast	69% - 72%	25% - 26%	3% - 5%

Market 3 shares	BT	Virgin Media	LLU Operators
January 07- Actual	49.9%	32.3%	17.8%
January 07- Forecast	47% - 53%	32% - 34%	14% - 19%

Market definition – Forecast v Actual (January 2007)

A5.10 In the November consultation, Ofcom found 3 geographic markets in the UK (excluding Hull area) based on LLU operators' forecast roll-out and cable coverage and the number of premises served by BT's exchanges. Table A5.5 shows the geographic market definitions based on actual January 2007 data and compares these with the forecasts.

Table A5.5: Market definition- Forecast vs Actual January 2007

	January 07 - Actual		January 07 - Forecast	
	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	4,191	27.9%	4,074	24.1%
Market 2	677	21.5%	729	21.5%
Market 3	719	50.5%	784	54.4%

A5.11 Table A5.6 shows how these changes materialise at the exchange level. Overall, a total of 5,335 exchanges remain in the same market as per the January 2007 forecast. They cover 90.41% of the total UK delivery points (excluding Hull).

Table A5.6: Market definition at exchange level

	No. exchanges	% DPs
No change in market	5335	90.41%
Market 1 unchanged	4,048	23.60%
Market 2 unchanged	579	16.86%
Market 3 unchanged	708	49.95%
Market 1 to Market 2	26	0.47%
Market 1 to Market 3	0	0.0%
Market 2 to Market 1	139	4.08%
Market 2 to Market 3	11	0.58%
Market 3 to Market 1	4	0.26%
Market 3 to Market 2	72	4.20%
Total	5587	100%

Annex 6

Impact Assessments

- A6.1 This Annex and the Impact Assessment in Annex 1 of the November consultation ('the November Impact Assessment') set out the impact of the proposed regulatory remedies (set out in Section 5) given the market definitions (set out in Section 3) and the SMP assessments (set out in Section 4). Together the analyses presented in the two documents represent Impact Assessments, as defined in Section 7 of the Act.
- A6.2 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. Ofcom is required by section 7 of the Act 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. Ofcom is, in any case, committed to carrying out and publishing Impact Assessments in relation to the majority of our policy decisions. Ofcom's approach to impact assessments is set out in the guidelines *Better policy-making: Ofcom's approach to impact assessment*⁸⁹.

Citizen and consumer interest

- A6.3 Ofcom's statutory duties are set out in the Act and its principal duties are:
- to further the interests of citizens in relation to communications matters (Section 3(1)(a)); and
 - to further the interests of consumers in relevant markets, where appropriate by promoting competition (Section 3(1)(b)).
- A6.4 Citizen's and consumer's are the ultimate purchasers of broadband products and currently over 14.5 million homes in the UK have a broadband connection. At a typical rental charge of (say) £17 per month for a broadband connection, UK citizen's and consumer's are spending about £3 billion on such services per year.
- A6.5 Citizen's and consumer's are becoming increasingly reliant on broadband for leisure and work activities and they will have an interest in ensuring that the broadband products available to them represent value for money in terms of characteristics such as price, performance and reliability.

Ofcom's policy objective

- A6.6 Ofcom considers that citizens' and consumers' interests will be best served by a fully functioning competitive wholesale broadband access market, as this will ensure the availability of competitive retail offerings. Where such a market exists, Ofcom will look to withdraw from regulation, in line with its stated principles.
- A6.7 However, where a fully functioning competitive wholesale broadband access market does not exist Ofcom will look to see whether it is necessary and desirable to impose regulatory remedies to further the interests of citizens and consumers.

⁸⁹ www.ofcom.org.uk/consult/policy_making/guidelines.pdf

Analysis of the different options

- A6.8 As set out in Section 3, Ofcom has identified four separate geographic markets for wholesale broadband access in the UK. These are:
- the Hull area - those geographic areas covered by exchanges where KCOM is the only operator;
 - 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 Principal Operators present (actual or forecast) AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves less than 10,000 premises; and
 - Market 3 - those geographic areas covered by exchanges where there are currently 4 or more Principal Operators present AND exchanges where there are forecast to be 4 or more Principal Operators but where the exchange serves 10,000 or more premises.
- A6.9 Further, as set out in Section 4, Ofcom considers that KCOM has significant market power (SMP) in the Hull area and BT has SMP in Market 1 and separately in Market 2. A finding of SMP within a market means that it is not a fully functioning competitive market.
- A6.10 In light of this and as set out in Section 5, Ofcom identified a number of regulatory options for each of the markets where SMP had been found. After careful consideration of these options Ofcom identified the regulatory remedies that it believes should be introduced in each of the markets where SMP had been found. The proposed regulatory remedies and the reasoning behind them are set out in Section 5.

Assessing the impact on different stakeholders and on competition

- A6.11 The November Impact Assessment considered the possible impact for different regulatory options on KCOM in the Hull area and BT in Market 1 and separately in Market 2 and the possible effects of each regulatory option on the different types of stakeholder, as well as on competition. In particular, the stakeholders considered explicitly in the Impact Assessment were Communications Providers with their own infrastructure, Communications Providers without their own infrastructure and citizens and consumers. Ofcom considers that repetition of this detailed assessment would serve little purpose and has therefore summarised its conclusions only.
- A6.12 For Market 3 however, Ofcom concluded that it was not appropriate or necessary to reach a firm conclusion on SMP in the November consultation. It therefore did not make any proposals for regulatory remedies in this market and accordingly was not able to conduct an Impact Assessment in the absence of defined proposals.

The Aims of Regulation

- A6.13 The aim of regulation is to further the interests of citizens and consumers by promoting the development of competition in the provision of downstream (retail) broadband services. Ofcom considers that competition in downstream markets is best achieved through the provision of upstream competition. However, as identified

in Section 4, Ofcom does not consider that there is sufficient competition in broadband access at the wholesale level in the following markets: the Hull area, Market 1 and Market 2.

The Hull Area

- A6.14 Ofcom considers that KCOM has SMP in the provision of wholesale broadband access services in the Hull area and that to encourage downstream retail competition it is necessary to regulate KCOM in the provision of such services. The November Impact Assessment considered three options for the regulation of KCOM and considered the likely impact of each option on; KCOM, Communications Providers who have their own infrastructure, Communications Providers without their own infrastructure and citizens and consumers. Effects on competition were also assessed for each proposed option. The three options were characterised as an option not to regulate (Option 1), an option to impose access and non-discrimination obligations (Option 2), and an option to set price controls (Option 3).
- A6.15 The November Impact Assessment concluded that on balance Option 2 was the approach that would be most likely to benefit stakeholders and, in particular, citizens and consumers.
- A6.16 The November consultation did not, however, consider the imposition of a quality of service requirement and consequently this was not explicitly included in the November Impact Assessment. The quality of service requirement could have been applied equally in Option 2 or Option 3. Whilst Ofcom has discounted Option 3 because it does not consider that price controls are warranted, the additional imposition of a quality of service requirement would not alter Ofcom's conclusion in relation to Option 3 in any event. Ofcom considers that the inclusion of a quality of service requirement in either Option 2 or Option 3 does not alter the assessment of the likely impact on different stakeholders, as set out in the November Impact Assessment, or the conclusion reached since it would not significantly increase the burden on stakeholders over and above the regulatory remedies proposed in the November Consultation whilst ensuring greater transparency for purchasers of wholesale broadband access products.

The Hull area - conclusion

- A6.17 For the reasons set out in the November Impact Assessment, Ofcom considers that on balance Option 2 (access and no undue discrimination requirement), including a quality of service requirement, is the most appropriate regulatory remedy to further the interests of citizens and consumers.

Market 1

- A6.18 Ofcom considers that BT has SMP in the provision of wholesale broadband access services in Market 1 and that to encourage downstream retail competition it is necessary to regulate BT in the provision of such services. The Impact Assessment set out in the November consultation ('the November Impact Assessment') considered three options for the regulation of BT and considered the likely impact of each option on; BT, Communications Providers who have their own infrastructure, Communications Providers without their own infrastructure and citizens and consumers. Effects on competition were also assessed for each proposed option. The three options were characterised as an option not to regulate (Option 1), an option to impose access and non-discrimination obligations (Option 2), and an option to set price controls (Option 3).

- A6.19 The November Impact Assessment concluded that on balance Option 2 was the approach that would be most likely to benefit stakeholders and, in particular, citizens and consumers.
- A6.20 The November consultation did not, however, consider the imposition of a quality of service requirement and consequently this was not explicitly included in the November Impact Assessment. The quality of service requirement could have been applied equally in Option 2 or Option 3. Whilst Ofcom has discounted Option 3 because it does not consider that price controls are warranted, the additional imposition of a quality of service requirement would not alter Ofcom's conclusion in relation to Option 3 in any event. Ofcom considers that the inclusion of a quality of service requirement in either Option 2 or Option 3 does not alter the assessment of the likely impact on different stakeholders, as set out in the November Impact Assessment, or the conclusion reached since it would not significantly increase the burden on stakeholders over and above the regulatory remedies proposed in the November Consultation whilst ensuring greater transparency for purchasers of wholesale broadband access products.

Market 1 – Conclusion

- A6.21 For the reasons set out in the November Impact Assessment, Ofcom considers that on balance Option 2 (access and no undue discrimination requirement), including a quality of service requirement, is the most appropriate regulatory remedy to further the interests of citizens and consumers.

Market 2

- A6.22 Ofcom considers that BT has SMP in the provision of wholesale broadband access services in Market 2 and that to encourage downstream retail competition it is necessary to regulate BT in the provision of such services. The Impact Assessment set out in the November consultation ('the November Impact Assessment') considered three options for the regulation of BT and considered the likely impact of each option on; BT, Communications Providers who have their own infrastructure, Communications Providers without their own infrastructure and citizens and consumers. Effects on competition were also assessed for each proposed option. The three options were characterised as an option not to regulate (Option 1), an option to impose access and non-discrimination obligations (Option 2), and an option to set price controls (Option 3).
- A6.23 The November Impact Assessment concluded that on balance Option 2 was the approach that would be most likely to benefit stakeholders and, in particular, citizens and consumers.
- A6.24 The November consultation did not, however, consider the imposition of a quality of service requirement and consequently this was not explicitly included in the November Impact Assessment. The quality of service requirement could have been applied equally in Option 2 or Option 3. Whilst Ofcom has discounted Option 3 because it does not consider that price controls are warranted, the additional imposition of a quality of service requirement would not alter Ofcom's conclusion in relation to Option 3 in any event. Ofcom considers that the inclusion of a quality of service requirement in either Option 2 or Option 3 does not alter the assessment of the likely impact on different stakeholders, as set out in the November Impact Assessment, or the conclusion reached since it would not significantly increase the burden on stakeholders over and above the regulatory remedies proposed in the

November Consultation whilst ensuring greater transparency for purchasers of wholesale broadband access products.

Market 2 – Conclusion

- A6.25 For the reasons set out in the November Impact Assessment, Ofcom considers that on balance Option 2 (access and no undue discrimination requirement), including a quality of service requirement, is the most appropriate regulatory remedy to further the interests of citizens and consumers.

Market 3

- A6.26 As explained in paragraph A6.12, Ofcom did not reach a firm conclusion on SMP in Market 3 in the November consultation. However, as set out in Section 4 Ofcom has now concluded that no firm has SMP in the provision of wholesale broadband access services in Market 3. The European framework (Article 16(3) of the Framework Directive) provides that:

“where a national regulatory authority concludes that the market is effectively competitive, it shall not impose or maintain any of the specific regulatory obligations referred to in paragraph 2 of this Article. [i.e. SMP Conditions] In cases where sector specific regulatory obligations already exist, it shall withdraw such obligations placed on undertakings in that relevant market. An appropriate period of notice shall be given to parties affected by such a withdrawal.”

- A6.27 Ofcom cannot therefore legally impose regulation in Market 3. Ofcom therefore does not consider it necessary to assess the impact of the removal of regulation in Market 3 since it does not have the discretion as to whether or not to impose regulation in that market.

Annex 7

Alternative Broadband Technologies

Broadband provision via means other than cable modem and xDSL

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 broadband access in the UK. Together these two technologies currently account for the vast majority of all broadband connections. However, alternative technologies are constantly under review and development. This annex considers some of the main alternative technologies and concludes whether any of them are likely to provide a sufficient competitive constraint in the wholesale broadband access market within the period of this review. The alternative technologies considered in this annex are:

- Wireless Fidelity (WiFi);
- Broadband Fixed Wireless Access (BFWA);
- Worldwide Interoperability for Microwave Access (WiMax);
- Mesh networks;
- Satellite;
- Powerline Technology; and
- Free space optics.

Wireless Fidelity (WiFi)

A7.2 WiFi is not considered an access technology, it is instead a standard that supports the inter-working of personal computers 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 (approximately <300m) to the WiFi antenna could use their laptop to access email or the internet. Such hotspots are becoming common in places such as; coffee shops, hotel lobbies and airport lounges.

A7.3 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.

Broadband Fixed Wireless Access (BFWA)

A7.4 BFWA is a line-of-sight radio technology with a typical range of up to 20 km that can be used to provide a high-speed data connection between the operators’ base station and the end-users’ premises. It is thus capable of offering an alternative broadband access connection to cable and xDSL.

A7.5 BFWA technology has been available now 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.

- A7.6 It is still possible that BFWA technology could offer a competitive constraint to cable and xDSL technologies in the longer term, however at the present time its availability and take-up is low. For this reason Ofcom does not believe that it is likely to provide a sufficient competitive constraint in the wholesale broadband access market within the period of this review.

Worldwide Interoperability for Microwave Access (WiMax)

- A7.7 WiMax technology allows for the provision of wireless wide area networks (WWAN) and can cover distances up to 50 km from the access point and therefore could be used to provide broadband access. WiMax is a complementary technology to WiFi as the latter could still be used in the home to provide a LAN with the former providing the access connection.

Mesh Networks

- A7.8 Most wireless based broadband networks provide "point to multi-point" capabilities. Mesh networks, however, have the potential to provide community networks in rural areas. Mesh networks require each participating household or business to have a radio antenna installed at their premises and these then provide the capability for each participant to transmit to each other. Mesh technology does away with the need for large antennae or masts used to transmit to each individual customer in traditional point to multi-point wireless solutions.

Broadband Satellite

- A7.9 Broadband satellite technology has an ability to provide broadband capabilities to end-users based nearly anywhere in the UK. End-users need a satellite dish and a modem and can be provided with a one-way connection (download only) or a two-way connection (the former would mean that the end-user would need to obtain a dial-up service as well). Satellite broadband services are widely available and there are many providers in the market who can offer variously one-way, two-way or both one-way and two-way and at many bandwidths. Prices for these services also vary considerably.
- A7.10 Satellite broadband services have features common to wireless broadband services in that there needs to be 'line of sight' and that they could be used to provide broadband services in areas in which it would be prohibitive to install fixed broadband services. They are, however, likely to be expensive as well and, in many instances, therefore, are likely to be suitable for the most remote areas or for offshore services.

Powerline Technology

- A7.11 Powerline technology uses the electricity supply network to provide two-way broadband connections by using filters that can separate the power supply flowing along the cable from communications signals. 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 signal.

- A7.12 Ofcom is not aware, however, of anyone running a commercial service in the UK which utilises power line technology. The technology has, however, advanced in some other countries where it is seen as a potentially viable alternative to DSL or cable services.

Fibre To The Home (FTTH)

- A7.13 FTTH provides broadband services over an optical fibre link to the consumers' home (replacing the conventional copper pair or coaxial cable). This potentially allows services with higher bandwidth than those offered over ADSL and cable modems. However, this technology is not currently being offered to broadband end-users in the UK.

Free space optics

- A7.14 Free space optics ('FSO') 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. FSO, however, provides for a last mile presence only and therefore is likely to be used as an add-on to a local or wide area network giving greater capacity between points or to multi-points at the edge of the network. Quite often, FSO systems are used as a back-up to existing fixed links rather than as a direct replacement for them.
- A7.15 Again, the potential for these alternative technologies to provide an additional competitive constraint in the wholesale broadband access market is a longer term possibility in the UK and beyond the time frame for the current market review. Services using these technologies are either not yet available or have not yet attained a mass-market presence.

Respondents' views

- A7.16 The November consultation asked the following question:

Question 15: Do respondents agree that the alternative broadband technologies referred to in this annex are unlikely to be sufficiently widespread or utilised within the period of this review to constrain prices in the market for wholesale broadband access services?

- A7.17 Respondents broadly agreed that, at this point in time, the other technologies referred to were unlikely to constrain prices in the wholesale broadband access market for the foreseeable future and it was too difficult to predict with any certainty when they might constrain prices. One respondent commented that given the extent of investment required to enable these technologies there was little likelihood of them having a major impact in the wholesale broadband access for the period covered by the review.
- A7.18 BT stated, however, that regulatory decisions taken by Ofcom could dissuade investment in alternative broadband technologies and therefore Ofcom must ensure that any remedies applied would not deter investment.

Ofcom's response

- A7.19 Ofcom agrees with most respondents that the technologies referred to in this annex are unlikely to be a major factor in the wholesale broadband access markets for the period covered by this review. Ofcom, nonetheless, recognises that it needs to monitor developments in alternative technologies and intends to do so.

Conclusion

- A7.20 The alternative technologies referred to in this annex are capable of providing broadband access services. To date, however, they have made little impact in the wholesale broadband access market. Although, these technologies have developed over the past few years and are likely to develop further in the future the same is likely to be true of cable and xDSL technologies.
- A7.21 Further the broadband market has experienced significant growth over the past few years and whilst it is expected to continue to grow over the next few years the rate of growth is likely to slow down as the market approaches saturation. Therefore, the opportunity for these alternative technologies to establish a foothold in this market and to generate sufficient volumes, which is necessary to bring the unit cost down, is closing.
- A7.22 Ofcom acknowledges that it is possible that these technologies could play a role in the future for the reasons discussed above but, for the reasons discussed above, Ofcom considers that they are not sufficiently widespread or utilised to have any real impact in the wholesale broadband access market within the period covered by this review. Ofcom's provisional conclusion is, therefore, that it need not carry out a more detailed investigation into the emergence of these technologies at this point in time.

Annex 8

Consumer Research

Introduction

- A8.1 This Annex contains further information and analysis that has been used to inform Ofcom's market definition as set out in Section 3.
- A8.2 The first part of this Annex explains the methodology adopted and consumer research questions Ofcom asked. The second part then sets out the formal calculation of the HMT for both residential and business consumers used to assess whether markets are potentially wider than the focal product being considered. The third part shows the results of the consumer survey and uses these results to analyse the retail product definition based on the HMT. The final part provides technical details of the formula used for calculating the critical loss used in the HMT.

Summary

- In summary, the combined results from business and residential consumers suggest that the market is wider than ADSL. These results are robust to different weightings used to account for the relative number of business and residential consumers.
- For residential ADSL and residential cable broadband services the results suggest the market could be wider than either of these services. Based on price and functional comparisons Ofcom considers that cable and ADSL are the relevant next closest substitutes to each other. The results of the consumer survey lend support to this view, although this result is based on interpretation of the services respondents named.
- Based on the results for business ADSL consumers, under certain assumptions the results of the consumer survey might suggest that the market should not necessarily be considered wider than ADSL. However this result is sensitive to the assumptions used. For example, there are a number of "conditional" switchers that stated that they would switch to alternatives if the price savings were available. The results of Ofcom's earlier surveys of business consumers conducted in 2006 were also consistent with finding a wider market. In both the current and previous surveys consumers considered cable as the next closest substitute.
- While the consumer survey is supportive of ADSL and cable in the same market. For both residential and business end-users, narrowband would not provide a competitive constraint on the price of broadband. In other words, the end-user research suggests that the market is only as wide as ADSL and cable.

Consumer survey overview

- A8.3 Ofcom commissioned a further consumer survey of business and domestic consumers following an earlier set of end-user research during February/March 2006 and June 2006 which was reported in the November consultation. The follow-up research was conducted in January 2007 and February 2007 with the results presented to Ofcom in March 2007.
- A8.4 The interview process was conducted amongst the decision makers responsible for purchasing telecom and internet connections. The key objective of the survey was

to assess predicted switching behaviour in particular their likely response to a SSNIP on their current services.

- A8.5 The follow-up research was conducted in light of some concerns regarding the results from the earlier survey discussed in the November consultation. In particular, residential end-users' responses to a SSNIP included unrealistically high numbers of end-users claiming that they would cease to use the internet altogether. As these responses impacted on whether the residential market was wider than a broadband market for ADSL and cable, Ofcom considered it important to conduct further research into claimed switching behaviour.
- A8.6 Ofcom has referred to some of the more general results of the consumer survey in the main Sections of this document and has published the full results of the consumer research results separately. 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.
- A8.7 Although these survey results have been used to inform Ofcom's market definitions set out in Section 3, the consumer 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 remain subject to important caveats as they are based on claimed behaviour as opposed to observed consumer behaviour and despite being based on relatively robust sample sizes they are subject to certain margins of error.

Formal calculation of the SSNIP test

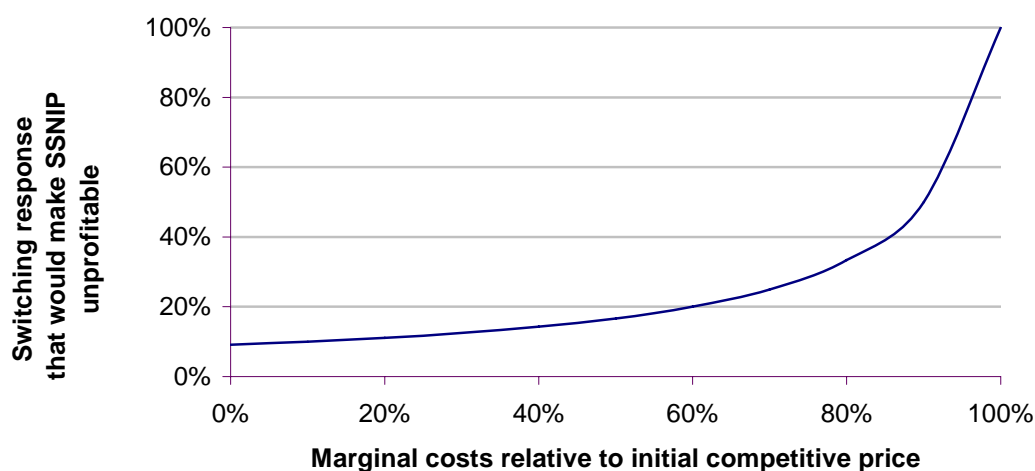
- A8.8 This section of the Annex explains how Ofcom has conducted its SSNIP analysis using the results from its consumer surveys and sets out Ofcom's estimations of the results of a formal calculation of the SSNIP test using the current information available. As explained in Section 3, Ofcom considers there to be one market for residential and business consumers of broadband internet access. Nevertheless, due to the nature of this consumer research, which had to be conducted for business and residential consumers separately, the results are presented in this Annex initially for both consumer types separately. However, the residential and business consumer results have also been presented in this Annex on a combined basis. This is based on relative weightings to account for the current volume of residential and business broadband consumers.
- A8.9 This section of the Annex also explains the components required to undertake SSNIP tests in particular the so-called 'critical loss factor', which is based on estimates of retail broadband prices and costs. Finally the results of the consumer survey are considered and compared against this critical loss factor in order to consider how wide the retail product market might be.

Summary of SSNIP test

- A8.10 As explained in Section 3, the important question underlying the SSNIP test is the impact that a price increase would have on profitability (i.e. would it be profitable for a hypothetical monopolist supplier of the focal product to impose a 5-10 per cent increase in prices). 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.

- A8.11 The change in profitability will depend on the extent of any change in net revenue (i.e. this consists of the net change in sales revenues but also takes account of the savings in costs of no longer having to supply those products). In order to assess this change in profitability it is necessary to estimate marginal costs and the impact on revenue (which will depend on the initial starting price, the assumed level of the price rise and the likely reaction of consumers to that price increase).
- A8.12 In the context of consumer surveys it is helpful to consider the SSNIP test based on a critical loss calculation. The critical loss calculation shows the change in demand at which a SSNIP would have a neutral effect on profitability. If the reduction in demand from a SSNIP is greater than the critical loss factor then the SSNIP will be unprofitable and vice versa. As the key output of the consumer survey is the likely change in demand (i.e. extent of consumer switching), the critical loss calculation is a simpler way of considering the results of consumer surveys and whether a SSNIP is likely to be unprofitable.
- A8.13 The critical loss is calculated as a function of the SSNIP (which in Ofcom's survey was set at the level of 10 per cent) and the ratio of the marginal cost to the current price (i.e. the price before the SSNIP). A technical derivation of the critical loss equation is given at the end of this Annex.
- A8.14 To provide some context to the potential range of critical loss factors, Figure A8.1 shows the indicative critical loss values based on different ratios of marginal cost to the current price.

Figure A8.1: Critical loss factor



- A8.15 Figure A8.1 shows that if marginal costs form a large component of the competitive retail price then a large switching response would need to be seen for a SSNIP to be unprofitable. For example, if the marginal cost represented 80 per cent of the current price, then a SSNIP of 10 per cent would be unprofitable if more than 33 per cent of consumers switched. On the other hand, if the marginal cost saved were zero, then a SSNIP of 10 per cent would be unprofitable if demand fell by more than 9 per cent. Below Ofcom presents its marginal cost/competitive price assumptions for retail broadband markets to derive the appropriate critical loss factors for the broadband products being considered.

Estimates of critical loss factor for broadband

- A8.16 In the November consultation, Ofcom noted that in order to estimate the marginal cost of supplying an asymmetric broadband internet access retail consumer, Ofcom would need to consider the underlying cost components in detail. Ofcom did not seek to model in detail each of these cost components but based its estimates on information available to it, which resulted in an approximate range of £4 to £8 per consumer per month for costs saved by ceasing to supply an individual consumer.
- A8.17 In the November consultation Ofcom used an estimated competitive price of £19.10 per month on which the SSNIP would then be applied⁹⁰. Comparing this to the estimated range of marginal costs of £4 to £8, Ofcom estimated that marginal costs as a percentage of current prices would be between 25 and 50 per cent for retail consumers.
- A8.18 The estimated proportion of marginal costs to prices and the assumed level of the SSNIP allow Ofcom to calculate the critical loss factor. Ofcom's estimates of prices and costs for the SSNIP of 10 per cent to be unprofitable this would suggest that demand needs to fall by more than 12 per cent at the lower end of the range and 16 per cent at the higher end.
- A8.19 The November consultation noted that this estimated range did not seek to distinguish between residential and business consumers. However, Ofcom recognises that there is likely to be difference in the price and cost of serving the average business consumer relative to an average domestic consumer at the retail level. 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 broadband retail provision to SMEs.
- A8.20 However, for critical loss purposes the question is not whether the absolute price of business services is similar to residential but the relative difference between business broadband prices and the costs of providing those products are likely to be a similar level to the cost/price ratio for residential consumers respectively. Respondents to the November consultation did not highlight this as an issue, and in the absence of evidence to the contrary, Ofcom has assumed that the marginal cost to price ratio is not significantly different between business and residential consumers.
- A8.21 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, Ofcom considers the best estimate of the critical loss range for SMEs to be the same as the range estimated for residential consumers, i.e. 12 to 16 per cent.

Consumer survey results

- A8.22 As explained at the beginning of this Annex, consumers were asked about their likely switching behaviour following a 10 per cent increase based on the current broadband price they pay. Two different SSNIP scenarios A and B were presented to respondents to test whether they considered there are any substitutes to their current broadband service and how wide the market could potentially be defined. In

⁹⁰ Excluding VAT this would equate to £16.26, which would be the relevant price that a hypothetical monopolist would take into account when applying a SSNIP

scenario A residential ADSL, cable, narrowband and business ADSL consumers were asked what their response would be to a SSNIP on their current service. In scenario B a further SSNIP question was asked to those respondents that said that they would switch to an alternative service in response to a SSNIP. The respondents were asked what they would do in response to a SSNIP both on their current service and the service they said that they would switch to. The following sections set out the results of the consumer survey for these two scenarios.

Scenario A: price rise applied to current connection

- A8.23 In the consumer survey the questionnaire asked respondents for residential ADSL, cable, Narrowband and Business ADSL consumers what their response would be to a SSNIP on their current service (“scenario A”). The SSNIP was presented as a 10 per cent rise on their estimated price of their current service. Where they stated that they would switch to another way of accessing the internet other than their current connection type, the questionnaire asked them to indicate that alternative connection method.
- A8.24 Under scenario A, some consumers were unable to identify the price of their broadband connection, for example due to their broadband service being sold as part of a bundle (and not explicitly identified) or because those consumer were on certain service bundles where the broadband service is provided for “free”. In these circumstances, end-users were asked what their response would be to price rise of between £1.50 and £2.50 on their current connection, based on a broad estimate of the competitive price level for broadband products. The results of this survey are summarised in Table A8.1.

Table A8.1: Reaction of residential consumers to 10% SSNIP⁹¹

Reaction	Residential			Business
	ADSL only	Cable only	Narrowband	ADSL only ⁹²
Continue to use current service	73%	78%	65%	81%
Change to alternative way of accessing the internet	19%	14%	28%	9%
Would look into other options/alternatives/look for cheapest	2%	2%	0%	2%
It would depend on package/depend on price	1%	1%	0%	1%
Other	0%	0%	0%	1%
Don't know	6%	5%	7%	5%

- A8.25 In relation to residential users, the survey evidence suggests that 73 per cent of residential ADSL and 78 per cent of cable would continue to use their current

⁹¹ The relevant base used for these calculations excludes certain non-ADSL consumers that were included as part of the ADSL sample. In addition, some respondents that named their current connection as the service they would switch to were asked further questions about switching to determine whether were likely to switch to an alternative way of accessing the internet or continue to use their current service. As a result the above switching rates and base reflect these adjustments.

⁹² Due to the relatively low numbers of business consumers with Cable broadband access these particular consumers were not targeted by the market researchers.

internet access connection. 19 per cent of ADSL and 14 per cent of cable said that they would change to an alternative way of accessing the internet. For both ADSL and cable, a further 3 per cent would “conditionally switch” if they could find a cheaper package or would look into alternative connections.

- A8.26 In relation to business users the survey evidence suggests that 81 per cent of business broadband consumers would continue to use ADSL access with 9 per cent stating that they would switch to an alternative service other than ADSL to access the internet. A further 3 per cent would “conditionally switch” if they could find a cheaper package or would look into alternative connections.
- A8.27 This suggests that 73 per cent of residential ADSL consumers; 81 per cent of business ADSL; 78 per cent cable consumers attach an average value to their broadband service of at least £21.01 (the current weighted average price, £19.10, plus 10 per cent).

Comparing critical loss factors to consumer survey results

- A8.28 Based on the calculations in this Annex, Ofcom has estimated the critical loss factors in the range of 12 to 16 per cent. These critical loss estimates can be compared to the consumer survey results on end-users likely switching behaviour in relation to a SSNIP. If the claimed switching is higher than the critical loss value this would suggest that a SSNIP would be unprofitable (indicating that the market could be wider than the focal product under consideration). Table A8.2 summarises these results and considers whether a SSNIP would be profitable.

Table A8.2: Scenario A: comparison of consumers’ demand responses to the critical loss

	Residential		Business
	ADSL	Cable	ADSL only
Change to alternative way of accessing the internet [1a]	19%	14%	9%
Switching including “conditional” switchers [1b]	22%	17%	12%
Critical loss range [2]	12-16%	12-16%	12-16%
Would SSNIP be profitable? [1a] < [2]	No	No	Yes

- A8.29 The results for residential consumers suggest that a SSNIP on the ADSL markets would be unprofitable. This would tend to indicate that the market is wider than ADSL. In the case of cable the switching rate falls within the critical loss range. The claimed switching behaviour of residential cable consumers would tend to suggest that the market is wider than cable.
- A8.30 In respect of the results from business consumers, although the proportion who said they would switch is below the critical loss range a further 3 per cent of ADSL would “conditionally switch” if they could find a cheaper package or would look into alternative connections.
- A8.31 It should also be noted that Ofcom’s earlier market research (reported in the November consultation) found a higher proportion of business consumers stating they were willing to switch. The earlier consumer survey evidence suggested that

80 per cent of business broadband consumers would continue to use broadband internet access with 16 per cent stating that they would switch to another way of accessing the internet. These results were suggestive that the market was wider and included ADSL and cable. As the results of this earlier business end-user research were not subject to the same concerns as residential consumers⁹³, this combined with the results of the current survey not yielding clear results on the profitability of the SSNIP, this does not indicate that the hypothesis that ADSL and cable are in the same market should be rejected.

A8.32 In addition, given the relative weights of business and residential consumers in the market, the results suggest that the level of switching is likely to be above the critical loss required for a SSNIP to be unprofitable. The combined results for business and residential consumers are discussed in the next section.

Combined residential and business results

A8.33 The above analysis reported the results of the end-user research for residential and business consumers separately. In this section, the results are combined by weighting the results by the volume of residential and business consumers. For the basis of this analysis, Ofcom has weighted the results in the ratio 80:20, which is broadly reflective of the volume of residential and business broadband consumers. However, Ofcom has also considered the sensitivity of the combined switching rates based on different weightings to ensure these results are robust to different scenarios.

Table A8.3: Combined residential and business results

Reaction	Combined Residential and Business ADSL⁹⁴
Continue to use current service	73%
Change to alternative way of accessing the internet	18%
Would look into other options/alternatives/look for cheapest	2%
It would depend on package/depend on price	1%
Other	0%
Don't know	6%

A8.34 The combined residential and ADSL results in Table A8.3 shows a switching rate of 18 per cent which is above the critical loss range. Therefore, a SSNIP on residential and ADSL market would be unprofitable suggesting that the market is wider than ADSL alone.

A8.35 Although Ofcom considers that the 80:20 weighting is representative of current residential and business volumes, it undertook further sensitivity analysis to ensure that the results were robust to a range of assumptions. If a 60:40 weighting was

⁹³ Namely, the large proportion of residential end-users that claimed they would stop using the internet in response to a SSNIP.

⁹⁴ Due to the relatively low numbers of business consumers with Cable broadband access these particular consumers were not targeted by the market researchers.

used instead then the implied switching rate would be 16 per cent, which is still at the top end of the critical loss range.

- A8.36 Indeed, it would require a residential market share of below 25 per cent before the implied switching rate would be sufficiently low to yield a SSNIP unprofitable (i.e. below the 12 per cent lower end of the critical loss range), which is well below the likely volume of residential lines.
- A8.37 Therefore, the combined results provide support ADSL and cable in the same market and are robust to changing assumptions.

Likelihood of switching

- A8.38 The analysis so far has considered switching results based on respondents that would consider switching. Under Scenario A, the questionnaire also asked respondents how likely they would be to switch in reality. The sensitivity of the above switching results when only “likely” switchers are included in the results is discussed below based on the results shown in Table A8.4.

Table A8.4: Scenario A: likelihood of switching

	Residential ADSL	Cable only	Business ADSL
Likely to switch (either certain to, Very likely or Fairly likely)	93%	100%	98%
Unlikely to switch (either fairly unlikely, very unlikely or certain not to)	7%	0%	2%
Don't know	0%	0%	0%

- A8.39 For residential ADSL and cable consumers, the vast majority would be likely to switch. For residential ADSL, 44 per cent would be certain to switch or very likely to switch and 49 per cent fairly likely to switch. Grouping these results together suggests around 93 per cent would be likely to switch. For cable, 100 per cent of those that would switch stated that they would be likely to do so in reality.
- A8.40 Adjusting the switching rates to only include those likely to switch would not impact on the conclusions that a SSNIP would be unprofitable for ADSL. By definition, as 100 per cent of cable would be likely to switch this would also leave the SSNIP results unchanged for cable.
- A8.41 For business ADSL consumers, 39 per cent stated that they were certain to or very likely to switch and 59 per cent were fairly likely to switch. Grouping these together suggests around 98 per cent of those who said they would switch would actually do so.
- A8.42 In summary, for both residential and business consumers, taking account of the likelihood of switching does not fundamentally change the results in either case.

Summary of results from Scenario A

- A8.43 For both residential ADSL and residential cable the switching rates based on “likely” switchers both show that a SSNIP would still be unprofitable. This is indicative that the market could be wider than either service alone.
- A8.44 For business ADSL the results from the latest survey are less clear. However if “conditional” switchers are included in the results or the results of the earlier survey are taken into account, they indicate that a SSNIP would be unprofitable suggesting the market is wider than ADSL alone.
- A8.45 More importantly where the residential and business ADSL results are combined to take account of relative market shares, the implied switching rates suggest the market is wider than ADSL. This is consistent with the market definition that includes both residential and business ADSL (as discussed in Section 3).

Switching preferences

- A8.46 The results described above are indicative of a retail market wider than either ADSL or cable alone. Following the standard approach to market definition the market is then widened to include the next closest product or service to the focal product and the HMT applied to both products together. In order to test this, the questionnaire asked respondents to name the service that they would switch to as shown in Table A8.5.

Table A8.5: Scenario A: potential substitute services

Nearest substitutes	1st	2nd
Business ADSL	Broadband via cable (22%)	Satellite or fixed wireless (16%)
ADSL	Satellite or fixed wireless (39%)	Broadband via cable (29%)
Cable	Satellite or fixed wireless (43%)	Broadband via ADSL (14%)
Narrowband	Broadband via ADSL (46%)	Broadband via cable (21%)

- A8.47 Both ADSL and cable users named satellite or fixed wireless as the broadband service they would switch to, suggesting that this is the closest substitute for ADSL or cable. The results also indicated that cable would be considered the next closest substitute for business ADSL consumers. For narrowband their closest substitute would be ADSL followed by cable.
- A8.48 Ofcom needs to consider the weight it should place on Satellite or Fixed wireless Broadband being considered the next closest substitute in preference to other fixed broadband services. This is because from a functional perspective both cable and ADSL could be considered as close substitutes. By contrast there are a number of other factors that suggest that it is unlikely that Satellite or Fixed wireless Broadband should be viewed as the next closest substitute either to ADSL or cable services:
- a) The price of retail residential satellite broadband is in the range of £55-£90 per month, which relative to the price of residential ADSL or cable broadband of £15-£25 per month this represents a significantly large differential. Even if functionally Satellite Broadband is similar to fixed Broadband ADSL or cable services, the price difference between Satellite and either ADSL or cable is

particularly significant and a £1.50 to £2.50 rise is unlikely to prompt switching to Satellite Broadband in preference to ADSL or cable.

- b) Respondents may have confused switching to satellite broadband with service bundles offered by players such as Sky, which combine Satellite Television packages with free broadband via ADSL. As such, respondents switching to Sky's broadband packages would remain on an ADSL service, which for the purpose of the HMT on ADSL would not be treated as switching. Likewise, for cable consumers this should be treated as switching to ADSL.
- c) Some respondents may have confused fixed wireless broadband connection with an ADSL or cable broadband connection where the end-user relies on associated wireless routers. This would not constitute switching between broadband access connections.
- d) The actual availability of fixed wireless broadband is considerably lower for residential consumers than considered by respondents. For example, approximately 45 per cent of respondents with ADSL connections considered either fixed wireless or satellite to be available⁹⁵.
- e) The consumer research recorded responses on likely switching to either Satellite or Fixed Wireless Broadband as one product category (i.e. respondents that said they would switch to Satellite Broadband and respondents that said they would switch to Fixed Wireless Broadband were recorded as one group). If the satellite and fixed wireless responses were treated as individual products instead, this could have suggested that the next closest substitute for ADSL services would have been cable and similarly cable for ADSL services.

A8.49 One of the concerns highlighted above is that residential consumers may have confused satellite broadband with satellite TV packages that are combined with broadband over ADSL. There may be further evidence to support this from the responses business ADSL users made to the same SSNIP questions. As the majority of business consumers would not be interested in satellite TV packages, any confusion over the meaning of satellite connections would be less significant (i.e. lower numbers would name satellite as a substitute on these grounds). This should mean that business consumers who named satellite broadband did so based on the actual service characteristics of a broadband satellite package. Indeed the results show that businesses first preference is for cable services as the next closest substitute to ADSL. This supports the view that residential consumers may have confused television packages bundled with ADSL for satellite broadband.

A8.50 Given the above concerns regarding the results of the consumer survey and the comparable pricing and function of ADSL and cable services Ofcom believes that these services should be selected as the next closest substitutes. It should be noted that in the first round of questions under Scenario A very few respondents named narrowband services.

A8.51 Scenario A only tested whether the market definition should be widened to include other services. For ADSL and cable, the results are indicative that a Broadband market definition that includes these services could be appropriate. However, it might be the case that respondents would switch to narrowband services if a SSNIP

⁹⁵ For most households they may have certain forms of wireless technologies in their locality such as WiFi hotspots/Metro Area Networks. However, as discussed in Annex 7 fixed wireless access is among alternative technologies that have so far been limited in impact in the broadband market.

were imposed on the wider ADSL and cable market. This final question, namely whether the consumer survey market should be widened further to include other broadband or narrowband services, is discussed below based on the second stage of questions presented to respondents under Scenario B.

Scenario B: testing for a wider market

A8.52 Scenario B asked a further SSNIP question for those respondents that said that they would switch to an alternative service in response to a SSNIP. The respondents were asked what they would do in response to a SSNIP both on their current service and the service they said that they would switch to. This question was included to reflect the possibility that some end-users may consider that there are potentially a number of good substitutes for their current connection method.

Table A8.6: Reaction of residential consumers to 10% SSNIP on wider market

Reaction	Residential		Business
	ADSL + next closest substitute	Cable + next closest substitute	ADSL + next closest substitute
Continue to use current service (or next closest substitute)	88%	94%	89%
Change to alternative way of accessing the internet (other than current or next closest substitute)	3%	1%	2%
Other	1%	0%	0%
Don't know	8%	5%	9%

A8.53 In relation to residential users the survey evidence suggests that 88 per cent of residential ADSL and 94 per cent of cable would continue to use their current internet access connection or their next closest substitute. Only 3 per cent of ADSL and 1 per cent of cable said that they would change to an alternative way of accessing the internet other than their current connection or the next closest substitute that they identified under Scenario A.

A8.54 In relation to business users the survey evidence suggests that 89 per cent of business broadband consumers would continue to use ADSL or the next closest substitute that they identified under Scenario A with only 2 per cent stating that they would switch to an alternative service to access the internet other than the one they identified under Scenario A.

A8.55 Hence, the Scenario B results show that the market should not be defined any wider than suggested by Scenario A. This applies for the results from either residential or business users. Hence, combining the results for residential and business would clearly yield the same conclusion. In other words the relevant residential and business broadband market should not be widened to include other potential services such as narrowband internet access.

Interaction of narrowband and broadband markets

- A8.56 The results of the residential consumer survey suggest that a broadband market exists that potentially includes ADSL and cable products. Analysis of switching in response to a SSNIP on a wider broadband market under Scenario B suggested that a SSNIP would be profitable. In other words, on the basis of end-user research, starting from ADSL or cable the market should be widened to include the next closest substitute but should not be defined any wider than this. Based on the Ofcom's assumptions this is indicative that the market might not be wider than ADSL and cable.
- A8.57 This suggests that we need not consider further the narrowband market as it would not provide a competitive constraint on a hypothetical monopolist of ADSL and cable services. However, some account may need to be taken of certain narrowband consumers planning to migrate to broadband (as these are prospective ADSL or cable consumers). This issue was raised by BT in its response to the November consultation and is explained further below.
- A8.58 Our survey evidence shows that there are indeed a number of narrowband consumers planning to migrate from narrowband to broadband in the next year or so (and this is further supported by observed market data). Given that there is still continuing migration from narrowband to broadband (albeit at a declining rate), it is still relevant to consider the interaction between narrowband and broadband markets as a hypothetical monopolist is likely to take into account narrowband consumers prospective migration to broadband. These migration effects are discussed further below.

Accounting for existing and potential new consumers

- A8.59 The critical loss calculations set out previously in this Annex considered reduction in demand that would make a SSNIP unprofitable, measured only with respect to the potential loss in demand from existing consumers of the focal product. However, as discussed above, it may be relevant also to consider the impact of a SSNIP on potential new consumers for broadband, particularly for narrowband consumers planning to migrate to broadband services. This is because new consumers for broadband services are a potentially important source of new revenue for a hypothetical monopolist.
- A8.60 If a hypothetical monopolist were to impose a SSNIP, this could result in a number of new consumers (and therefore new sources of revenue) being deterred from taking up broadband if the price is now higher. Prospective new consumers potentially migrating to broadband in the near future should therefore arguably be factored into any critical loss calculations.
- A8.61 Looking at the trends in retail broadband markets, it can be seen a number of consumers have migrated from other ways of accessing the internet to broadband in recent years. Our previous consumer research conducted in 2006 suggested that the majority of consumers previously had another way of accessing the internet (mainly dial-up connections). On the other hand around 45 per cent of business and 38 per cent of residential consumers did not previously use another way of accessing the internet prior to installing their broadband connection.
- A8.62 Based on the results from our most recent survey, 23 per cent of narrowband consumers surveyed were certain to or very likely to change the way they access the internet in the next 12-18 months and a further 18 per cent were fairly likely to.

59 per cent said that they would switch to ADSL and 17 per cent to cable (i.e. around 75 per cent of respondents stated that they were planning to switch to some form of broadband connection).

A8.63 When asked what their response would be to a SSNIP on the service they were planning to switch to, 25 per cent of those narrowband consumers planning to switch to broadband said they would instead stay on their current connection and 59 per cent would continue to switch to broadband.

A8.64 Given current levels of broadband and narrowband penetration, Ofcom research⁹⁶ suggests 79 per cent of adults who access the internet at home⁹⁷ do so via a broadband connection and 21 per cent via dial-up. Hence a hypothetical monopolist of broadband will consider how the impact of a SSNIP on broadband would affect the 79 per cent of the market currently on broadband plus a proportion of the 21 per cent of the market that are narrowband consumers that are planning to migrate to broadband in the next 12-18 months.

Potential migration away from broadband services

A8.65 The above discussion focused on consumers potentially migrating to broadband services. Equally if there are other consumers that were already planning to migrate away from broadband within the 12 month period then a SSNIP on their broadband connection is likely to reinforce these switching intentions. However, it should be noted that even in the absence of the price rise on their current connection this intended switching behaviour would still have occurred. Therefore, it might be incorrect to include the responses of consumers who have already made up their mind to change to another way of accessing the internet in the next 12 months. This means that the SSNIP analysis should capture changes in behaviour that solely occur in response to that hypothetical price increase.⁹⁸

A8.66 Therefore, the appropriate base of consumers over a particular period includes:

- all relevant existing broadband consumers
- PLUS the flow of new consumers anticipated in the next 12 months
- LESS any consumers already very likely to migrate away from broadband in the next 12 months.

A8.67 For the purpose of simplifying the analysis of migration to and from broadband, Ofcom has only considered this with reference to ADSL and narrowband. (i.e. based on the results of residential ADSL consumers' intended migration and potential migration to ADSL by narrowband consumers). These adjustments are set out in Table A8.7.

⁹⁶ http://www.ofcom.org.uk/research/cm/broadband_rpt/broadband_rpt.pdf

⁹⁷ As of Q4 2006, approximately 63% of adults had an internet connection at home.

⁹⁸ It should be noted that this migration itself may have been in response to relative price or quality changes; analysis of the reasons why consumers are migrating is however a different exercise to SSNIP analysis, which seeks to address likely responses to changes in relative prices. For the purpose of SSNIP analysis it is relevant to exclude them from this analysis as their intended switching behaviour would have likely occurred even in the absence of changes in relative prices.

Table A8.7: Reaction of residential ADSL consumers to 10% SSNIP including potential joiners and excluding potential leavers

Reaction to SSNIP	Residential consumers planned course of action			Implied Percentages
	Existing ADSL consumers	Less ADSL already intending to switch away*	Plus narrowband intending to switch to ADSL	
Total base	361	343	365	
Continue to use or switch to ADSL	260	260	275	75%
Switching from ADSL	68	50	57	16%
Other	11	11	11	3%
Don't know	22	22	22	6%

*Based on those ADSL consumers that stated they were certain to or very likely to switch to another (non-ADSL) service in the next 12-18 months.

- A8.68 Once potential leavers from ADSL and joiners to ADSL (from narrowband) are excluded or included respectively from the overall base of ADSL consumers, the end-user research still tends to show that the market is wider than ADSL (i.e. the 16 per cent switching rate is above the mid-point of our critical loss range of 12-16 per cent).
- A8.69 The net impact of adjusting results from the consumer survey to include potential leavers and joiners is that the overall switching rates marginally fall. If the analysis only considered potential new consumers (i.e. those planning to switch from narrowband to ADSL), the overall impact is still relatively small⁹⁹. The key conclusion from this analysis is that any differences in implied switching rates are sufficiently small that they are unlikely to alter our conclusions on market definitions.
- A8.70 In addition, on a forward looking basis, as the broadband market matures the overall migration rates are likely to slow, which if anything would mean that any migration effects from narrowband are likely to become less important.

Conclusions

- A8.71 The above residential consumer survey results suggest that the broadband market is wider than ADSL or cable alone. Although a significant number of end-users claimed that they would switch to satellite and wireless broadband as the next closest substitute, based on price and functional comparisons, Ofcom considers that cable and ADSL are in fact the relevant substitutes.
- A8.72 Although the business end-user results suggested somewhat lower rates of switching, this result is sensitive to the assumptions used and it is significant that out of the consumers that would switch, cable would be considered the next closest substitute. This latter result is consistent with the results of our earlier consumer survey, which clearly placed cable and ADSL in the same market. Furthermore, as the market definition in Section 3 does not treat residential and business consumers as separate markets the relevant comparison should be with respect to switching

⁹⁹ The implied switching rate would rise to 20 per cent, which is a one percentage point higher than the switching rate implied by our earlier analysis in table A4.3.

for both residential and business consumers, which would tend to suggest a wider market that includes cable. When the residential and business results are combined they show that the market is wider than ADSL and are robust to different weighting assumptions.

- A8.73 For both residential and business end-users, narrowband would not provide a competitive constraint on the price of broadband. In other words the end-user research is indicative that the market is only as wide as ADSL and cable.

Critical loss derivation

- A8.74 The critical loss measures the percentage reduction in demand to a given SSNIP that would leave profits unaffected. Hence, a larger loss of demand than the critical loss factor would make a SSNIP unprofitable.

- A8.75 In order to calculate the critical loss it is necessary to look the change in profits following a SSNIP. The change in profit equals the change in revenue less the marginal costs saved (assuming constant marginal cost, c):-

$$\pi_1 - \pi_0 = p_1 q_1 - p_0 q_0 - c(q_1 - q_0) \quad (1)$$

where:

π is profit, c is 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

$c \equiv \alpha p_0$ i.e. α is the ratio of marginal cost to the initial price

- A8.76 Substituting these definitions in (1), specifying $\pi_1 - \pi_0 < 0$ and rearranging gives the critical loss:-

$$\tilde{L} < -\frac{s}{1+s-\alpha} \quad (2)$$

Examples

- A8.77 The examples below provide indicative values for critical loss based on a 10% SSNIP and different marginal cost assumptions. Marginal costs are based on that identified above $c \equiv \alpha p_0$ (i.e. marginal costs are expressed as a percentage of initial prices).

Table A8.8: Indicative critical loss for 10% SSNIP based on different cost assumptions

	A	B	C	D
Marginal cost assumption	$c = 0\% \times p_0$	$c = 50\% \times p_0$	$c = 60\% \times p_0$	$c = 70\% \times p_0$
Critical loss (\tilde{L})	-9.1%	-16.7%	-20%	-25%

Annex 9

Ofcom's Consultation Principles

A9.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A9.2 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

A9.3 We will be clear about who we are consulting, why, on what questions and for how long.

A9.4 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 version for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A9.5 We will normally allow ten weeks for responses to consultations on issues of general interest.

A9.6 There will be a person within Ofcom who 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. This individual (who we call the consultation champion) will also be the main person to contact with views on the way we run our consultations.

A9.7 If we are not able to follow one of these principles, we will explain why. This may be because a particular issue is urgent. If we need to reduce the amount of time we have set aside for a consultation, we will let those concerned know beforehand that this is a 'red flag consultation' which needs their urgent attention.

After the consultation

A9.8 We will look at each response carefully and with an open mind. We will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 10

Consultation Cover Sheet

- A10.1 In the interests of transparency, we will publish all consultation responses in full on our website, www.ofcom.org.uk, unless a respondent specifies that all or part of their response is confidential. We will also refer to the contents of a response when explaining our decision, without disclosing the specific information that you wish to remain confidential.
- A10.2 We have produced a cover sheet for responses and would be very grateful if you could send one with your response. This will speed up our processing of responses, and help to maintain confidentiality by allowing you to state very clearly what you don't want to be published. We will keep your completed cover sheets confidential.
- A10.3 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 cover sheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A10.4 We strongly prefer to receive responses in the form of a Microsoft Word attachment to an email. Our website therefore includes an electronic copy of this cover sheet, which you can download from the 'Consultations' Section of our website.
- A10.5 Please put any confidential parts of your response in a separate annex to your response, so that they are clearly identified. 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 do not have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: **Review of the wholesale broadband access markets 2006/07**

To (Ofcom contact): **David Clarkson**

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

What do you want Ofcom to keep confidential?

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

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response. It can be published in full on Ofcom's website, unless otherwise specified on this cover sheet, and I authorise Ofcom to make use of the information in this response to meet its legal requirements. 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 11

Consultation Questions

A11.1 Within this consultation document Ofcom has identified five key questions that it would like stakeholders to consider. These questions are listed below:

Question 1: Do respondents have any comments, additional to those made in their responses to the November consultation, on Ofcom's approach and conclusions on market definition as set out in Section 3 of this document?

Question 2: Do respondents have any comments, additional to those made in their responses to the November consultation, on Ofcom's proposed market power findings for the Hull area, Market 1 or Market 2?

Question 3: Do respondents agree with the approach set out by Ofcom for its market power assessment in Market 3 and its conclusion that there is no-SMP?

Question 4: Do respondents have any comments, additional to those made in their response to the November consultation, on Ofcom's proposed regulatory remedies for the Hull area Market 1 or Market 2?

Question 5: Do respondents agree with Ofcom's proposals in relation to providing affected parties with a period of notice prior to the removal of certain SMP services conditions in Market 3? In particular do respondents agree with the proposed notice period and the proposed SMP service conditions to which the notice period applies?

Annex 12

Respondents to the November consultation

1. BT
2. Cable & Wireless
3. Colt
4. Gauntlett, Mr R
5. KCOM (previously named Kingston Communications)
6. Kemp, Mr D
7. Myers, Mr M
8. O2
9. Pearson, Mr R
10. Scottish Executive
11. Soulsby, Mr J
12. Thompson, Mr P
13. Thus
14. Tiscali
15. Torpey, Mrs M E
16. Trout, Mr J
17. Viatel
18. Welsh Assembly Government
19. Wright, Mr A

Ofcom also received seven confidential responses and an additional four responses from individuals who wish to remain unnamed.

Annex 13

Glossary

ADSL	Asymmetric Digital Subscriber Line
ASC	Active Street Cabinet
ATM	Asynchronous Transfer Mode
BT	British Telecommunications
DP	Delivery Point
DSLAM	Digital Subscriber Line Access Multiplexer
EC	European Commission
ERG	European Regulators Group
GIS	Geographical Information System
HMT	Hypothetical Monopolist Test
IP	Internet Protocol
IRG	Independent Regulators Group
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LLU	Local Loop Unbundling
MDF	Main Distribution Frame
NRA	National Regulatory Authority
PLT	Powerline Technology
PPC	Partial Private Circuit
PSTN	Public Switched Telephone Network
SDSL	Symmetric Digital Subscriber Line
SOHO	Small Office / Home Office
SMP	Significant Market Power
SSNIP	Small but Significant Non-transitory Increase in Price
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network