



Review of the wholesale broadband access markets

Final explanatory statement and notification

Statement

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Section 1

Summary

Introduction

- 1.1 Broadband plays a central role in communications. It is now used by many residential and business consumers to keep in touch, access information and conduct business. Broadband now reaches the majority of households and businesses in the UK and this has been reflected in widespread take-up (there are now more than 16 million broadband connections in the UK). Competition, meanwhile, has seen providers differentiating their service offerings in terms of price, speed, quality and increasingly in terms of product bundles. 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 In the 2005 Strategic Review of Telecoms, Ofcom identified that competition based upon infrastructure tends to give the greatest benefits in terms of the mix of lower prices and faster innovation that residential and business consumers want. Ofcom, therefore, considers that competition between networks based on local loop unbundling (LLU) is crucial to maintaining the UK's broadband progress.
- 1.3 However, as recognised in the 2005 Strategic Review of Telecoms, LLU is unlikely to be successful in all parts of the UK. This means that in some geographic areas there is unlikely to be direct competition between broadband networks. In these areas regulation at the wholesale level is necessary to ensure that consumers can choose between differing retail offers. Conversely, in areas which benefit from competition between networks, Ofcom must seek to remove unnecessary regulation.

Regulatory decision

- 1.4 Having considered all responses to the November 2006 and November 2007 consultation documents Ofcom is setting out its final decision in this statement. This is summarised below.
- 1.5 Ofcom has identified asymmetric broadband access as being the product relevant to this review. At the current time products based on ADSL and cable technologies dominate the wholesale broadband access market.
- 1.6 Ofcom's analysis of the wholesale broadband access market has shown that competition is maturing at different rates across the UK. In the majority of the UK consumers have access to at least four wholesale broadband providers. In contrast, in some areas competition has not yet developed and consumers in these areas only have access to one wholesale provider. These stark differences in competition have resulted in Ofcom identifying four separate geographic markets:
- i) the Hull area; those areas covered by exchanges where KCOM is the only operator. This market covers 0.7% of UK premises.
 - ii) Market 1; those areas covered by exchanges where BT is the only operator. This market covers 16.4% of UK premises.

- iii) Market 2; those areas covered by exchanges where there are 2 or 3 operators. This market covers 13.7% of UK premises.
 - iv) Market 3; those areas covered by exchanges where there are 4 or more operators. This market covers 69.2% of UK premises.
- 1.7 Having identified the product and geographic scope of the market(s) Ofcom was required to assess each market in turn to determine whether any operator or group of operators holds a position of significant market power (SMP). Ofcom has concluded that:
- KCOM holds a position of SMP in the Hull area;
 - BT holds a position of SMP in Market 1;
 - BT holds a position of SMP in Market 2; and
 - No operator holds a position of SMP in Market 3.
- 1.8 Given these findings of SMP Ofcom has decided to impose the following regulatory obligations on KCOM in the Hull area and on BT in both Market 1 and Market 2.
- Requirement to provide Network Access on reasonable request
 - Requirement not to discriminate unduly
 - Requirement to publish a reference offer
 - Requirement to notify charges, terms and conditions
 - Transparency as to quality of service
 - Requirement to publish technical information
 - Requirement to account separately
- 1.9 Given the finding of no-SMP in Market 3, no *ex-ante* regulatory remedies will apply in this market. However, Ofcom is requiring a 12 month notice period for customers who have existing contracts with BT, so that they can continue to operate while they make any necessary alternative arrangements.
- 1.10 All existing regulatory remedies that stem from the previous wholesale broadband access market review will cease to apply.

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 2003¹ 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 edition². In addition the Commission has

¹ (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

² 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”)³.

- 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 are no longer appropriate and need revising. Ofcom therefore considered that it had to 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 significant market power (“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”⁴ (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.

³ 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)

⁴ 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. Oftel produced additional guidelines on the criteria to assess effective competition based on the SMP Guidelines⁵.
- 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.

Regulatory remedies under the 2003/04 Review

- 2.13 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.
 - 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 imposed 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. See the final explanatory statement and notification of the 2003/04 Review, published on 13 May 2004 for the full details⁶.

The November 2006 consultation and the November 2007 consultation

- 2.16 The market definitions identified in the 2003/04 Review were heavily influenced by the network topology, its underlying technology and the services that Communications Providers were demanding at that time. However, as explained in the consultation documents entitled; Review of the wholesale broadband access markets 2006/07, published on 15 November 2006 ("the November 2006 consultation")⁷ and on 21 November 2007 ("the November 2007consultation")⁸, Ofcom considers that each of these factors will change in the period covered by this review.
- 2.17 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

⁵ www.ofcom.org.uk/static/archive/oftel/publications/about_oftel/2002/smpg0802.htm

⁶ www.ofcom.org.uk/consult/condocs/wbamp/wholesalebroadbandreview/broadbandaccessreview.pdf

⁷ <http://www.ofcom.org.uk/consult/condocs/wbamr/wbamr.pdf>

⁸ www.ofcom.org.uk/consult/condocs/wbamr07/wbamr07.pdf

protocol (IP), which are capable of providing much 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. 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. For instance, local loop unbundling (LLU) is now widely used in some geographic areas, whereas wholesale broadband access is still used exclusively in other geographic areas.

- 2.18 The combination of these developments has led Ofcom to conclude 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 2007 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 rebates 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. BT extended the number of qualifying exchanges to 1016 on 1 May 2007. On 1 April 2008 BT modified the criteria it was using to determine qualifying exchanges. This resulted in some of the 1016 exchanges no longer qualifying for the rebate and some other exchanges being added to the qualifying list. The net effect of these changes was that the number of qualifying exchanges increased to 1025 on 1 April 2008.
- 2.22 At the retail level, providers such as; AOL, O2, Orange, Sky, TalkTalk and Tiscali, all 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 Further, Ofcom considers that competition at the wholesale level is stronger in some geographic areas than it is 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 use 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 Ofcom considered it necessary to carry out a detailed analysis of competition in the provision of wholesale broadband access to understand whether the conclusions reached in the 2003/04 Review were still valid.
- 2.25 Ofcom's preliminary view, which was set out in the November 2006 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 Taking into account all the responses to the November 2006 consultation Ofcom carried out further analysis of competition in the provision of wholesale broadband access. Whilst some respondents were nervous about the prospects of geographic markets in general and the potential de-regulation of BT in some areas in particular, Ofcom considered that the available evidence clearly indicated that this is the direction that the market is heading. Indeed, between the November 2006 consultation and the November 2007 consultation competition had both expanded geographically and intensified.
- 2.27 In the November 2007 consultation Ofcom set out a full set of proposals and a draft notification. Ofcom proposed the identification of four geographic markets; the Hull area, Market 1, Market 2 and Market 3. Ofcom proposed to find KCOM to hold a position of SMP in the Hull area and BT to hold a position of SMP in both Market 1 and Market 2. Ofcom proposed to find no-SMP in Market 3. Based on these SMP findings Ofcom proposed to impose a number of regulatory remedies on KCOM in the Hull area and a number of regulatory remedies on BT in both Market 1 and Market 2.
- 2.28 The November 2007 consultation was also sent to the European Commission in accordance with Article 7 of the Framework Directive and section 50 of the Act.
- 2.29 The closing date for responses to the November 2007 consultation was originally specified as being 7 February 2008. However, this was extended by one week to 14 February 2008 at the request of several stakeholders.

Responses to the November 2007 consultation

- 2.30 Ofcom received a number of responses to the November 2007 consultation from a broad range of stakeholders. Ofcom has given careful consideration to the comments made by respondents and this is set out in detail in the relevant sections of this statement.

Comments from the European Commission

- 2.31 Under the Article 7 process, which ran in parallel with the November 2007 consultation, the European Commission requested additional information from Ofcom, which Ofcom duly provided. On the 14 February 2008 the European Commission, pursuant to Article 7(3) of the framework Directive, issued a comments letter on Ofcom's notification⁹. Whilst the European Commission did not raise any objections to Ofcom's approach it did make a number of comments. In particular the European Commission invited Ofcom to:
- "...verify when adopting the final measure whether its assessment of market shares of various market participants takes proper account of indirect constraints."¹⁰
 - "...further substantiate in its final measure its aggregation of geographic "units" in its proposed "markets", based on the detailed information submitted in its replies to requests for information and in particular with reference to the distribution and evolution of market shares and pricing within different geographic areas in accordance with competition law principles, as discussed in section III above"¹¹
- 2.32 Ofcom has taken the utmost account of the European Commission's comments in its approach and has specifically addressed each of the two points above in this statement, see paragraphs 4.37 to 4.41 and Annex 4.
- 2.33 During discussions with the European Commission, under the Article 7 process, Ofcom made a commitment to monitor carefully the progress of competition in all the Market 3 exchange areas and to conduct a further market review if market developments call into question the assumptions underlying Ofcom's forward looking analysis. In its comments letter the European Commission welcomed this commitment. However, it also invited Ofcom to continue to monitor LLU investment and to conduct a further review of the market should an appreciable change in the level of LLU investment and competition occur. Ofcom is committed to doing this.

Outline of this document

- 2.34 This statement should be read in conjunction with the November 2006 consultation and the November 2007 consultation to understand the full reasoning for Ofcom's decision. The rest of this document is structured as follows:
- Section 3 Market Definition
 - Section 4 Market Power Assessment
 - Section 5 Regulatory Remedies
 - Annex 1 Notification
 - Annex 2 Geographic Data Analysis

⁹ http://circa.europa.eu/Public/irc/info/ecctf/library?l=/uk/registeredsnotifications/uk20070733/uk-2007-0733_actepdf/EN_1.0_&a=d

¹⁰ Page 9

¹¹ Page 12

- Annex 3 Assessment of December 2007 data
- Annex 4 Distribution and evolution of service shares
- Annex 5 Competition in the Hull area
- Annex 6 Respondents to the November 2007 Consultation
- Annex 7 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 assessment of market power is 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.

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-side 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 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, the Explanatory Memorandum and the SMP Guidelines and considers that the market definition proposed is consistent with the approach set-out in these documents.

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 frame¹² (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 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 substitutions 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.

¹² 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

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 to the retail service will cause retail customers to switch retail products, thus reducing demand for the wholesale input.
- 3.21 In the current review it was 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 some of the characteristics of the market for wholesale broadband access services. In some cases the wholesale service is used as an input to markets that are defined as separate at the retail level. Ofcom took 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 Memorandum¹³.
- 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 products¹⁴ 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.

¹³ Section 2.2 (without *ex-ante* regulation)

¹⁴ 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/>).

Retail market definition

3.24 In the November 2007 consultation Ofcom set out the following proposed retail product definition:

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.

3.25 In making this proposal Ofcom considered that:

- i) cable-based and ADSL-based broadband internet access services are in the same relevant economic market;
- ii) narrowband and broadband internet access services are in separate economic markets;
- iii) mobile and fixed broadband internet access services are in separate economic markets;
- iv) symmetric and asymmetric broadband internet access services are in separate economic markets; and
- v) residential and business broadband internet access services are in the same relevant economic market.

3.26 Whilst there has recently been an increase in the propensity for retail providers to provide broadband access as part of a bundle of services, consumers are generally able to unpick the bundle and purchase broadband separately from another provider. Ofcom, therefore, does not believe that broadband when combined with other services constitutes a separate retail market.

3.27 Consumers are increasingly being offered broadband access products and prices that are only available in selected areas. The existence of geographic variations in product offerings and prices suggests that geographic markets are emerging at the retail level. However, it is not necessary for Ofcom to identify the precise geographic definition of the retail market in concluding this review.

3.28 The full assessment of Ofcom's retail market definition is given in paragraphs 3.24 to 3.116 of the November 2007 consultation.

Wholesale market definition

3.29 In the November 2007 consultation Ofcom set out the following proposed wholesale broadband access product definition:

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

3.30 Ofcom believes that the wholesale market includes both ADSL and cable-based access, even though cable operators do not generally offer a wholesale broadband

access service to other operators. This is because substitution at the retail level provides an indirect constraint on the pricing of wholesale products. An increase in a wholesale charge (eg for ADSL) which was passed through to retail customers would lead to some end-users switching from the service whose price has risen to the substitute service (in this case cable) at the retail level. Provided the scale of such switching is sufficient to render the price increase unprofitable, as is likely given that the retail services are close substitutes, the two wholesale services should be regarded as part of a single market.

- 3.31 The importance of indirect constraints is discussed in detail in paragraphs 3.154 to 3.184 of the November 2007 consultation.
- 3.32 Ofcom concluded that the market included wholesale inputs required to support the provision of services to both business and residential consumers primarily because at the wholesale level the services used in the two cases are for all intents and purposes identical. This reasoning was set out in paragraphs 3.92 to 3.102 of the November 2007 consultation. However, as it has been a major topic in responses to the consultation, it is discussed in greater detail below, see paragraphs 3.44 to 3.67.
- 3.33 Ofcom's assessment of the geographic scope of the markets concluded that there were four separate wholesale broadband access markets, as follows:
- i) the Hull area - those geographic areas covered by exchanges where KCOM is the only operator;
 - ii) Market 1 - those geographic areas covered by exchanges where BT is the only operator;
 - iii) 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
 - iv) 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.
- 3.34 When determining the geographic scope of the market Ofcom considered that the absence of demand-side and supply-side substitution between areas was likely to lead to very narrow geographic markets which would be impractical as a basis for analysing competitive conditions. Further, Ofcom considered that it was not appropriate to broaden the market based on a common pricing constraint at the wholesale level. Ofcom has therefore identified the geographic scope of the market(s) in a way consistent with the EC guidelines by focussing on the homogeneity of competitive conditions. Thus, areas where the conditions of competition are sufficiently homogeneous are grouped together for the purpose of the assessment.
- 3.35 After considering numerous options Ofcom decided to use the geographic area covered by BT's local telephone exchanges as the basic geographic unit for the analysis. This is the natural unit to use in this case because of the importance of LLU operators to competition in wholesale broadband access markets. LLU operators place their own equipment in BT's exchanges to provide wholesale and retail broadband services to customers connected to that exchange. Once an LLU operator

has entered a particular exchange area, the nature of LLU costs mean that it will have an incentive to compete for all the customers connected to that exchange. This leads to a natural homogeneity of competitive conditions within the exchange area, and a material difference to other exchange areas where unbundling has not taken place to a similarly material extent.

- 3.36 For this reason, Ofcom has also used the number of Principal Operators present in each exchange area as a key indicator of competitive conditions. For the forward looking part of the analysis, Ofcom decided to use the number of Principal Operators present and the exchange size (i.e. number of premises served by the exchange) when determining the similarity in competitive conditions. The size of the exchange indicates its attractiveness to potential future unbundlers.
- 3.37 Ofcom considers that a Principal Operator is any operator that is expected to provide a material constraint in the market, either directly or indirectly. Ofcom identified a total of eight Principal Operators; the incumbent operator BT, the cable operator Virgin Media and six LLU operators (referred to as Principal LLU Operators). All of these operators are active in the provision of wholesale broadband access services and all have significant coverage of the UK (above 45 %).
- 3.38 The full assessment of Ofcom's wholesale market definition is given in paragraphs 3.117 to 3.297 of the November 2007 consultation.
- 3.39 The November 2007 consultation asked the following question:

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?

Respondents' comments

Retail market definition

- 3.40 A number of respondents to the November 2007 consultation questioned Ofcom's proposal to define a single retail broadband internet access market which includes both residential and business services. Most of these respondents accept that general residential and business broadband internet access are in the same retail market, but consider that 'higher' quality broadband services, which are typically used by large businesses to provide connectivity between business sites, are in a separate retail market. One respondent however suggests that there could be three separate retail markets; residential internet access, business internet access and services aimed at large business users.
- 3.41 The main arguments put forward by respondents in support of a separate retail market for 'higher' quality broadband services are:
- i) large business users demand higher quality products (e.g. lower contention ratio) and would be unwilling to accept a lower quality product (e.g. those typically used by the more general business customers);
 - ii) services aimed at large business users have a higher retail price;
 - iii) large business users demand higher service/care levels; and

- iv) large business users use asymmetric broadband access services to connect remote sites into a 'closed-VPN' rather than to directly access the internet.

Wholesale market definition

- 3.42 Several respondents have questioned Ofcom's proposal to define a single wholesale market for asymmetric broadband access which includes both residential and business services. Whilst there is a general view amongst these respondents that separate residential and business markets exist at the wholesale level, very little rationale and evidence has been provided to support this.
- 3.43 Two respondents suggest that the scope of the wholesale market is directly derived from the retail level. One respondent states that separate wholesale markets exist for much the same reasons as the retail market and the other states that differences at the retail level translate to significant differences at the wholesale level.

Ofcom's response

- 3.44 It is clear that the key market definition issue for many respondents is whether there is a separate market for a "high-end" broadband product for business users. Because this appears to be of some importance, Ofcom has given the points made by respondents particularly careful consideration, and discusses them in some detail in this section before other points made by respondents are discussed.
- 3.45 Ofcom notes that the arguments advanced by respondents largely concern retail markets and so are relevant to this review of the wholesale broadband access market only to the extent that this is dependent on the retail market definition. Moreover, even if Ofcom were to accept that the points made have some validity in relation to the retail market it would not necessarily follow that higher quality retail broadband services should be regarded as a separate economic market to other retail broadband services. And even if such a market were to be defined at the retail level, it would not follow automatically that this should be mirrored in the wholesale market definition.
- 3.46 Bearing this in mind, Ofcom addresses issues relating to wholesale market definition first, before considering retail market definition.

Wholesale market definition

- 3.47 As discussed below, Ofcom does not believe that separate markets exist at the retail level. Further, Ofcom believes that in this case the wholesale market definition does not in fact depend on the retail definition. In general, the boundaries of wholesale product markets are at least as broad as the boundary of the corresponding retail market and can be broader if direct substitution at the wholesale level is possible. As such it could well be the case that even with narrow retail markets, a broad wholesale market would exist.
- 3.48 Ofcom considers that in the case of broadband there is likely to be less market distinction at the wholesale level compared with the retail level. This is largely due to supply-side considerations at the wholesale level. Ofcom summarised its reasoning for this view in paragraphs 3.185 to 3.187 of the November 2007 Consultation. However, this has been expanded on below.
- 3.49 Ofcom's view is that the wholesale inputs used to support residential and business users are basically the same because of the way in which these wholesale services

are provided. If we consider an ADSL provider for example, then the same ADSL line card is used to support both residential and business services. Further the DSLAM that the ADSL line card is plugged into is capable of supporting both residential and business services (including business services of the highest available quality) as is the backhaul connection from the DSLAM. A wholesale ADSL provider is thus equally able to provide the whole range of residential and business asymmetric broadband access services. Therefore, it is reasonable to assume that a wholesale provider who is only supplying (say) residential services could readily (i.e. within 12 months) start offering business services in response to a SSNIP.

- 3.50 Because the inputs into residential and business services are the same, Ofcom has concluded that the underlying costs of providing these services are identical. This is not to say that all wholesale products will have the same cost but rather the unit input costs are the same. Clearly, if a particular wholesale product is configured to be higher quality, for example by allocating more network resources to it and/or giving it priority over other services, then it is likely that the costs of provisioning this higher quality product would be higher. Thus, any cost differences at the wholesale level are not to do with different inputs but rather a different configuration or greater quantity of the same inputs.
- 3.51 At the wholesale level Ofcom therefore believes that suppliers have control of the service characteristics and are able to configure services to suit different customers' needs. To check this view Ofcom requested information from the Principal LLU Operators about the type of services they intend to provide over their LLU-based network and whether they currently deploy different networks (e.g. DSLAM, backhaul connection) to guarantee distinctive quality of service levels. The responses from the Principal LLU Operators are summarised below:
- None of them deploy different networks to guarantee different levels of service quality.
 - Three of them stated that they currently had sufficient backhaul capacity to support a broad range of service qualities without the need for any immediate upgrades or traffic management.
 - Two of them stated that they currently provide products with different service quality levels by using separate VLANs within a common backhaul link.
 - One stated that it has deployed appliances to manage traffic at peak times based on the applications used by the end users. Another stated that it uses hierarchical traffic shaping at the Broadband Remote Access Server (BRAS) to ensure service quality. Two others stated that whilst it is currently not necessary for them to prioritise traffic they are developing such mechanisms.
- 3.52 From the information provided by the Principal LLU Operators it is apparent that suppliers operating at the wholesale level tend to have a single platform which is capable of supporting a wide range of services (high contention to very low or no contention). Ofcom therefore concludes that a wholesale provider who is only supplying (say) residential services could readily (i.e. within 12 months) start offering business services in response to a SSNIP.
- 3.53 Further, and in the light of this, Ofcom does not believe that there is any reason to assume that the scope of the wholesale market is directly derived from the retail level, as suggested by two respondents. Indeed, Ofcom believes that there is likely to be significantly less distinction at the wholesale level compared to the retail level.

This view actually seems to be supported by the information provided by one of the respondents.

- 3.54 In arguing that separate retail markets exist, one respondent provided a table showing the three retail product families that it offers. For each family the respondent identifies the typical service characteristics, the typical retail price and the typical gross margin. This table shows that as the service characteristics improve (i.e. the quality gets better) the retail price and the gross margin both increase. By deducting the gross margin from the retail price we are thus able to get a rough estimate of the input cost. From the information provided by this respondent it is apparent that the input cost is broadly the same for any given service characteristics. This suggests that at the retail level, as the quality of the service increases a larger proportion of the retail price is actually paying for the service wrap rather than the access itself.
- 3.55 This therefore appears to be consistent with Ofcom's view that there is less distinction at the wholesale level compared to the retail level and that at the wholesale level there is no clear distinction between residential and business services.
- 3.56 In support of finding separate residential and business markets at the wholesale level one respondent made the following comment: "*A retailer cannot in general purchase a wholesale product intended for the business internet market and tweak or reconfigure it to make it suitable for high end business applications*". Ofcom would question the validity of this comment on two grounds.
- 3.57 Firstly, the construct of this comment seems rather odd as it sets out a scenario where a retailer purchases a wholesale product with a particular configuration and is then unable to change the configuration itself. However, if the retailer wanted a different configuration it would simply request this from the wholesale provider, who could then change it on their behalf and presumably levy a different charge accordingly. This is in fact exactly what happens today with BT's DataStream product and as Ofcom understands it this will also be the situation under BT's 21C network with its planned wholesale broadband connect (WBC) product, the point being that a provider of wholesale asymmetric broadband access can readily provide products with different configurations.
- 3.58 Secondly, it is not a necessary condition for there to be a single market that a retailer situated between the wholesale provider and the end user should be able to reconfigure the wholesale service, although Ofcom notes that, if it could do so, this would undermine any attempt at price discrimination by the wholesaler, and would then be a powerful argument for the existence of a single market. In the absence of this, the question is simply whether wholesale providers of business internet services could readily provide high-end business services, or *vice-versa*. On this point Ofcom firmly believes that they can and that this can be achieved relatively simply in a number of ways, e.g. by applying different settings to different end user connections. This is supported by responses to Ofcom's request for information sent to the Principal LLU Operators.
- 3.59 Whilst most respondents seem to agree that wholesale providers of residential services (e.g. LLU operators) could provide business services, several respondents have questioned what these providers are currently doing and how readily they could in fact enter the business market.
- 3.60 Some respondents consider that there are separate wholesale markets for residential and business services as they believe that LLU operators are not currently offering

business services. On this point Ofcom would note that the product market definition does not necessarily hinge on what providers are currently doing, but rather on whether they provide a constraint (i.e. are they able to readily enter the market in response to a SSNIP). However, Ofcom would note that most of the Principal LLU Operators already offer some business services and indeed some of these operators have separate divisions dedicated to this activity. For example, Carphone Warehouse offers communications solutions to businesses through its Opal brand, Cable & Wireless provides business services, Orange (owned by France Telecom) has a dedicated business services division, Tiscali has a dedicated business services division and Sky offers communications solutions to businesses through its Easynet brand.

- 3.61 One respondent believes that it is not straightforward to move from offering residential grade wholesale services to business grade services. This respondent goes on to explain that the difficulties are not of a technical nature but rather stem from the need to develop new processes and systems. Ofcom recognises that different process and systems may be necessary to support higher quality services. However, Ofcom believes that a provider who already has a network that can be configured to offer higher quality services could obtain the necessary processes and systems within 12 months, either by developing them in-house, buying them in or contracting support out to a third party. In any case, as discussed above, most of the Principal Operators already have, at least some, of the necessary processes and systems¹⁵.
- 3.62 In support of finding separate residential and business markets at the wholesale level one respondent argues that BT currently offers two wholesale asymmetric broadband access products, one aimed at residential users (IPStream) and the other aimed at business users (DataStream). Ofcom does not however believe that this is entirely correct. BT's current wholesale asymmetric broadband access product is DataStream and this product can be configured to provide a range of different qualities of service. Indeed, customers of this product are today using it to offer highly contended services aimed at residential users and un-contended and low-contention services aimed at business users. In doing this the customer requests the required DataStream capacity and class of service from BT and specifies how this should be over-booked. This is exactly in line with Ofcom's understanding set out above where a wholesale provider can readily configure services to suit different customer requirements.
- 3.63 BT's current IPStream product is in fact a particular configuration of the DataStream network elements with an added IP layer. Thus, BT is currently using a single platform to provide a wide range of wholesale products.
- 3.64 In the future, recognising the need for Ofcom to take a forward look, it is BT's intention, under 21C, to introduce WBC and the plan is that this product will be available with a wide range of quality options, which customers are able to select.
- 3.65 In relation to the retail market definition a number of respondents commented on the fact that large business users often use broadband access to connect remote sites into a virtual private network (VPN) and that the preference is for these connections

¹⁵ Ofcom generally takes supply-side substitution into account in market definition to the extent that it provides additional constraints above those identified on the demand side. This restricts it to operators who are not already materially present in the market. However, whether suppliers are treated as supply-side substitutes or as already having entered the market, there do not appear to be any significant barriers to entry or expansion (the ability of such operators to expand could be taken into account in the market power assessment).

to be made directly to the VPN rather than indirectly via the internet. Thus, creating a 'closed-VPN'.

- 3.66 On the issue of 'closed-VPN' access, Ofcom believes that a wholesale provider of asymmetric broadband access can readily configure the service to be part of a 'closed-VPN' or to use it to provide access to the internet. This is because the wholesale provider has full control over the configuration of the service – at the wholesale level there is no inherent linkage between asymmetric broadband access and internet connectivity.
- 3.67 Ofcom is therefore firmly of the view that at the wholesale level there is a single economic market for a broad range of asymmetric broadband access services, which includes both services aimed at residential retail consumers and services aimed at business retail consumers.

Retail market definition

- 3.68 Each of the four points made by respondents is addressed in turn below.

Lack of demand-side substitution from higher quality products to lower quality products

- 3.69 As noted above in paragraph 3.13, the hypothetical monopolist test (HMT) is a useful tool that can be used in the market definition process to identify close demand-side and supply-side substitutes and we have used this tool to inform the scope of the markets in our market analysis. The implication of the comments received from respondents is that demand-side substitution in response to a SSNIP on higher quality products would be insufficient to render such a SSNIP unprofitable and that therefore there exists a separate relevant market for higher quality products, distinct from the market for lower quality products. It is also important to note here that substitution on the supply-side as well as the demand-side is relevant to our consideration of the definition of the relevant market.
- 3.70 On the demand-side, for the case being considered here we can use the HMT to identify whether a hypothetical monopolist of higher quality broadband services could impose a SSNIP above the competitive level without losing sales to such a degree as to make the price rise unprofitable. To the extent that such a price rise is unprofitable the market is continually broadened (by adding neighbouring products) until the price rise across the broader set of products becomes profitable and this set of products constitutes the boundary of the relevant economic market. In order to conduct such an exercise we first need to identify a precise set of characteristics for higher quality broadband and then need to consider the likely demand-side and supply-side response to a SSNIP.
- 3.71 A number of respondents believe that higher quality broadband can be defined using technical characteristics. However, there is no clear agreement about what technical characteristic(s) are relevant.
- 3.72 Some respondents suggest that a contention ratio of 5:1 or less is essential. Another respondent, however, suggests that large business users require contention ratios of up to 10:1. Another respondent notes that the exact characteristics will vary depending on the requirements, but then goes on to identify a list of detailed technical characteristics which it believes are generally required by large business

users. Minimum throughput¹⁶ was also a characteristic that was highlighted as being important.

- 3.73 Whilst respondents do not agree on the precise technical characteristic(s) that are relevant it is clear that there is general agreement among them that contention ratio is important. In order to test this, we can run a “thought-experiment” to assess whether there is a particular contention ratio across which demand-side and supply-side substitution does not take place.
- 3.74 A reasonable assumption, for the purpose of this experiment, might be that higher quality broadband has a contention ratio of 5:1 or less (as suggested by some respondents). Then, if a hypothetical monopolist of higher quality broadband were to impose a SSNIP, the first question would be whether this SSNIP is rendered unprofitable by demand-side substitution because ‘some’ large business users would be prepared to use a product with a slightly higher contention ratio (say 6:1) to avoid the SSNIP.
- 3.75 Ofcom understands that individual large business users already use broadband access with various contention ratios depending on their particular requirements and the service availability in a given situation. This view seems to be supported by the information supplied by some respondents. In particular respondents collectively suggest that individual large business users require broadband access services with a range of contention ratios, perhaps with different sites being provided different services depending on the business requirements of the end customer. Respondents also suggest a range for the required minimum throughput and some even note that the exact characteristics will vary depending on the requirements. Further the publicly available marketing information that is targeted at large business users rarely mentions contention ratio and where it does there is no suggestion that 5:1, or indeed any other value, has any particular significance. Survey evidence collected for the business connectivity market review (BCMR)¹⁷ also suggested that business users were prepared to compromise on contention to some extent, in response to a SSNIP in the price of their current service.
- 3.76 On the basis of the above, Ofcom concludes that it would not be possible for a hypothetical monopolist of broadband access with a contention ratio of 5:1 (or less) to profitably impose a SSNIP as there would be sufficient demand-side substitution to render the price rise unprofitable. It should be noted that as the contention ratio threshold is increased the number of users will also increase, i.e. less demanding users will become part of the group of users which are exposed to the SSNIP. With this in mind Ofcom believes that it is not possible to identify any value of contention ratio where there is a break in demand-side substitutability.
- 3.77 This suggests that there is likely to be a chain of substitution linking services with different contention ratios. The presence of chains of substitution can have the effect of broadening markets such that a market can include products which might not be direct substitutes for other products in the market. For example, a 50:1 contention ratio product may not be seen by customers as a direct substitute for say 5:1 contention ratio products, but through a chain of substitution (with customers being willing to substitute from 5:1 to 6:1 to 7:1 etc contention ratio products) these products are found to be in the same relevant market. The potential impacts of

¹⁶ Minimum throughput, when used in this context, is the lowest speed that the broadband access connection will fall to under heavy network congestion.

¹⁷ (Section 3: pp60- 81) http://www.ofcom.org.uk/consult/condocs/bcmr/bcmr_pt1.pdf

chains of substitution are discussed below when we address the comments from respondents on broadband prices.

- 3.78 Ofcom generally regards supply-side substitution as limited to operators who are not already materially present in the market¹⁸. However, in order to establish the feasibility of supply-side substitution, the question would be whether suppliers of 'higher' contention ratio products could readily (i.e. within 12 months) start offering 'lower' contention ratio products in response to a SSNIP. This is covered in more detail in the discussion on the wholesale market definition, but in summary Ofcom believes that it is relatively simple for suppliers of higher contention ratio products to offer 'lower' contention ratio products. Therefore, the market would be broadened on the supply-side even if the demand-side analysis were to conclude that the market was narrow.
- 3.79 In summary, Ofcom does not believe that it is possible to identify a clear break between higher quality and lower quality products on the basis of demand-side and supply-side substitution analysis. Moreover, even if there was a gap in the range of quality options available today and this was identifiable, this would not necessarily mean that separate economic markets exist. It could be that given the current conditions observable in the market that there is simply no demand for particular quality options. If demand were to emerge for these products then we consider that suppliers would be able to provide the different quality options as there does not appear to be any barrier to them doing so. Ofcom therefore believes that the information available suggests that a continuum of quality options exists and that different users opt to use products that suit their particular business requirements.

Broadband prices

- 3.80 A number of respondents note that large business users pay significantly higher prices than other users and consider that the presence of such a gap in the pricing shows that large business users are in a separate market, i.e. there exists a break in the chain of substitution.
- 3.81 In response to this argument it is important to bear in mind that for large business users it is often not possible to identify the price of an individual broadband access connection, as these are often sold as part of a bundle of services and/or at a negotiated 'bespoke' (and as such unpublished) price. However, a number of respondents have provided their view of the typical price paid by large business users for higher quality broadband.
- 3.82 One respondent suggests that the price for these services might range from £150 to £600 per month, although no details about the service are provided. Another respondent suggests a price range of £60 to £250 per month for services with a contention ratio between 5:1 and 1:1. Another respondent suggests a price of £80 to £100 per month for a service with a contention ratio of 1:1.
- 3.83 Ofcom again considers that the wide range of views expressed by respondents reinforces the view above that there is not a clearly identifiable separate market for the provision of broadband access services to large business users. In addition,

¹⁸ Ofcom generally takes supply-side substitution into account in market definition to the extent that it provides additional constraints above those identified on the demand side. This restricts it to operators who are not already materially present in the market. However, whether suppliers are treated as supply-side substituters or as already having entered the market, there do not appear to be any significant barriers to entry or expansion (the ability of such operators to expand could be taken into account in the market power assessment).

whilst some users may demand higher quality broadband services (and be prepared to pay for them) it does not necessarily follow that they constitute a separate economic market.

- 3.84 From the information provided by respondents there does not appear to be a gap in the pricing between higher quality broadband and other broadband services and this is supported by Ofcom's own research.
- 3.85 In developing our proposals for the November 2007 consultation, we considered the range of retail offers available for residential and business customers. In doing this we conducted research using for example third-party price comparison websites¹⁹ as well as providers' own websites. Although it is difficult to draw definitive conclusions from such research, our consideration of the available price evidence across a range of suppliers does not point to a clearly identifiable break in the market between those services targeted at mass market users and business users. In fact, third-party price comparison websites seem to mainly differentiate the various product offerings in terms of download and upload speed rather than on the basis of contention ratio.
- 3.86 In light of this, Ofcom does not believe that it is possible to identify a clear break between higher quality and lower quality broadband access products based on consideration of the different quality/price options available. Ofcom therefore believes that the information available suggests that a continuum of quality/price options exists and that different users opt to use products that suit their particular business requirements.
- 3.87 In some respects, the situation in the provision of broadband access is analogous to the situation considered by the Competition Commission in its investigation into the supply of new cars²⁰. In that investigation the Competition Commission concluded that there was a single 'broad' market for all new cars, on the basis of a chain of substitution. The Competition Commission, in its analysis identified a number of key issues that supported this conclusion. These included:
- there is a wide range of different models, which come in a variety of different specifications;
 - there are overlaps of the list price of new cars in different segments (segments used by the Competition Commission being mini, supermini, lower medium, upper medium, executive, luxury saloons, multi-purpose vehicles, dual purpose and specialist sports);
- 3.88 The Competition Commission also considered that regardless of demand-side constraints, supply-side considerations supported the definition of a broad market, including all new cars. The Competition Commission noted that manufacturers were increasingly using single production platforms to produce different model ranges, with the implication that production of different ranges could be switched relatively easily.
- 3.89 This situation is mirrored to an extent in the provision of broadband access services where there is a wide range of possible service options with different product characteristics, available at different prices, with these overlapping and being supported by the same wholesale inputs.

¹⁹ See for example: <http://www.thinkbroadband.com/packages/list/6.html>

²⁰ http://www.competition-commission.org.uk/rep_pub/reports/2000/fulltext/439c2.pdf

Service/care levels

- 3.90 Two respondents have stated that one of the key distinguishing features of services aimed at large business is the associated care level. However, neither of these respondents has identified how care level should be defined or what care level is necessary for a broadband service to be suitable for large business users.
- 3.91 Ofcom recognises that large business users will generally demand higher care levels than other users, in the same way that large business users generally demand higher quality/lower contention ratio services and accordingly are willing to pay higher prices. This is similar to other services where large businesses may require higher quality/ higher price products and is not limited to broadband services. This general tendency does not necessarily mean that separate economic markets exist.
- 3.92 In the case of care level none of the respondents have proposed what characteristics should be used to define it and thus Ofcom is not sure what respondents believe the starting point should be, upon which to base the hypothetical monopolist test. However, as with quality/contention, it appears to Ofcom that a range of care levels are available in the market and that users opt to use products that suit their particular requirements. Moreover, all suppliers in the market are able to offer a range of care levels to customers.

Closed-VPNs

- 3.93 Ofcom recognises that some consumers, in particular large business consumers, may use asymmetric broadband access as part of a 'closed-VPN', i.e. the broadband access is connected directly to a private network rather than the public internet. Whilst this arrangement is clearly different to 'direct' internet access it does not necessarily follow that it is in a different market.
- 3.94 On the demand-side Ofcom notes that customers are able to substitute between internet-based VPN access and 'closed-VPN' access, although it recognises that some customers will not be prepared to use internet-based VPN access as an alternative to 'closed-VPN' access. However, Ofcom considers that supply-side constraints are likely to be more relevant in this case.
- 3.95 On the supply-side the question would be whether suppliers of asymmetric broadband internet access could readily (i.e. within 12 months) start offering asymmetric broadband access to a 'closed' VPN in response to a SSNIP. This is covered in more detail in the discussion on the wholesale market definition, but in summary Ofcom believes that it is relatively simple for suppliers of asymmetric broadband internet access to offer 'closed-VPN' access.
- 3.96 A number of respondents have suggested that asymmetric broadband access when used as part of a 'closed-VPN' is similar to business connectivity and that such services should be included in a retail market for business connectivity (including potentially also retail leased lines). Ofcom believes that symmetric (leased line) and asymmetric broadband services are in separate markets. This is not to say that business users would never use asymmetric service, as clearly they do, but rather that where business users demand a symmetric service, the available evidence suggests that an asymmetrical service would not be considered as a suitable

substitute for a sufficient proportion of end-users to conclude that these services be included in the same relevant market²¹.

- 3.97 Evidence gathered for Ofcom's business connectivity market review suggests that there has been some migration of leased line customers to services supplied using other technologies. It is likely that this will continue in future, perhaps particularly for customers who currently use the lowest bandwidth retail leased lines. Some such customers may find that their needs can be met at lower cost by an asymmetric broadband access service based on ADSL technology. However, Ofcom has also borne in mind that the observation that some customers have switched away from leased lines to other products is not sufficient to place these products in the same market. The relevant question, for the purposes of market definition, is whether switching to these and other products would be sufficient to render unprofitable a SSNIP above the competitive price by a hypothetical monopolist. Ofcom considered the evidence for the existence of such a constraint on leased line prices from switching to asymmetric broadband access and other services in chapter 3 of the January 2008 BCMR consultative document²². A number of indicators are considered, including customer responses to questions about willingness to switch to other services, functionality, prices, usage patterns and switching costs. It is concluded that these products should not be considered as part of the same market as leased lines.
- 3.98 Indeed, given the differences in relative prices identified, the extent of switching away from leased lines in fact appears rather limited. The fact that there continues to be significant retail demand for low bandwidth leased lines, despite the availability of other products at often significantly lower prices, suggests that these products are not sufficiently close substitutes to form part of the same market.

Respondents' comments

- 3.99 In addition to comments about whether there is a separate market for a "high-end" broadband product for business users respondents also commented on the following points.

National market

- 3.100 Some respondents, in support of their argument that there is a separate market for high-end business services, suggested that this market was national in scope because large multi-site customers require a service covering the entire UK and, moreover, require this to be provided by a single supplier. As not every LLU operator covers all the exchange areas in Market 3, these respondents then argue that the resulting gaps in coverage will prevent competition for large multi-site customers.

Bundling

- 3.101 One respondent argued that Ofcom should give greater prominence to geographic differences at the retail level, in particular those arising from the availability of different retail product bundles in different areas. However, it agreed that it is not necessary to define the precise scope of the retail market for the purposes of this review and largely agreed with Ofcom's proposals for wholesale market definition.

²¹ Ofcom notes that the market delineation between business connectivity and broadband is based on characteristics in addition to symmetry, such as the functionality that services provide, prices, usage patterns and switching costs.

²² <http://www.ofcom.org.uk/consult/condocs/bcmr/>

- 3.102 One respondent expressed a concern about BT and the use of bundles incorporating broadband access. The response noted that BT may attempt to leverage its dominance from telephony into broadband and that this may present Ofcom with regulatory challenges.

Backhaul within WBA

- 3.103 One respondent believes that there is still a need for further clarification regarding the inclusion of backhaul within the wholesale broadband access product market. Specifically what constitutes “backhaul as necessary”? This respondent also believes that guidance is necessary in the situation where WBA traffic from SMP markets and non-SMP markets is aggregated before handover.

Ofcom’s response

National market

- 3.104 More details of LLU operators’ coverage and planned coverage are given in Section 4 and Annex 2 of this document. As noted in Section 4, two LLU operators plan to cover more than 95% of premises in Market 3 and a further two plan to cover more than 80% of premises in Market 3. Any gaps in coverage will therefore be relatively small. Moreover, to the extent that they exist, and there is demand for a nationwide service from business customers with sites in these areas Ofcom does not believe that it follows that an LLU operator will not be able to offer service.
- 3.105 The fact that certain LLU operators have chosen not to unbundle certain exchanges may be a reflection of their anticipated demand in these areas and/or their ability to meet demand in these areas through other means. It is also the case that these operators have the option of unbundling additional exchanges in Market 3 in response to changing conditions.
- 3.106 In addition, in any Market 3 exchange area there will be at least two Principal LLU Operators present and, as set-out in Section 4, no operator has market power. This removes the desire to exploit or leverage market power as a possible motive for one LLU operator to refuse to supply another operator in an area where the latter does not have coverage. It does not therefore follow, as one respondent asserted that:

“In the absence of any obligation to supply, the rational choice for BT (or any LLUO who could supply WBA) would be not to supply access in [Market 3] on a wholesale basis to a downstream competitor”.

- 3.107 Even in circumstances where no LLU operator has sufficient coverage to bid for a particular contract on their own, it is likely to be rational for operators to supply one another. Indeed, of the six Principal LLU Operators, four say that they already offer wholesale services to other providers and another one says that it is currently considering doing so.
- 3.108 Further, business customers do have the option of using multiple broadband access providers to fulfil their needs and in fact some prefer to do this. Thus, in the situation where a business customer requires broadband access to multiple sites in Market 3 and where no single operator, with the exception of BT, covers all these sites and where all the operators refuse to supply one another, it is still possible for the business customers to get competitive supply by using more than one operator.

Bundling

- 3.109 Ofcom notes BT's comments about the possible effect of retail bundling. It also notes BT's agreement that it is not necessary to define the precise scope of the retail market for the purposes of this review and, in general terms, its agreement with Ofcom's proposed wholesale market definition.
- 3.110 Ofcom notes the concerns regarding BT leveraging its dominance from telephony into broadband access through bundling, but believes that the issue is not relevant to this review. BT's SMP in wholesale narrowband markets is addressed through conditions applying to the products BT provides in those markets. These would have the effect of preventing anti-competitive bundling.

Backhaul within WBA

- 3.111 As set out in paragraph 3.133 of the November 2007 Consultation Ofcom believes that it is necessary, both for BT and BT's competitors, to retain some flexibility in the product definition, in order to allow for future network and product developments.
- 3.112 The comment on guidance in the situation where WBA traffic from SMP markets and non-SMP markets is aggregated before handover seems to relate to concerns over the possible leverage of SMP into non-SMP areas. This point has been addressed in paragraph 4.32.

Comment from the European Commission

- 3.113 The European Commission, in its comments letter of 14 February 2008 made one specific comment in relation to Ofcom's market definition proposals. This comment invited Ofcom to:

*"...further substantiate in its final measure its aggregation of geographic "units" in its proposed "markets", based on the detailed information submitted in its replies to requests for information and in particular with reference to the distribution and evolution of market shares and pricing within different geographic areas in accordance with competition law principles, as discussed in section III above."*²³.

Ofcom's response

- 3.114 Ofcom has done this in Annex 4.

Conclusion on wholesale broadband access market definition

- 3.115 Based on the analysis set-out in the November 2007 consultation and taking into account all the responses to this consultation, Ofcom considers the relevant wholesale broadband access product market to be:

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.

²³ Page 12

3.116 When identifying the geographic scope of the market Ofcom has decided to use the methodology proposed in the November 2007 consultation. However, as discussed in paragraphs 3.275 to 3.276 of the November 2007 consultation, Ofcom planned to gather further data at the time of the final statement. In this respect, Ofcom has gathered actual LLU rollout data up to the end of February 2008 and forecast LLU rollout to the end of February 2009. It should be noted that none of the Principal LLU Operators had any rollout plans beyond the end of February 2009 and thus the data available to Ofcom represents all known rollout in the period covered by this review.

3.117 In analysing the most recent data available, Ofcom has identified the precise geographic markets and these are summarised in Table 3.1.

Table 3.1: Summary of the wholesale broadband access market definitions

Market	Description	No. Exchs	Coverage
the Hull area	those geographic areas covered by exchanges where KCOM is the only operator	14	0.7%
Market 1	those geographic areas covered by exchanges where BT is the only operator	3720	16.4%
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	670	13.7%
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	1197	69.2%

3.118 A list of the exchanges that falls into each of the above markets is included in Annex 1. Details of the geographic analysis are included in Annex 2.

Section 4

Market Power Assessment

Introduction

- 4.1 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 took 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.”²⁴

- 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.”²⁵

- 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

²⁴ Paragraph 19

²⁵ Paragraph 20

*themselves, save in exceptional circumstances, evidence of the existence of a dominant position...*²⁶

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.*²⁷

4.12 The European Regulators' Group (“ERG”) has issued a working paper on SMP²⁸ (the ERG SMP Position) that builds upon the SMP Guidelines. In this paper further criteria are explicitly considered:

²⁶ Paragraph 75

²⁷ Paragraphs 78-79

²⁸ “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)

- excessive pricing;
- ease of market entry;
- cost and barriers to switching;
- 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 assessment 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 When assessing SMP it is appropriate to take account of the existing regulation of a service upstream of the market that is being considered. In the context of this market review, the relevant regulation is the requirement on BT to provide 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 SMP (equivalent to the competition law concept of dominance), either singly or collectively, in the relevant wholesale asymmetric broadband access markets. If Ofcom considers that 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 This section considers the assessment of SMP in each of the wholesale broadband access markets defined in Section 3.

SMP proposals

4.18 In the November 2007 consultation Ofcom set out the following SMP proposals:

- 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 operator possesses SMP in the wholesale broadband access market in Market 3.
- 4.19 In making these proposals Ofcom considered that the most important criteria for the assessment of SMP in these markets was:
- market growth and market shares;
 - future potential market shares;
 - barriers to entry and expansion;
 - economies of scale and scope; and
 - countervailing buying power.
- 4.20 The full market power assessment is given in paragraphs 4.20 to 4.174 of the November 2007 consultation.
- 4.21 The November 2007 consultation asked the following two questions:

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?

Respondents' comments

SMP findings for the Hull area, Market 1 and Market 2

- 4.22 None of the respondents who commented on these proposals disagreed with Ofcom's market power findings.

SMP finding in Market 3

- 4.23 One respondent said that it was of the view that separate wholesale markets and products exist for the supply of large business broadband access and residential and small business broadband access:
- a wholesale product (currently IPStream) that provides the inputs to retail residential and small business broadband internet access market and
 - a wholesale product (currently DataStream) that provides the inputs to the retail "large business" broadband access market.
- 4.24 This respondent believes that an assessment of the wholesale inputs to retail large businesses, in isolation, would result in the finding of a national market with BT having SMP in this national market.

- 4.25 Another respondent believes that a no-SMP finding in Market 3 is borderline and that the available evidence could support a finding that BT has SMP in this market. For instance this respondent believes that:
- BT continues to enjoy a market share which may exceed 40%
 - due to the scale of the individual competitors (no individual competitor likely to exceed 10% market share) they do not provide a real constraint to BT
 - forward looking market share analysis is inherently risky
 - the constraints on BT are mainly indirect
 - separate geographic markets creates scope for BT to leverage its SMP in Market 1 and Market 2 into Market 3.
 - BT may deploy new technologies (next generation access (NGA)) in the future which will enable it to gain the upper hand over its competitors
- 4.26 Another respondent believes that the proposal to remove SMP constraints from Market 3 is risky as it might imply a gradual discrimination within BT in favour of BT Retail or Global Services through pricing, services or even deployment of new product exclusively for BT. The likely consequence would be the creation of a competitive advantage for BT Global Services when bidding for larger tenders that involve ADSL tails.

Ofcom's response

SMP finding in Market 3

- 4.27 For BT to have SMP in a market for wholesale broadband access used to supply large businesses, as one respondent argues, two propositions would have to be correct. Firstly, the supply of wholesale broadband access for large business users would have to be identified as a relevant market, separate from the supply of wholesale broadband access used by other categories of retail customer. And secondly BT would have to be found to have SMP in it. Ofcom's view is that the supply of large business broadband access and residential and small business broadband access are part of a single market. It therefore does not agree with the first proposition advanced by this respondent. Ofcom explains the reasons for its view on the relevant market definition fully in section 3.
- 4.28 Moreover, even if, for the purposes of exposition, the supply of wholesale broadband access used by large businesses were treated as a separate market, the ease of entry by suppliers of other wholesale broadband access products would likely prevent the exploitation of market power. The second proposition advanced by the respondent is therefore also unlikely to hold, even if the first were accepted for the purposes of analysis. This is consistent with the Commission's view as set out in its Explanatory Memorandum, that market definition is a means to an end and that, provided constraints are correctly identified, the same conclusion regarding market power should be reached whether such constraints are treated as arising from within a market or from potential entry from outside it.
- 4.29 On the comments made about BT's market share in Market 3, Ofcom would note that, as set out in this section, BT's market share is currently below the 40% threshold. Further, BT's market share has fallen substantially over the last two years

and is likely to fall further. In addition, as set out in paragraph 4.19, there are other important criteria for the assessment of SMP in this market.

- 4.30 On the comment about the 'small' scale of individual competitors in Market 3, Ofcom would again note that there are other important criteria for the assessment of SMP in this market and as such just because a competitor has small market share it does not necessarily follow that they do not provide a constraint. Indeed, once they have entered an exchange area, small LLU operators have a strong incentive to expand to gain additional subscribers in order to recover the fixed costs of unbundling, and so are likely to compete strongly for customers. However, notwithstanding this, Ofcom would note that currently two LLU operators have market shares in excess of 10% and the cable operator has a market share of 28%.
- 4.31 The comment about indirect constraints is a market definition point and Ofcom fully addressed this in paragraphs 3.154 to 3.184 of the November 2007 consultation, partly in response to comments on the November 2006 consultation. No new arguments have been raised in the responses to the November 2007 consultation. Ofcom, therefore, continues to believe that it is appropriate to include certain sources of indirect constraints in the market (eg cable operators) and that their constraining effect on market power may be stronger than any currently operating direct constraints.
- 4.32 On the comment about the potential leverage of SMP in Market 1 and Market 2 into Market 3, Ofcom recognises this concern. However, such concerns are most appropriately addressed through remedies applied in Markets 1 and 2. It is also necessary to ensure that the remedies are structured in such a way to ensure that if such leverage did occur it could be spotted and appropriate action taken. To this end Ofcom is imposing accounting separation between the defined markets. This is set out in more detail in Section 5.
- 4.33 On the comment about new technologies and NGA, Ofcom would note that, as part of the forward looking assessment, it has taken into consideration all known future developments that could impact this market. Of course it is possible that something unexpected could happen. However, under the framework Ofcom is required to re-review this market if it becomes apparent that the regulation no longer reflects the market conditions.
- 4.34 Furthermore, the Undertakings which BT gave to Ofcom, which provides for 'functional separation' ensures that should BT launch a new access service then this service will be made available to all Communications Providers on equal terms.
- 4.35 On the comment about the removal of SMP constraints in Market 3, Ofcom would note that a finding that the wholesale broadband access market in Market 3 is competitive and the consequential removal of SMP conditions does not mean that BT will necessarily choose to discriminate in favour of its downstream arm. Indeed, if BT chooses to compete actively for customers of its wholesale broadband access product it may well not do so. But even if it does discriminate in favour of its downstream arm, the fact that the market is competitive means that such discrimination can not be used to leverage market power and so harm competition.

Comment from the European Commission

- 4.36 The European Commission, in its comments letter of 14 February 2008 made one specific comment in relation to Ofcom's assessment of market shares. In particular, the European Commission requested that we ensure that our assessment of

wholesale market shares takes proper account of indirect constraints from the retail level²⁹.

Ofcom's response

- 4.37 There are two potentially relevant considerations to the treatment of indirect constraints from the retail level:
- i) are the sources of such constraints correctly included in the market and in the calculation of wholesale market shares?; and
 - ii) if it is correct to include them, is it appropriate to make any adjustment to market shares imputed from the retail level to reflect the indirectness of the constraint?
- 4.38 It is not clear in the European Commission comments letter which of these considerations is its primary concern, or whether it is in fact concerned with both. However, Ofcom considers that its assessment of market shares does take proper account of indirect constraints from the retail level, on both counts.
- 4.39 Ofcom explains why it has included sources of indirect constraints on BT in the wholesale market in paragraphs 3.175 to 3.179 of the November 2007 consultation. In particular, Ofcom's analysis of substitution at the retail level properly takes into account the fact that such indirect constraints are subject to a "dilution effect". The dilution effect arises because a given percentage increase in the wholesale price will result in a smaller percentage increase in the retail price, when the wholesale increase is passed through to the retail level. When constructing the SSNIP test Ofcom thus applied the relevant dilution factor to the assumed 10% increase (the SSNIP) in the wholesale price and this ensures that the analysis takes proper account of this dilution. But even allowing for this dilution effect, the scale of switching in response to a SSNIP in the wholesale price is sufficient to render that SSNIP unprofitable.
- 4.40 Ofcom does not believe that any additional adjustment to market shares imputed from the retail level is needed to reflect the indirectness of constraints on BT in the context of this market review. This is because, in an *ex-ante* framework, it is necessary to assume an absence of regulation in the market being reviewed. As set out in paragraph 3.174 of the November 2007 consultation, it is possible that, without such regulation, no operator would supply wholesale broadband access to other service providers. In this case, market shares at the retail level will properly reflect market shares at the wholesale level and no further adjustment is required to the market shares to take account of dilution from the retail to the wholesale level. This is in contrast to an *ex-post* analysis (of the kind which might be conducted in a Competition Act inquiry), where in some circumstances it may aid interpretation to make an additional adjustment to the market share of an allegedly dominant firm subject to indirect constraints, to reflect the indirectness of such constraints.
- 4.41 Ofcom also note that market shares are only one of the indicators of market power and that other indicators may be more relevant in this case, particularly the consideration of barriers to entry and expansion. Finally, but importantly, market definition is a means to an end. The end in this case is to identify correctly whether and where there is a need for *ex-ante* regulation in the wholesale broadband access market. The Commission itself notes that Ofcom would have reached the same

²⁹ Page 9.

conclusion on this point even if it had taken account of indirect constraints only at the SMP analysis stage.

SMP assessment

4.42 Ofcom continues to believe that the market power assessment, set out in Section 4 of the November 2007 consultation, is appropriate for this review. All the factors assessed in Section 4 of the November 2007 consultation therefore remain valid. However, since the November 2007 consultation Ofcom has gathered more up-to-date data from the Principal Operators and based its final assessment on actual data to the end of February 2008 and forecast data to the end of February 2009. Given the changes in the precise geographic boundaries and given this more recent data, Ofcom has set out below the current market share information for each market and its forward looking predictions.

The Hull area

4.43 The latest data continues to show that KCOM is the only supplier of retail and wholesale broadband access in the Hull area. KCOM is therefore considered to have 100% market share in the Hull area.

4.44 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.

Market 1

4.45 Market 1 is composed of 3,720 exchange areas, within which BT (based on forecast for February 2009) is the only Principal Operator³⁰. These exchange areas cover 16.5% of all UK delivery points (excluding the Hull area). 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.

4.46 Table 4.1 outlines the wholesale broadband access market shares in this market as of the end February 2008, split between BT, Virgin Media and LLU operators.

Table 4.1: Market 1: WBA market shares, February 2008

	BT	Virgin Media	LLU operators
WBA volumes (000s)	2,490	35	0
Share of Market	99%	1%	0%

4.47 The market shares outlined in Table 4.1 above are not expected to change appreciably in the period of this review. There is no planned entry between February 2008 and February 2009 from the Principal Operators. In addition, Ofcom has no evidence of there being plans to expand cable coverage in these areas.

³⁰ There are some exchange areas within this market which include provision of services from Virgin Media. As explained in Annex 2, 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.

Market 2

- 4.48 Market 2 is composed of 670 exchange areas, within which there are (based on forecasts for February 2009) 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 13.8% of all UK delivery points (excluding the Hull area).
- 4.49 Table 4.2 outlines the wholesale broadband access market shares in this market as of the end February 2008, split between BT, Virgin Media and LLU operators.

Table 4.2: Market 2: WBA market shares, February 2008

	BT	Virgin Media	LLU operators
WBA volumes (000s)	1,602	287	240
Share of Market	75.2%	13.5%	11.3%

- 4.50 Whilst BT has ubiquitous coverage in this market, cable coverage is currently c.23% of all delivery points and this is not expected to change appreciably in the period of the review. Total LLU coverage is currently 80% of all delivery points with this coverage being fragmented between multiple operators.
- 4.51 Ofcom forecast that by the end of February 2009 there will be at least one LLU operator which will be able to provide services from exchanges covering 75% of delivery points in Market 2. There is currently no planned rollout beyond February 2009.
- 4.52 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. When predicting future market shares Ofcom has used the same methodology as explained in paragraph 4.112 of the November 2007 consultation. Historic, current and predicted future market shares, for Market 2, are given in Table 4.3.

Table 4.3: Projected WBA shares for Market 2³¹

	BT	Virgin Media	LLU operators
March 2006	83%	17%	0.1%
July 2006	84%	16%	0.1%
July 2007	82%	14%	4.3%
February 2008	75%	14%	11.3%
February 2009	68% - 71%	13% - 14%	16% - 18%

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

- 4.53 Table 4.3 shows that BT's share of Market 2 is expected to fall slightly between February 2008 and February 2009. Furthermore, due to the limited number of LLU

³¹ Note that the market shares are not directly comparable with those included in the November 2007 consultation as the precise geographic market boundary has been updated

operators that will be competing at each exchange in Market 2, Ofcom only expects a modest growth in LLU market share in the period of this review.

Market 3

- 4.54 Market 3 is composed of 1,197 exchange areas, within which there are (based on actual data for February 2008) at least 4 Principal Operators or where there are 4 or more Principal Operators but where the exchange serves 10,000 or more premises (based on forecasts for February 2009). These exchange areas cover 69.7% of all UK delivery points (excluding the Hull area).
- 4.55 Table 4.4 outlines the wholesale broadband access market shares in this market as of the end of February 2008, split between BT, Virgin Media and LLU operators.

Table 4.4: Market 3: WBA market shares, February 2008

	BT	Virgin Media	LLU operators
WBA volumes (000s)	4,345	3,217	3,840
Share of Market	38.1%	28.2%	33.7%

- 4.56 Ofcom's analysis has taken into account the developing nature of this wholesale market and considered the likely evolution of operators' market shares. Historic, current and predicted future market shares, for Market 3, are given in Table 4.5.

Table 4.5: Recent changes and projected WBA shares for Market 3³²

	BT	Virgin Media	LLU operators
March 2006	63%	33%	4%
July 2006	60%	32%	8%
July 2007	47%	29%	24%
February 2008	38%	28%	33%
February 2009	26% - 32%	27% - 28%	41% - 46%

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

- 4.57 Although there are at least 4 Principal Operators in every exchange area in this market no single operator, apart from BT, is currently predicted to have 100% coverage of this market. Table 4.6 shows the expected minimum, maximum and average coverage of Market 3 for the Principal LLU Operators, both by number of exchanges and percentage of premises.

Table 4.6: Principal LLU Operator coverage of Market 3 (as of end of February 2009)

	LLU min	LLU max	LLU avg
No. Exchanges	792	1188	978
% Premises	75.3%	99.5%	86.4%

³² Note that the market shares are not directly comparable with those included in the November 2007 consultation as the precise geographic market boundary has been updated

4.58 In addition, Table 4.7 shows the coverage of Market 3 for individual Principal LLU Operators.

Table 4.7: Principal LLU Operator coverage of Market 3

Market 3 coverage	Feb 08	Feb 09
More than 70%	6	6
More than 75%	3	6
More than 80%	2	4
More than 85%	2	3
More than 90%	2	2
More than 95%	1	2

- 4.59 As many as six LLU operators are therefore likely to be able to serve customers, using their own infrastructure, in by far the greater part of Market 3. However, Ofcom has considered the relevance to the SMP assessment of the existence of some small gaps in the area forecast to be covered by any one operator (insofar as they are relevant to market definition, they are considered in Section 3). In doing so, it notes that, the 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. This does not depend on BT facing the same competitors in every part of Market 3.
- 4.60 As noted in Section 3, because no operator has SMP in a Market 3 area, the question of leverage of market power between Market 3 areas does not arise, whilst BT's ability to leverage market power from Markets 1 and Market 2 will be prevented by appropriate conditions and ongoing monitoring by Ofcom. In addition, the fact that some Market 3 areas are not in a particular operator's current roll out plans does not preclude it from rolling out to those areas in the future. It might however reflect an expectation that roll out to these areas is unlikely to be necessary, perhaps because it expects to be able to meet demand there by other means.

Conclusion on SMP assessment

The Hull area

- 4.61 Ofcom concludes that KCOM has single firm SMP in the wholesale broadband access market in the Hull area and will retain SMP throughout the period of this review. The main reasons are as set out in paragraph 4.73 of the November 2007 consultation.

Market 1

- 4.62 Ofcom concludes that BT has single firm SMP in the wholesale broadband access market in Market 1 and will retain SMP throughout the period of this review. The main reasons are as set out in paragraph 4.99 of the November 2007 consultation.

Market 2

- 4.63 Ofcom concludes that BT has single firm SMP in the wholesale broadband access market in Market 2 and will retain SMP throughout the period of this review. The main reasons are as set out in paragraph 4.132 of the November 2007 consultation.

Market 3

- 4.64 Ofcom concludes that no firm possesses SMP in the market for wholesale broadband access in Market 3 and that this will remain the case for the period of this review. The main reasons are as set out in paragraph 4.170 of the November 2007 consultation.

Section 5

Regulatory Remedies

Introduction

5.1 In this section Ofcom sets-out the regulatory remedies it is imposing on KCOM in the Hull area and on BT in Market 1 and separately in Market 2. This section also sets-out the notice period that Communications Providers should be given prior to the revocation of all of the relevant SMP conditions in Market 3.

Regulatory remedies under the 2003/04 Review

5.2 In the 2003/04 Review 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.

5.3 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.

5.4 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*.

5.5 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

Regulatory remedies proposed in the November 2007 consultation

- 5.6 In the November 2007 consultation Ofcom proposed the following regulatory remedies to be imposed on KCOM in the Hull area and to be imposed on BT in both Market 1 and Market 2.
- Requirement to provide Network Access on reasonable request
 - Requirement not to unduly discriminate
 - Requirement to publish a reference offer
 - Requirement to notify charges, terms and conditions
 - Transparency as to quality of service
 - Requirement to notify technical information
 - Requirement to account separately
- 5.7 In identifying these regulatory remedies Ofcom considered the need for *ex-ante* regulation, the characteristics of communications markets and the aims of regulating wholesale broadband access. Ofcom also conducted an impact assessment for each of the proposed regulatory remedies, which separately assessed the impact on; the SMP operator, communication providers with their own infrastructure, communication providers without their own infrastructure and citizens and consumers. Further, Ofcom considered each of the suggested remedies in the “Revised ERG Common Position on the approach to appropriate remedies in the ECNS regulatory framework” and the “ERG 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”.
- 5.8 The full consideration of Ofcom’s proposed regulatory remedies is given in paragraphs 5.17 to 5.200 of the November 2007 consultation.
- 5.9 Ofcom’s proposal to find no-SMP in Market 3 means that all SMP services conditions must be revoked in this market. However, Ofcom was mindful of the potential undesirable affects that the sudden withdrawal of SMP services conditions could have on parties such as Communications Providers who currently purchase wholesale broadband access products on regulated terms and their customers, including residential and business end users. To address these potential undesirable affects Ofcom set-out a notice of withdrawal of SMP services conditions for Market 3 in the November 2007 consultation.
- 5.10 Under the notice of withdrawal of SMP services conditions for Market 3, Ofcom proposed that affected parties be given a period of notice of 12 months and that during the notice period BT would be required to continue to provide Network Access on reasonable terms and conditions to its existing customers. To achieve this Ofcom proposed to maintain the following existing SMP services conditions for 12 months after the date of the conclusion to this review.
- EA1 - Requirement to provide Network Access on reasonable request;
 - EA2 - Requirement not to unduly discriminate;

- EA4 - Requirement to notify charges, terms and conditions;
 - EA5 - Transparency as to quality of service; and
 - EA6 - Requirement to notify technical information.
- 5.11 The full consideration of Ofcom's proposed notice of withdrawal of SMP services conditions for Market 3 is given in paragraphs 5.201 to 5.225 of the November 2007 consultation.
- 5.12 The November 2007 consultation asked the following two questions:

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?

Respondents' comments

- 5.13 Respondents have commented on the following issues in relation to Ofcom's proposed regulatory remedies.

Reasonable pricing in Market 1 and Market 2

- 5.14 Several respondents commented on the fact that Ofcom is not proposing cost orientation or price controls in markets where SMP has been found. These respondents generally feel that cost orientation and price controls should be imposed where SMP is found, as is the case in the symmetrical broadband access market.
- 5.15 One respondent believes that Ofcom's decision not to impose price charge control was influenced by the voluntary commitments given by BT in November 2006.
- 5.16 A number of respondents have commented on the precise wording of the proposed condition EA1, noting that under the 2003/04 Review this condition reads as follows:

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, conditions and charges and on such terms, conditions and charges as Ofcom may from time to time direct.

- 5.17 However, the proposed condition in the November 2007 consultation reads as follows:

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.

- 5.18 These respondents believe that Network Access should be provided on “fair and reasonable terms, conditions and charges”. Some of the respondents suggest that it would be prudent for Ofcom to retain ‘reasonable charges’, as there may be situations where the absences of such an obligation could impair Ofcom’s enforcement ability. In particular, respondents feel that such an obligation may be useful in relation to the charges for ancillary services such as migration and note that Ofcom previously used this obligation to direct the DataStream to IPStream migration charge.
- 5.19 One respondent suggested that a ‘reasonable charges’ obligation may also be necessary in order to address issues such as: compensation payments (SLGs), discount schemes and forced migration onto 21C.

ATM Direction and ATM Margin Direction

- 5.20 One respondent raised concerns about the revocation of the 2004 ATM Direction, as it felt that without this direction in place BT may choose to discontinue DataStream. This respondent seeks reassurance that DataStream will not be withdrawn without a reasonable notice period or replacement with an equivalent product.
- 5.21 Another respondent states that, in its view, Ofcom has not presented analysis to justify the removal of the Direction setting the margin between IPStream and ATM interconnection prices.

Notice of withdrawal of SMP services conditions for Market 3 (transitional measures)

- 5.22 On respondent stated that, in its view, there is no legal basis for the maintenance of SMP obligations following the removal of SMP. This respondent goes on to say that even if Article 16(3) of the Framework Directive was intended to apply in these circumstances, it does not believe it could legitimately apply for a period of 12 months. This respondent further states that if obligations are to be maintained then they should be keep to a minimum, in particular they should only cover DataStream supplied under contracts already in force, and believes that this can be achieved through the maintenance of condition EA1 (Requirement to provide Network Access on reasonable request) only.
- 5.23 Another respondent believes that the proposed 12 month notice period is probably sufficient, but asked for specific guidance about IPStream as it believes that IPStream is now more important than DataStream.
- 5.24 Another respondent agrees that it is appropriate to provide a period of time for any necessary changes, but does not comment on how long such a period should be. This respondent also states that it is essential that during the notice period operators can continue to operate as normal.
- 5.25 Another respondent agreed with the general provision of a 12 month notice period.
- 5.26 Another respondent, however, believes that the period of notice should be 2 years to ensure that adverse effects are avoided.
- 5.27 Another respondent commented on the timing between Ofcom’s WBA statement and the commitment to supply wholesale products upon reasonable request that BT gave in the November 2006 ceiling letter. Particularly, the respondent emphasised that BT’s assurance to supply IPStream and WBC until the end of 2008 will expire only a

few months after Ofcom's final notification and therefore leaving BT with no obligation to supply a wholesale bitstream product in Market 3.

The Hull area

- 5.28 Ofcom received 111 responses from Hull residents. Most of these respondents raised the issue about the lack of competition and choice in the Hull area. A number of the respondents also felt that the level of service provided by Karoo (KCOM's retail division) was poor and that its broadband offerings were generally more expensive and/or had a lower specification when compared with other retail broadband offerings that are available in some other parts of the UK. To address this some respondents suggested that Ofcom should require other providers to offer services in the Hull area.
- 5.29 In addition 23 of these 111 respondents expressed concern about Ofcom's proposed regulatory remedies in the Hull area. They felt that in addition to the requirements to provide network access to other providers and not to discriminate, Ofcom should also place price controls on KCOM's wholesale broadband products. When raising this concern these 23 respondents use the following standard text:

"As a customer of Kingston Communications, I wish to voice my concern over Ofcom's intention not to place pricing controls upon KCs wholesale broadband offering.

I believe that in not placing said controls upon KC, Ofcom is not helping to ensure that KC operates a fair policy of access to its network. This perpetuates a monopoly environment, dissuades business, investment and innovation in Hull and area.

I am formally petitioning you to establish sterner controls upon KC, and would appreciate your response to this."

Ofcom's response

Reasonable pricing in Market 1 and Market 2

- 5.30 As explained in detail in paragraphs 5.118 to 5.121, paragraph 5.177 and paragraphs 5.188 to 5.191 of the November 2007 consultation, Ofcom considers that it would be inappropriate, at this point in time, to impose charge controls or cost-orientation obligations in Market 1 or Market 2. This is because in a developing market characterised by growth and innovation, such as broadband, it is difficult for a regulator to predict with sufficient accuracy how the market will develop and thus there is a risk that any price regulation could turn out to be inappropriate and result in reduced levels of investment, which would ultimately be to the detriment of consumers, both residential and business.
- 5.31 In response to comments made about the consistency with other markets, in particular the symmetrical broadband access market, Ofcom would note that this is a different market with different characteristics and as such there is no reason to assume that the regulatory remedies should necessarily be the same. Indeed, Ofcom has duty to consider the circumstances on a case by case basis when deciding on the remedies which it believes are most appropriate.
- 5.32 In relation to the exact wording of condition EA1.2, Ofcom believes that the proposed wording, as set out in the November 2007 consultation, correctly reflects the decision

not to impose price regulation. A requirement to provide Network Access on fair and reasonable charges would however be at odds with this decision.

- 5.33 Some respondents have suggested that it may be prudent for Ofcom to require BT to provide Network Access on fair and reasonable charges, as it may be useful in relation to certain ancillary services.
- 5.34 However, Ofcom can not find any compelling reason for imposing such a requirement and respondents have not demonstrated a positive case. The situations where this requirement was previously used, as highlighted by some respondents, relates to BT's DataStream and IPStream products. At the time these products were considered to be in separate markets, but Ofcom no longer believes that this is the case and therefore it is not necessary to regulate charges between these products, see paragraphs 5.37 to 5.52 for more information on this point.
- 5.35 Further, if the fair and reasonable charging requirement was introduced as suggested it would not be limited to ancillary services. To limit it to ancillary services would require an explicit reference to the services to which it applies. In doing this Ofcom would need to identify the services and situations where a fair and reasonable charging requirement is necessary. As explained above Ofcom has not been presented with any compelling evidence that would justify the imposition of such a requirement.
- 5.36 Ofcom has therefore decided to keep the wording of condition EA1.2 as set out in the November 2007 consultation.

ATM Direction and ATM Margin Direction

- 5.37 In the 2003/04 Review Ofcom made a distinction between ATM delivered and IP delivered broadband services. This was due to the strong focus and keen interest in ATM that existed at the time. At the time of the 2003/04 Review Ofcom considered that BT's ATM delivered products (DataStream) were in the WBA market, whereas BT's IP delivered products (IPStream) were considered to reside at a downstream 'intermediate' level (i.e. between the wholesale and retail levels). However, as set-out in this review Ofcom no longer considers this to be the case.
- 5.38 Prior to the 2003/04 Review there was a dispute between BT, Energis (now part of Cable & Wireless) and Thus concerning xDSL interconnection at the ATM switch. This dispute was resolved in June 2002 through the issuing of a direction which required BT to provide interconnection with its ATM network ('the 2002 ATM Direction').
- 5.39 Given that ATM delivered products were the main focus of the 2003/04 Review and that there was a clear requirement from industry to interconnect with BT's ATM network, Ofcom decided to place a specific obligation on BT to provide ATM interconnection ('the 2004 ATM Direction'). The 2004 ATM Direction essentially carried forward the existing requirements from the 2002 ATM Direction for BT to provide interconnection with its ATM network.
- 5.40 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 the Margin Direction was done so in relation to the specific products that existed at the time and on the basis of a national market (excluding the Hull area) definition.

- 5.41 As discussed in the November 2007 consultation, there have been a number of product developments since the 2003/04 Review, particularly to the IP delivered products. Since the 2003/04 Review for example, there has been significantly more interest in IP delivered products. At the current time BT supplies nearly five times as many IP delivered products compared with ATM delivered products, to other providers. If we include BT's own use of broadband products then the ratio of IP delivered products to ATM delivered products increases to nearly nine.
- 5.42 In addition, on a forward looking basis Ofcom believes that further significant product developments are likely to occur. Indeed, BT has already started to rollout its next generation network (21C) and offer broadband products based on this network. 21C does not use ATM at all and the intention is that 21C will replace all of BT's existing networks, including its ATM network. The majority of 21C rollout is scheduled to occur during the period covered by this review.
- 5.43 Ofcom therefore believes, for the reasons above, that there is no longer a clear distinction between ATM delivered and IP delivered broadband services and thus they should not be found to be in separate economic markets. Further, on a forward looking basis any such distinction will have no meaning at all.
- 5.44 Given these developments Ofcom does not believe that it is necessary or appropriate to impose a 'new' ATM direction on BT in Market 1 and Market 2, under this review.

Lack of an ATM direction

- 5.45 Ofcom believes that the concerns raised by the respondent about BT discontinuing supply of its ATM delivered DataStream product in the absence of an *ex-ante* direction requiring it to provide ATM interconnection are misplaced, as discussed below.
- 5.46 The lack of an ATM direction does not mean that BT is not required to provide ATM delivered products. Rather, under the SMP conditions there is a general requirement on BT to provide network access on reasonable request. Therefore, BT cannot use the absence of an *ex-ante* direction requiring it to provide ATM interconnection as the basis to discontinue supplying its ATM delivered DataStream product.
- 5.47 BT can, however, discontinue supplying ATM delivered products if it can demonstrate that it is no longer reasonable to continue supplying such products. In fact, this is likely to happen as BT rolls out 21C and switches off its existing networks. In making this transition it is BT's intention to consult with its customers to agree the specification of the replacement product(s) and the timing of any withdrawal. BT has established a process, known as Consult 21, for this purpose.
- 5.48 Further, it is worth noting that the existence of an ATM direction would not prevent BT from discontinuing supply of its ATM delivered products, as any such direction would be subject to the supply being reasonable. Thus, whether an ATM direction exists or not has no bearing on BT's requirement to provide ATM delivered products or its ability to discontinue supplying such products. Indeed, the only reason that Ofcom placed a specific ATM direction at the time of the 2003/04 Review was to provide clarity and certainty given the strong focus and keen interest in ATM that existed at the time and the relatively nascent state of the market.

Margin Protection

- 5.49 As discussed above the margin set in the Margin Direction was done so in relation to the specific products that existed at the time and on the basis of a national market (excluding the Hull area) definition. Also, as mentioned above, and as set out in the November 2007 consultation, there have been a number of product developments since the Margin Direction was introduced. For instance, the introduction of up to 8Mbit/s services, which now account for about 65% of BT's broadband products. In addition, Ofcom no longer believes that a national market (excluding Hull) exists. Ofcom thus considers that the Margin Direction no longer reflects the prevailing market conditions.
- 5.50 The fact that the Margin Direction is based on the previous market definition, which is no longer considered to be appropriate, means that it would be wrong to simply carry this direction forward. The question for Ofcom is, thus, not whether the Margin Direction should be removed but rather should a 'new' Margin Direction be introduced under the new market definition?
- 5.51 In answering this question it is worth recalling why the Margin Direction was introduced in 2004. It was introduced given the strong focus and keen interest in ATM that existed at the time, as discussed above. However, as also discussed above, this is no longer the case. Further, at the time of the 2003/04 Review Ofcom considered that BT's ATM delivered products (DataStream) were in the WBA market, whereas BT's IP delivered products (IPStream) were considered to reside at a downstream 'intermediate' level. Hence, there was the possibility that BT could set the relative prices of DataStream and IPStream to deter the use of DataStream by effectively leveraging its SMP in the WBA market into the downstream intermediate level. This would have been to the detriment of end consumers as they would have been denied access to certain product features and offerings that at the time could only be supported by DataStream. However, given the product developments, particularly to the IP delivered products, many of these product features and offerings are now available on BT's IPStream products and thus the risk of consumer detriment is significantly less today.
- 5.52 Ofcom therefore considers that it is neither necessary nor appropriate to issue a direction that sets a margin between different BT products, especially ones that reside in the same economic market. In reaching this conclusion Ofcom is not saying that DataStream is no longer required, as this is clearly a matter for individual providers, but rather the decision to use DataStream, or not, should be based on providers' own business requirements and not on the size of the margin set by the regulator.

Notice of withdrawal of SMP services conditions for Market 3 (transitional measures)

- 5.53 As set out in paragraphs 5.202 to 5.205 of the November 2007 consultation Ofcom believes that it needs to exercise its duty under section 84 (4) of the Act in light of Article 16(3) of the Framework Directive. Ofcom is therefore of the opinion that there is a solid legal basis to require BT to continue to provide Network Access in Market 3 for an appropriate period of notice in order to protect parties affected by the withdrawal of SMP service conditions in this market.
- 5.54 This view seems to be supported not only by the ERG Remedies Position as stated in paragraph 5.204 of the November 2007 consultation but also by the recent Explanatory Memorandum of the Commission, which states that:

“In accordance with Article 16(3) of the Framework Directive, when an NRA withdraws remedies imposed as a result of a market analysis, an appropriate period of notice shall be given to parties affected by the withdrawal of such obligations.”

- 5.55 In line with the respondent who states that obligations under this notice period should be kept to a minimum, Ofcom accepts that this is the correct principle. However, there is a balance to be struck between freeing up the market from regulation on the one hand and ensuring that affected parties are given adequate protection in the transition on the other.
- 5.56 A number of respondents requested clarification about who the notice period applies to, eg customers who have existing contracts with BT v new customers. It is Ofcom's view that the notice period should only apply to customers who have existing contracts with BT, as these customers, and their customers in turn, are the parties that will be affected by the withdrawal of the SMP services conditions and would thus require appropriate protection. New customers will be required to negotiate commercial terms when purchasing wholesale broadband access services in Market 3, rather than relying on the existence of regulated terms.
- 5.57 During this notice period Ofcom believes that it is necessary for customers, who have existing contracts with BT, to be able to continue to operate in the same way as they did before publication of this statement. Thus, they should be able, for the duration of the notice period, to continue purchasing the products that they are currently purchasing while they make any necessary alternative arrangements.
- 5.58 Whilst at the time of the 2003/04 Review Ofcom considered that BT's ATM delivered products (DataStream) were in the WBA market, whereas BT's IP delivered products (IPStream) were considered to reside at a downstream 'intermediate' level, Ofcom considers that product developments have removed this distinction. This was discussed in the November 2007 consultation and in paragraphs 5.37 to 5.52 of this statement. Going forwards Ofcom therefore considers that BT's current DataStream and IPStream products are both in the WBA market. Given that the notice period applies going forward Ofcom believes that BT should continue to supply both DataStream and IPStream products to existing customers during the notice period.
- 5.59 During the notice period Condition EA1 (Requirement to provide Network Access on reasonable request), from the 2003/04 Review will continue to apply.
- 5.60 On the issue on how long the notice period should be, Ofcom notes that several respondents agreed with the 12 month proposal. Only one respondent disagreed stating that it believes the period of notice should be 2 years to ensure that adverse effects are avoided. Ofcom believes that a 2 year notice period would be disproportionate and would in fact be longer than many typical contract lengths. Ofcom, therefore, continues to believe that 12 months is appropriate for customers who have existing contracts with BT to make any necessary alternative arrangements.
- 5.61 In relation to the comment made about the timing between Ofcom's WBA statement and the commitment to supply wholesale products upon reasonable request that BT gave in the November 2006 ceiling letter³³, Ofcom would note that BT's commitments are separate to market reviews. Further, as set out in this statement Ofcom is requiring BT to provide a 12 month notice period.

³³ www.ofcom.org.uk/telecoms/loi/bbpricing/ceilings.pdf

- 5.62 The same respondent made a number of additional comments about BT's price commitments. However, as noted above BT's price commitments are separate to this market review and accordingly Ofcom would suggest that if stakeholders wish to discuss these commitments that this is done separately to this review.

The Hull area

- 5.63 Ofcom understands the general concerns raised by Hull residents and has carried out a piece of work to identify why competition has not yet developed in the Hull area and to compare wholesale and retail prices between the Hull area and other parts of the UK. This is set out in Annex 5.
- 5.64 In the following paragraphs Ofcom considers the following two comments made by respondents in relation to the regulatory remedies that should apply in the Hull area:
- require alternative providers to offer services in the Hull area
 - place price controls on KCOM's wholesale broadband products
- 5.65 On the first of these suggestions, absent a finding of SMP Ofcom does not have the power to require providers to offer services in Hull. It can however ensure that all the technical and regulatory conditions exist to make it possible for alternative providers to enter the Hull market and it is committed to doing this.
- 5.66 On the second of these suggestions, placing price controls on KCOM's wholesale broadband products is an option that Ofcom considered in the November 2007 consultation. However, Ofcom did not propose this option because in a developing market characterised by growth and innovation, such as broadband, it is difficult for a regulator to predict with sufficient accuracy how the market will develop and thus there is a risk that any price regulation could turn out to be inappropriate and result in reduced levels of investment, which would ultimately be to the detriment of consumers, both residential and business.
- 5.67 The respondents calling for price controls state that they believe price controls will help to ensure that KCOM operates a fair policy of access to its network. However, as discussed in Annex 5, alternative providers do not seem to consider the existence of price controls, or not, to be a significant factor when deciding whether to enter the Hull market. Ofcom would further note that the proposed regulation of KCOM is broadly similar to that for BT and that significant access to BT's network was achieved in the absence of price controls.
- 5.68 Ofcom therefore considers that price controls are unlikely to significantly influence the business case for alternative providers but do risk stifling further investment and development of the market. On this basis Ofcom is not intending to place price controls on KCOM at this time.
- 5.69 Where respondents have made price comparisons they have generally compared KCOM's retail broadband products with LLU-based product bundles, eg products offered by Sky and Talk Talk. In this context it is the LLU remedy, which flows from the wholesale local access (WLA) market, which is being commented on rather than the remedies which flow from this WBA market review. Whilst this market review is not directly about LLU, Ofcom notes that KCOM is also required to provide access to its exchanges (aka LLU) on a cost orientated basis and that this LLU remedy does have the potential to constrain the WBA market.

Notice of withdrawal of SMP services conditions for Market 3

5.70 In the November 2007 consultation Ofcom proposed that affected parties be given a period of notice of 12 months and that during the notice period BT would be required to provide Network Access on reasonable terms and conditions to its existing customers. To achieve this Ofcom proposed to maintain the following existing SMP services conditions for 12 months after the date of the conclusion to this review.

- EA1 - Requirement to provide Network Access on reasonable request;
- EA2 - Requirement not to unduly discriminate;
- EA4 - Requirement to notify charges, terms and conditions;
- EA5 - Transparency as to quality of service; and
- EA6 - Requirement to notify technical information.

5.71 Ofcom continues to believe that it is necessary to maintain condition EA1, as discussed in paragraphs 5.53 to 5.59. However, Ofcom no longer considers that the other conditions are essential during the notice period.

5.72 During the notice period Ofcom believes that it is necessary for customers, who have existing contracts with BT, to be able to continue to operate in the same way as they did before publication of this statement. Ofcom would therefore not expect these customers to be subject to any unreasonable price rises or service degradation. However, having considered respondents comments Ofcom is persuaded that the maintenance of conditions EA2, EA4, EA5 and EA6 would be overly restrictive in the light of a no-SMP finding. In particular it could have a significant impact on BT's ability to compete for new customers whereas the protection during the notice period is intended to maintain supply to existing customers. For example it could prevent BT from offering bespoke deals even though they are continuing to supply existing customers with existing products.

5.73 Therefore, in order to give BT flexibility in Market 3 whilst ensuring that existing customers are able to continue to operate in the same way as they did before publication of this statement, Ofcom has decided to maintain only condition EA1 during the notice period. This is also in keeping with the principle that obligations under this notice period should be kept to a minimum.

Conclusion on regulatory remedies

5.74 Ofcom has decided to impose the following regulatory obligations on KCOM in the Hull area and on BT in Market 1 and separately in Market 2.

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

- Requirement to notify technical information
- Requirement to account separately

5.75 The requirement for accounting separation will necessitate the current regulatory accounting framework on BT and KCOM to be reviewed and updated. Ofcom will undertake this work in advance of publication of the 2008/09 regulatory Financial Statements and any changes are likely to be subject to a separate consultation. The 2007/08 regulatory Financial Statements will be unchanged by this statement.

ERG Common Position

5.76 In identifying these remedies Ofcom has taken full account of all the ERG Common Positions, Remedies Positions and best practices in this area. This is set out in detail in the November 2007 Consultation, in particular see paragraphs 5.29 to 5.40, paragraph 5.108, paragraph 5.179 and paragraph 5.195.

Market 3

5.77 Given the finding of no-SMP in Market 3, no *ex-ante* regulatory remedies will apply in this market. However, Ofcom is requiring a 12 month notice period for customers who have existing contracts with BT, so that they can continue to operate while they make any necessary alternative arrangements. During this period Condition EA1 (Requirement to provide Network Access on reasonable request), from the 2003/04 Review, will continue to apply.

Existing regulatory remedies

5.78 All existing regulatory remedies that stem from the previous wholesale broadband access market review will cease to apply.

Annex 1

Notification

Revocation of notifications, identification of certain services markets, the making of market power determinations and the setting of SMP services conditions

WHEREAS:

- (A) the Office of Communications ('OFCOM') made, in accordance with sections 48 (2), 79 and 80 of the Communications Act 2003 ('the Act') proposals for identifying markets, making market power determinations and the setting of SMP services conditions by reference to such determinations ('SMP conditions') in relation to British Telecommunications plc ('BT') and KCOM Group plc ('KCOM') by way of publication of a notification on 15 November 2007 ('the Consultation Notification');
- (B) a copy of the Consultation Notification was sent to the Secretary of State in accordance with section 50 (1) (a) of the Act and to the European Commission and to the regulatory authorities of every other member State in accordance with sections 50 (3) and 81 of the Act;
- (C) in the Consultation Notification and the accompanying explanatory statement OFCOM invited representations about any of the proposals set out therein by 7 February 2008, and subsequently extended this period for representations to 14 February 2008;
- (D) by virtue of section 80 (6) of the Act, OFCOM may give effect to any proposals to identify a market for the purposes of making a market power determination or any proposals for making a market power determination set out in the Consultation Notification, with or without modification, where:
 - (i) it has considered every representation about the proposals duly made to OFCOM within the time period specified in the Consultation Notification (as extended);
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State; but
 - (iii) OFCOM's power to give effect to such proposals is subject to section 82 and 83 of the Act;
- (E) by virtue of section 48 (5) of the Act, OFCOM may give effect to any proposals to set SMP conditions set out in the Consultation Notification, with or without modification, where:
 - (i) it has considered every representation about the proposals duly made to OFCOM within the time period specified in the Consultation Notification (as extended); and
 - (ii) it has regard to every international obligation of the United Kingdom (if any) which has been notified to OFCOM for this purpose by the Secretary of State;

- (F) OFCOM received responses to the Consultation Notification and has considered every such representation duly made to it in respect of the proposals set out in the Consultation Notification and the accompanying explanatory statement; and the Secretary of State has not notified OFCOM of any international obligation of the United Kingdom for this purpose;
- (G) the European Commission has not made a notification for the purposes of Article 7 (4) of the Framework Directive as referred to in section 82 of the Act and the proposals do not relate to a transnational market as referred to in section 83 of the Act; and

NOW, therefore:

1. OFCOM in accordance with sections 48(1) and 80 of the Communications Act 2003 (the "Act") hereby identifies markets, makes market power determinations, sets certain SMP services conditions by reference to such determinations ("SMP conditions") and revokes certain SMP conditions as set out in the following paragraphs.

2. OFCOM identifies 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 provided in Market 3; and
- (d) wholesale broadband access provided in the Hull area.

3. OFCOM makes in accordance with section 79 of the Act 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 sets 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, identifying 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 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 setting 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 also amends 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 OFCOM’s Notification published on 21 May 2008” and “Wholesale Broadband Access in Market 2 as defined in OFCOM’s Notification published on 21 May 2008”. Ofcom is further proposing to amend Part 1 of Schedule 1 to the Notification dated 22 July 2004 setting further SMP 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 conditions set by those Notifications shall be revoked by this Notification in accordance with paragraphs 10 to 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 Notification when it takes effect under sections 48(1) and 79(4) of the Act unless otherwise stated in paragraph 11 of this Notification.

11. Insofar as Condition EA1 of Schedule 1 to the notifications at Annex E of the *Wholesale broadband access market review* published by Ofcom on 13 May 2004 relates to Market 3 and insofar as this Condition relates to the provision of Network Access to a Third Party which is an existing wholesale broadband access customer of the Dominant Provider, this Condition 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. For the avoidance of doubt conditions EA2, EA3, EA4, EA5, EA6 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, insofar as they relate to Market 3, shall be revoked by this Notification when it takes effect under sections 48(1) and 79(4) of the Act.

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 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 set the SMP conditions as 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. In addition, when identifying and analysing the markets referred to in paragraph 2 above, and in considering whether to set the SMP conditions as set out in this Notification, Ofcom has taken the utmost account of the European Commission’s response to the Consultation Notification.

14. OFCOM considers that the SMP 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 condition.

15. In making all of the decisions 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 its duties under section 3 of the Act;

16. 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 in accordance with sections 50(2) of the Act.

17. 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 this Notification;

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

“**Market 3**” means the area covered by the BT exchanges set out at Appendix 3 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

21 May 2008

Schedule 1

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 favors 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

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.

Schedule 3

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 (“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.

Appendix 1

BT exchanges covering Market 1

3,720 BT exchanges

CMACK, CMALB, CMALC, CMALDM, CMALL, CMARM, CMBARF, CMBER, CMBKN, CMBOB, CMBRAU, CMBRE, CMBWN, CMCLA, CMCLAV, CMCOLE, CMCRI, CMCUR, CMDIT, CMEARL, CMELMD, CMETT, CMFIL, CMFRA, CMFUR, CMGREA, CMHAMP, CMHARBU, CMHASN, CMHEN, CMHIG, CMKINE, CMLAP, CMMART, CMMER, CMMID, CMMOR, CMMORT, CMPAI, CMPAT, CMPEB, CMQUA, CMSFD, CMSHE, CMSMBK, CMSNI, CMSON, CMSOUC, CMSWI, CMTAN, CMWEE, CMWEL, CMWESH, CMWHY, CMWOL, CMWOR, CMWYT, CMYOX, EAABR, EAABY, EAACL, EAALB, EAARD, EAASD, EAASW, EAATT, EABAC, EABAD, EABAW, EABBY, EABDC, EABDF, EABEY, EABFD, EABFN, EABGC, EABIL, EABIN, EABIR, EABKW, EABLA, EABLU, EABLY, EABMF, EABMK, EABNC, EABND, EABNH, EABNM, EABNW, EABOT, EABRD, EABRI, EABRK, EABRP, EABRR, EABRT, EABRU, EABSM, EABTF, EABTM, EABUR, EABUX, EABWL, EABYF, EACAA, EACAI, EACAR, EACAX, EACDN, EACFD, EACFH, EACHA, EACHR, EACHT, EACHY, EACLA, EACLE, EACLV, EACLY, EACOD, EACOG, EACOM, EACOP, EACOX, EACRO, EACST, EACTD, EACTP, EACTS, EACUL, EACWT, EADEB, EADED, EADIC, EADIS, EADNE, EADNM, EADOC, EADSM, EAEBG, EAHL, EAELM, EAELS, EAELV, EAEMS, EAERD, EAERI, EAESW, EAEYE, EAEYK, EAFAK, EAFDM, EAFDD, EAFIN, EAFLE, EAFMT, EAFML, EAFOR, EAFOW, EAFOW, EAFRP, EAFSD, EAFTN, EAFUN, EAFXD, EAFYF, EAGAR, EAGAY, EAGBN, EAGBT, EAGCR, EAGT, EAGDE, EAGDM, EAGES, EAGHD, EAGHM, EAGHY, EAGLE, EAGMS, EAGOL, EAGRE, EAGRU, EAGRY, EAGSM, EAGST, EAGWH, EAGYD, EAHAS, EAHAT, EAHBK, EAHBO, EAHDM, EAHDN, EAHEA, EAHED, EAHEL, EAHEM, EAHEN, EAHER, EAHET, EAHEV, EAHGM, EAHIC, EAHIL, EAHKD, EAHLM, EAHLT, EAHNF, EAHNG, EAHNS, EAHNT, EAHOH, EAHOL, EAHOM, EAHON, EAHOR, EAHOX, EAHRL, EAHRR, EAHST, EAHSW, EAHTM, EAHTT, EAHUL, EAHWO, EAILK, EAING, EAISL, EAKBC, EAKEL, EAKEN, EAKSH, EAKSL, EAKTN, EALAK, EALAT, EALAV, EALAY, EALIN, EALIT, EALLN, EALOD, EALPT, EALST, EALTN, EALWT, EAMAD, EAMBN, EAMEN, EAMET, EAMFD, EAMHD, EAMHM, EAMID, EAMKT, EAMLK, EAMLS, EAMOR, EAMTC, EAMTS, EAMUL, EAMUN, EANAC, EANAR, EANAY, EANDL, EANEE, EANEW, EANPT, EANWS, EAOC, EAOFF, EAORF, EAORM, EAORS, EAOUS, EAOVE, EAPAK, EAPEA, EAPEL, EAPLE, EAPOT, EAPRI, EAPUC, EAPUL, EAPUR, EAPYM, EAQUI, EARAD, EARAT, EARAV, EARDH, EARDN, EAREE, EAREN, EARID, EARMS, EAROO, EAROW, EAROX, EASAB, EASAL, EASAP, EASBM, EASBN, EASCK, EASCR, EASFM, EASFR, EASGM, EASGN, EASHE, EASHI, EASHL, EASHM, EASHR, EASIC, EASIL, EASIX, EASMA, EASMD, EASMN, EASNA, EASOS, EASRM, EASRP, EASRY, EASST, EASTB, EASTK, EASTL, EASTN, EASTR, EASTT, EASTW, EASUR, EASUT, EASWD, EASWL, EASWM, EASWN, EASWT, EASXM, EASXP, EASYD, EATER, EATFD, EATHA, EATHE, EATHU, EATIP, EATIV, EATKL, EATLL, EATLW, EATNM, EATOL, EATSC, EATTS, EATWI, EAUBB, EAWAN, EAWBS, EAWCT, EAWDB, EAWEL, EAWEN, EAWFY, EAWIL, EAWIN, EAWIV, EAWIX, EAWKB, EAWLD, EAWLM, EAWLW, EAWLY, EAWMK, EAWMS, EAWOD, EAWOL, EAWOR, EAWRD, EAWRE, EAWRO, EAWRU, EAWSM, EAWSP, EAWST, EAWTL, EAWTN, EAWTS, EAWWR, EAWYM, EAYOX, EMABBOT, EMABRIP, EMALREW, EMALSTO, EMAMBER, EMANCAS, EMASFOR, EMBAIN, EMBAKEW, EMBARTO, EMBENEF, EMBENWI, EMBGWOR, EMBILLE, EMBILLI, EMBILST, EMBLAKE, EMBLEAS, EMBLISW, EMBLLTO, EMBOSTO, EMBOTTE, EMBOZEA, EMBRAIL, EMBREAD, EMBRIGS, EMBRIXW, EMBROUG, EMBUCKM, EMBULWI, EMBURGH, EMBURTJ, EMBUTTE, EMBYFIE, EMBYTHO, EMCABYT, EMCARSI, EMCASTO, EMCHRIS, EMCHSTL, EMCLIFT, EMCLIPS, EMCLOPT, EMCNTON, EMCOPEN, EMCOLLI, EMCOTTE, EMCORAN, EMCORGLN, EMCORWL, EMCORXT, EMCORNTON, EMCORWLL, EMCTSC, EMCULVE, EMCWRS, EMDARLE, EMDEEPI, EMDETHI, EMDFFIE, EMDINGL, EMDNGTN, EMDODDI, EMDOWSB, EMDRAYC, EMDUDDI, EMEASTB, EMEASTH, EMEASTS, EMEADENH, EMEADWIN, EMEKKBY, EMELLAS, EMEMLTON, EMEMLPIN, EMESSSTL, EMETWLL, EMEYEPE, EMFARNS, EMFENTO, EMFLECK, EMFOLKI, EMFOSDY, EMFRIDA, EMFRISK, EMFULBE, EMGADDE, EMGEDNE, EMGILLS, EMGLINT, EMGOSBE, EMGPONT, EMGRETC, EMGRETL, EMGRFTO, EMGRGTGL, EMGTTHA, EMGUYHI, EMHACKL, EMHECKI, EMHLBCH, EMHLLTO, EMHNGTN, EMHOARC, EMHOLSJ, EMHOLSM, EMHRLST, EMHRRBY, EMHUBBE, EMHUGAR, EMHULLA, EMHURLE, EMHUSBB, EMINGOL, EMKBWOR, EMKCLIF, EMKGWOR, EMKINO, EMKIRKL, EMKIRTO, EMKISLI, EMKMBLT, EMKNIPT, EMKNRSS, EMLANGR, EMLBENN, EMLERRE, EMLNGBU, EMLOWDH, EMLSTEE, EMLSUTT, EMMADW, EMMANEA, EMMARCH, EMMARKB, EMMARSM, EMMEDBO, EMMELBO, EMMERES, EMMESHM, EMMKDEE, EMMMLCHA, EMMMLTON, EMMNTON, EMMORCO, EMMRTON, EMNEBOR, EMNETHB, EMNEWLE, EMNEWTO, EMNLUFF, EMNWTON, EMOLDLE, EMOSSGA, EMOUNDL, EMOVERS, EMPADVE, EMPAPSA, EMPARWI, EMPATTI, EMPAULE, EMPEATL, EMPEAS, EMPNCHB, EMPREST, EMRDDEE, EMRGATE, EMROCKI, EMROTTB, EMRRSBB, EMSAWTR, EMSBSEY, EMSCALF, EMSCREM, EMSHARD, EMSILVE, EMSKGN, EMSLFRD, EMSOMER, EMSOUTH, EMSPCOT, EMSPLSB, EMSRAUC, EMSRFLT, EMSTICK, EMSTKEG, EMSUBGE, EMSUDBU, EMSUTER, EMSUTSJ, EMSUTTO, EMSWATN, EMSWSD, EMTERSJ, EMTGGBY, EMTHIST, EMTHORP, EMTHRAP, EMTHRNY, EMTHURL, EMTILTO, EMTNGND, EMTOWCE, EMTRVES, EMTTYDD, EMTWCRO, EMUPPIN, EMUPWLL, EMWALGR, EMWALSA, EMWARBY, EMWDHOU, EMWEDDO, EMWELFO, EMWELNY, EMWHAPL, EMWHISS, EMWHTTO, EMWINST, EMWINWI, EMWIOTH, EMWIRKS, EMWISSM, EMWLTHA, EMWLVEY, EMWMNDH, EMWNFLT, EMWOLEY, EMWOODB,

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 SMWHY, SMWKN, SMWLS, SMWLY, SMWNG, SMWRB, SMWS, SMWSN, SMWSW, SMWTC, SMWTTW,
 SMWW, SMWX, SMWZ, SSABE, SSABS, SSADN, SSAFD, SSAHY, SSALM, SSAMB, SSAVY, SSAXB,

Appendix 2

BT exchanges covering Market 2

670 BT exchanges

CLFLE, CLMOO, CLWOO, CMBIDF, CMBRI, CMCHEY, CMCOD, CMFIN, CMJAM, CMKER, CMKNO, CMKVR, CMMLD, CMTOL, CMWOM, EAARR, EAAYL, EABEC, EABGY, EABMD, EACHF, EACHU, EACOS, EACTM, EADAN, EADER, EADOW, EADRA, EAELC, EAEP, EAEXN, EAFRN, EAFUL, EAGBD, EAGIR, EAGWK, EAGYT, EAHAE, EAHAW, EAHIS, EAHSD, EAHWH, EAKSG, EALNT, EAMAN, EAMIL, EANWD, EAONG, EAROC, EASAF, EASBY, EASCI, EASFT, EASOH, EASTD, EASUD, EASWO, EASWV, EATEV, EATHB, EATRU, EAWAS, EAWDF, EAWRI, EAWTB, EMALFRE, EMASBOU, EMASHBB, EMATTHE, EMBELPE, EMBINGH, EMBIRSS, EMBOURN, EMBRLAT, EMBUCKD, EMCHATT, EMCHELL, EMCOTGR, EMDESBO, EMDSSTFO, EMEARLS, EMESTLE, EMFINED, EMHARDI, EMHORSL, EMHOTHER, EMIBSTO, EMIRTHL, EMKIMBE, EMKRBYM, EMLUTTE, EMMATLO, EMMKFIE, EMNEWOL, EMOAKHA, EMPLUMT, EMQURRN, EMRADCL, EMRANND, EMRMSEY, EMROTHW, EMRPLEY, EMRPTON, EMRTHLY, EMSHEPS, EMSHIRE, EMSLEBY, EMSOSH, EMSTTEL, EMTBSHE, EMTUTBU, EMWARSO, EMYXLEY, ESARB, ESARM, ESBK, ESBAX, ESBON, ESBUC, ESBYB, ESCAU, ESCOC, ESCUP, ESDEN, ESDYS, ESFFR, ESGAL, ESGLN, ESGLS, ESGRB, ESGRG, ESIK, ESIKR, ESKNW, ESLNW, ESLOA, ESLOC, ESMAI, ESMID, ESMNF, ESMON, ESQUE, ESSCN, ESSHO, ESSTA, ESTAY, ESTNT, ESWHI, ESWIN, LCADL, LCAIN, LCAPB, LCASL, LCBAC, LCBAN, LCBIR, LCBRN, LCBUS, LCCAF, LCCLE, LCCOC, LCCOP, LCCDF, LCECC, LCFRE, LCHAM, LCHBK, LCHEY, LCKEN, LCKHA, LCKNO, LCLON, LCLYT, LCMAR, LCPAD, LCPAR, LCPEN, LCPLB, LCPLE, LCTOD, LCULV, LCWHI, LCWIL, LCWOR, LNBGN, LNCNW, LNCUF, LNPFT, LNPKS, LSBKM, LSCOB, LSFARN, LSMERS, LSOXS, LSTAD, LSUWAR, LSWOL, LVAUG, LVBIL, LVCUL, LVEAS, LVFRO, LVHAL, LVHEL, LVHIG, LVHOY, LVNOR, LVRAI, LVUPH, LWCHO, LWDEN, LWHARE, LWRAD, MRARD, MRCHA, MRDIS, MRKNU, MRSAD, MRSAN, MRWEA, MYBNN, MYBOS, MYBRW, MYCAL, MYCUL, MYDLT, MYDUD, MYGOO, MYGUI, MYHAW, MYHEB, MYHIP, MYHON, MYILK, MYILL, MYKKB, MYKNA, MYMTH, MYOAT, MYRPN, MYRPP, MYSCA, MYSKE, MYSLA, MYSML, MYSNH, MYSOW, MYSTE, MYTHN, MYTHT, MYWEH, NDACO, NDAGR, NDAYL, NDBAR, NDBEA, NDBGR, NDBHI, NDBIR, NDCDO, NDCHE, NDCHS, NDCOP, NDEDE, NDHEA, NDHIL, NDHOO, NDHYT, NDLON, NDLOO, NDMSH, NDNON, NDNRO, NDPWO, NDSHE, NDSNO, NDSTU, NEBL, NEBRO, NEBUR, NECR, NEDUDL, NEE, NEFH, NEFN, NEGA, NEGM, NEHHL, NEHYL, NEHZ, NELC, NEMEA, NEOC, NEP, NEPH, NERE, NERG, NERN, NESAC, NESH, NESLB, NESTK, NESTO, NEWLF, NEWN, NIAM, NIBB, NIBC, NIBNH, NIBO, NIBRH, NICDY, NICF, NICI, NICKL, NICMN, NICN, NICR, NIDD, NIDG, NIDLD, NIDO, NIDP, NIDV, NIEG, NIFWM, NIHO, NIHW, NILDW, NILE, NILY, NIMAL, NINS, NINY, NIOM, NIRI, NIRT, NISE, NISM, NISTM, NSASH, NSBLG, NSDEN, NSELL, NSIUR, NSKGW, NSKNC, NSLNG, NSNTH, NSPRT, NSSVN, NSWES, SDBLLNG, SDBMBRD, SDFRSHW, SDHYLNG, SDLSLNT, SDMDDL, SDPCHVN, SDPGHM, SDPLGT, SDPTRSF, SDSHNKL, SDSNDWN, SDSTBBN, SDSTHWC, SDSTHWT, SDSTRN, SDSTYNN, SDTTCHF, SDVNTNR, SLARM, SLASC, SLASK, SLBAW, SLBCC, SLBEN, SLBLR, SLBOI, SLBWD, SLCLS, SLCLY, SLCUD, SLCX, SLGL, SLGY, SLHBE, SLHLG, SLHYG, SLIMM, SLKIV, SLLH, SLNCU, SLOB, SLPN, SLRSN, SLRY, SLSC, SLSKT, SLTHY, SLTKL, SLWAD, SLWBO, SLWHT, SLWKT, SLWM, SLWS, SLWTH, SMAP, SMBC, SMBU, SMBWD, SMCAR, SMCBY, SMC, SMFG, SMFRD, SMGM, SMHGN, SMHXT, SMKI, SMKO, SMKT, SMLA, SMOA, SMPEN, SMPRB, SMRDB, SMSA, SMSFD, SMSTF, SMTA, SMWC, SMWE, SMWEP, SMWI, SMWTD, SMYG, SSBAT, SSBCL, SSBOA, SSBOX, SSBRI, SSCBD, SSCHN, SSCOL, SSCOR, SSCRD, SSDSY, SSFGN, SSFLA, SSGLA, SSHWK, SSKEY, SSLON, SSPIL, SSSFD, SSSH, SSSH, SSSHN, SSSTT, SSTHO, SSWCE, SSWEL, SSWG, SSWIB, SSWOB, SSWWS, SSSYAT, STAMSBY, STBINAB, STBISHW, STBLFRD, STBLNFD, STBRDPT, STBURSN, STCANCL, STDORCH, STDOWTN, STDURRW, STFORDB, STHAMBL, STHICLF, STLGSHL, STLYTMN, STMILOS, STSHABY, STSTHBN, STSWANG, STTDWTH, STTWYFD, STVERWD, STWARHM, STWLTON, SWABT, SWADW, SWAG, SWAVY, SWBPG, SWCAA, SWCIT, SWCJW, SWCNE, SWCT, SWCXX, SWCYX, SWDPW, SWEBY, SWFBX, SWGC, SWGLN, SWLLG, SWLLR, SWMES, SWMGR, SWMMV, SWMYS, SWNE/CH, SWOAG, SWPDU, SWPDW, SWPEK, SWPND, SWPTY, SWQTI, SWRDA, SWRDX, SWRHR, SWRWI, SWSKU, SWTEZ, SWTFA, SWTR, SWXNH, SWYYN, SWZKS, THBW, THCK, THCLY, THCN, THDC, THFC, THIP, THSPD, THTH, THWL, THWP, THWR, WMASH, WMBEW, WMHAG, WMHCH, WMLIT, WMMFD, WMPKR, WMTRE, WMUTT, WNBC, WNBH, WNBRS, WNBUC, WNCKO, WNDAW, WNDEN, WNDON, WNFL, WNHAT, WNHAW, WNHR, WNHW, WNLED, WNM, WNNP, WNPRS, WNRE, WNROW, WNRUA, WNRUT, WNRWX, WNSA, WNSHI, WNSY, WNWCH, WNWEM, WSANN, WSARD, WSAYR, WSBEI, WSBN, WSBRE, WSBRW, WSBUS, WS CAB, WSCLE, WSCMN, WSDAR, WSDUN, WSGOU, WSGRE, WSGRT, WSHEL, WSIRS, WSIRV, WSKBN, WSKIE, WSKIW, WSLAK, WSLAR, WSLES, WSLEX, WSPOS, WSPRE, WSPRO, WSPTH, WSPTN, WSSTE, WSSTN, WSSTW, WSTRO, WWBARN, WWBIDE, WWBLYD, WWBRAU, WWBRIX, WWBUDE, WWCHEL, WWCHRD, WWCHRS, WWCHUD, WWCRE, WWCREW, WWCULL, WWDART, WWDRAWL, WWDRAWN, WWHAYL, WWHOLF, WWHONI, WWILFR, WWILMI, WWKKWL, WWKNGB, WWLAUN, WWLISK, WWLPRT, WWMART, WWMINE, WWNANP, WWOSMY, WWPAR, WWPER, WWPIN, WWPRYN, WWROBO, WWSALT, WWSHIP, WWSIDM, WWSIVE, WWPET, WWTAVI, WWTEIG, WWTIVE, WWTOPS, WWTORR, WWTOTN, WWWADE, WWWELL, WWWILL, WWYELV, WWYEOV

Appendix 3

BT exchanges covering Market 3

1197 BT exchanges

CLBER, CLBIS, CLCAN, CLCLE, CLCOV, CLEUS, CLFAR, CLHOL, CLKEN, CLKLG, CLKXX, CLOW, CLMON, CLNEW, CLSHO, CLSOU, CLSTE, CLUPP, CLWAL, CLWAP, CMACO, CMALD, CMASHF, CMASTX, CMBEAC, CMBEAR, CMBED, CMBIL, CMBIN, CMBIR, CMBLAC, CMBNW, CMBRO, CMBRU, CMBYL, CMCAL, CMCAN, CMCAS, CMCEN, CMCGF, CMCHAP, CMCHEL, CMCHY, CMCRA, CMDDD, CMDRU, CMDUN, CMEARD, CMEAS, CMEDG, CMERD, CMEXH, CMFAL, CMFOL, CMFOR, CMFOU, CMGREG, CMHALE, CMHARBO, CMHEA, CMHED, CMHIGH, CMHIGW, CMHILL, CMHOR, CMKEN, CMKING, CMKWD, CMLEA, CMLGS, CMLIC, CMLYE, CMNOR, CMNUN, CMPEL, CMPEN, CMPRI, CMRAD, CMREC, CMRUB, CMRUGB, CMSED, CMSEL, CMSHEL, CMSHI, CMSME, CMSOL, CMSOUB, CMSPR, CMSTB, CMSTE, CMSTOX, CMSTRA, CMSTRE, CMSUT, CMTET, CMTIL, CMTIP, CMVIC, CMWAL, CMWARW, CMWDGT, CMWED, CMWESB, CMWIL, CMWL, CMWV, EABAS, EABCY, EABEL, EABIS, EABNT, EABOR, EABRW, EABSE, EACAM, EACHE, EAACLN, EACOL, EACRH, EACVI, EAEBY, EAELY, EAEWD, EAFEL, EAFOX, EAGOR, EAGRA, EAHAV, EAHLW, EAHTF, EAHWD, EAIPS, EAKLN, EALAI, EALGH, EALLOW, EAMAL, EAMRN, EANBF, EANCC, EANCN, EANCW, EANMK, EARAY, EARST, EASBF, EASBW, EASND, EASTF, EASTM, EATHP, EATLB, EAVAN, EAWAR, EAWFD, EAWHI, EAWTH, EMALLES, EMALVAS, EMARKWR, EMARNOL, EMAYLES, EMBASFO, EMBEAUM, EMBEEST, EMBELGR, EMBLDWO, EMBRAUN, EMBULWE, EMBURTO, EMCASTL, EMCENTL, EMCHALF, EMCHAPE, EMCOALV, EMCRRBY, EMDAVEN, EMDRRBB, EMDUSTO, EMEASWI, EMEDWAL, EMERRSS, EMEVING, EMFAZEL, EMGDDLI, EMGLNFI, EMGRETO, EMGRHAM, EMGSCTE, EMHARRO, EMHINCK, EMHNDON, EMHUCKN, EMILKES, EMKINGS, EMKIRKB, EMKTTT, EMLANGL, EMLEABR, EMLGHBO, EMLONGB, EMLONGE, EMMAARC, EMMELTN, EMMICKL, EMMNSFI, EMMONTF, EMMOULT, EMMRKTH, EMNARBO, EMNEWAR, EMNORTH, EMODDBY, EMORTON, EMPETER, EMPINXT, EMPOLSW, EMPRTRE, EMRDDIN, EMRUSHD, EMSANDI, EMSHRWO, EMSPDNG, EMSTBBS, EMSTIVE, EMSTMTFD, EMSTNEO, EMSTNYG, EMSUTTI, EMSWADL, EMTHRN, EMTMWOR, EMTRENT, EMWELLI, EMWERRI, EMWESSW, EMWESTO, EMWHITT, EMWILLO, EMWOLLA, EMWSBCH, EMWSTWO, ESABB, ESALL, ESBAN, ESBAT, ESBRF, ESBRO, ESCLA, ESCOR, ESCOW, ESCRA, ESCTN, ESDAB, ESDAL, ESDAV, ESDEA, ESDON, ESDUF, ESFAI, ESFAL, ESFML, 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, LCBK, LCBLP, LCBOL, LCBUR, LCCAR, LCCHO, LCCHU, LCCLR, LCCLV, LCCOL, LCDAR, LCDAU, LCFAR, LCFWL, LCFOM, LCFUL, LCGRH, LCHW, LCHIG, LCHIN, LCHOR, LCLAN, LCLAY, LCLEI, LCLEY, LCLIT, LCLOT, LCMOR, LCNEL, LCNEL, LCNESH, LCCOR, LCPPEW, LCPPOU, LCPRE, LCRAM, LCRIB, LCROC, LCROS, LCSHW, LCSOU, LCSSH, LCSTA, LCSTD, LCTOT, LCWES, LCWIG, LNADK, LNBAR, LNBKG, LNBPK, LNCED, LNCHF, LNCLA, LNDAG, LNEEDM, LNEFN, LNFIN, LNGDM, LNGHL, LNHAC, LNHAI, LNHAT, 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, LNWSAD, LNWITH, LSADD, LSASH, LSBAL, LSBEC, LSBEU, LSBEX, LSBRO, LSBURH, LSBYF, LSCHER, LSCHES, LSCHI, LSCLPM, LSCRAY, LSCRO, LSCTFD, LSCTHM, LSDAR, LSDAP, LSDOW, LSDUL, LSELT, LSEPSM, LSERI, LSESH, LSEWE, LSFARB, LSFOR, LSGIP, LSGRNW, LSGRO, LSHAY, LSKID, LSKIN, LSLEA, LSLEE, LSLODH, LSMAL, LSMEPK, 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, LSWAL, LSWAN, LSWEY, LSWIM, LSWLTN, LSWOO, LSWOR, LSWWKM, LVAIN, LVALL, LVANF, LVARR, LVBIR, LVBOO, LVBRO, LVCAL, LVCEN, LVCHI, LVCLA, LVCRE, LVELL, LVGAT, LVGRE, LVHES, LVHOO, LVHUN, LVHUY, LVIRB, LVLAR, LVLYM, LVMAG, LVMOU, LVMSX, LVNES, LVNET, LVNLW, LVORM, LVPAD, LVPEN, LVPRE, LVRNE, LVRNM, LVROC, LVROY, LVSAI, LVSEF, LVSIM, LVSKE, LVSTA, LVSTK, LVSTO, LVWAL, LVWAR, LVWAT, LVWID, LWACT, LWASH, LWBUS, LWCHI, LWCOL, LWCRI, LWREAL, 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, MRCEN, MRCHE, MRCHO, MRCOL, MRCON, MRDEN, MRDID, MRDRO, MRDREAS, MRFAI, MRGAT, MRGLO, MRHAR, MRHEA, MRHUL, MRHYD, MRIRL, MRLON, MRMAC, MRMAR, MRMDW, MRMER, MRMID, MRMOS, MRMSL, MRNEW, 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, MYCSH, MYDEW, MYDHS, MYELL, MYGRF, MYHAL, MYHAX, MYHBK, MYHEA, MYHEC, MYHGT, MYHHL, MYHLT, MYHMF, MYHMW, MYHOB, MYHSF, MYHUD, MYIDL, MYKEI, MYKNO, MYLAI, MYLOF, MYLOW, MYLS, MYMAN, MYMIL, MYMIR, MYMOO, MYMOR, MYMSG, MYNMN, MYOTL, MYPON, MYPUD, MYQUE, MYROT, MYRWD, MYSAN, MYSEA, MYSEL, MYSEM, MYSHI, MYSKP, MYSRB, MYUND, MYWAK, MYYO, NDASF, NDBEX, NDBLH, NDBRO, NDCAN, NDCRO, NDDEA,

NDDOV, NDEGR, NDFAV, NDFOL, NDGIL, NDGRA, NDHAS, NDHBA, NDMAI, NDMED, NDOXT, NDRAI, NDRAM, NDSEV, NDSIT, NDSTR, NDTHA, NDTON, NDTWE, NDUCK, NDWHI, NDWMA, NEAT, NEAYC, NEB, NEBA, NEBDT, NEBH, NEBO, NEBR, NECM, NECN, NECT, NED, NEDB, NEDL, NEDU, NEEC, NEEHN, NEESG, NEF, NEG, NEGF, NEGHD, NEHAL, NEHLS, NEHRT, NEHT, NEILB, NEJ, NEJW, NEK, NEKI, NEL, NELF, NELIN, NEMI, NEMP, NEMTN, NENA, NENN, NENP, NENS, NENT, NENTE, NENTW, NEPTE, NERC, NERT, NES, NESAI, NESHM, NESP, NESS, NESTN, NESU, NESUN, NESVL, NEW, NEWB, NEWHP, NEWK, NIAT, NIBA, NIBM, NIBML, NIBYS, NIC, NICRG, NICTY, NIEAS, NIGGY, NIKNK, NILD, NILG, NILN, NINTH, NINTS, NIORM, NIPO, NIWBY, SDBGNRR, SDBGSS, SDCHCHS, SDCRWLY, SDCSHM, SDCWS, SDESTBR, SDFRHM, SDGSPRT, SDHLSHM, SDHMPDN, SDHRLY, SDHRNDN, SDHRSHM, SDHV, SDHVNT, SDHYWRD, SDKMPTW, SDLNCNG, SDLTTLH, SDLWS, SDMSWRT, SDNWHVN, SDNWPRT, SDPCNTC, SDPNDHL, SDPNRTH, SDPRTSL, SDPVNSY, 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, SLGB, SLGTP, SLHWD, SLHY, SLIN, SLLI, SLMBY, SLMEX, SLMOS, SLOLD, SLRF, SLRH, SLRHN, SLRN, SLRWM, SLSEK, SLSF, SLST, SLSW, SLSY, SLWB, SLWD, SLWKZ, SLWL, SLWW, SMAI, SMAM, SMAY, SMBA, SMBB, SMBCD, SMBF, SMBI, SMBK, SMBT, SMCY, SMCO, SMCOSH, SMDB, SMDC, SMHD, SMHH, SMHI, SMHR, SMHUR, SMHY, SMLBD, SMLEA, SMLH, SMLT, SMNP, SMOF, SMSM, SMSFF, SMSU, SMSX, SMTR, SMWN, SMWV, SSAVO, SSBBN, SSBED, SSBIS, SSBIT, SSBWD, SSCAL, SSCHI, SSCIR, SSCLE, SSCMN, SSCSY, SSDEV, SSDOW, SSEAS, SSEAV, SSFIS, SSFLT, SSFRO, SSGLR, SSHEN, SSKMD, SSKWD, SSMEL, SSMID, SSSAI, SSSOR, SSSPOR, SSSRAD, SSSRED, SSSOU, SSSSM, SSSST, SSSSTO, SSSWN, SSSTHL, SSSTRO, SSSXY, SSSWAR, SSSWES, SSSWHI, SSSWOR, SSSWOT, SSSWSM, STANDVR, STBDSTN, STBNMTH, STBOSMB, STBOTLY, STCFORD, STCHRCH, STEASTL, STFAIRO, STFAWLY, STFERND, STHMPTN, STHRSTK, STHYTHE, STLOCKH, STLYMTN, STMRHLL, STNEWMN, STNTHBN, STPOOLE, STPRKST, STRINGW, STROMSY, STRWNMS, STSALIS, STSHRLY, STSOTON, STTOTTN, STWIMBN, STWINCH, STWINTN, STWLSTN, STWSTBN, SWAA, SWAAZ, SWABD, SWBIG, SWBNP, SWCAB, SWCFATE, SWCFK, SWCJ, SWCRS, SWCUV, SWGBY, SWHXM, SWKGH, SWLJ, SWLJZ, SWLLD, SWLLO, SWLNI, SWMAL, SWMDE, SWMLZ, SWMMN, SWMT/EX, SWNBI, SWNE/EX, SWNM, SWNVW, SWPBM, SWPEU, SWPN, SWPP, SWPTB, SWPTH, SWQJA, SWRTH, SWRVH, SWSKJ, SWSX, SWSZX, SWTDU, SWTRF, SWWXC, THAD, THAS, THATN, THBA, THBEN, THBK, THBN, THBO, THBR, THBZ, THC, THCV, THCW, THDK, THEAR, THFB, THFJ, THFT, THGG, THGI, THGX, THHM, THHT, THLL, THM, THML, THNU, THRG, THS, THSL, THT, THTAD, THTF, THTT, THWDY, THWK, THWM, THWO, THY, WEWBAY, WEWBLO, WEWHAM, WEWLOR, WEWMAI, WEWMAR, WEWMAY, WEWNPN, WEWPAD, WEWPRI, WEWSOH, WMALS, WMBID, WMBLY, WMBPZ, WMBUR, WMCHD, WMCIT, WMDIM, WMDRO, WMEV, WMFER, WMHAS, WMHX, WMIPS, WMKD, WMKDG, WMLEE, WMLON, WMMAL, WMMTL, WMNAN, WMNEW, WMRJ, WMRUG, WMSBH, WMSPA, WMSTJ, WMSTK, WMSTO, WMSTP, WMWLN, WMWR, WNCSC, WNCNS, WNCSS, WNDEE, WNOAK, WNSTI, WNWEL, WNWEX, WNWYN, WRBATT, WRBEL, WRBRIX, WRCHL, WRECT, WRFULM, WRKGDN, WRNELMS, WRPGRN, WRPIM, WRSKEN, WRSLO, WRSTHBK, WRVAUX, WRWHI, WRWKEN, WRWMIN, WSAIR, WSALE, WSBAI, WSBAR, WSBEA, WSBEH, WSBEL, WSBIS, WSBLA, WSBRI, WSCAM, WSCAR, 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, WSPA, WSPOL, WSREN, WSRUT, WSSCO, WSSHE, WSSOU, WSSPR, WSTHO, WSUDD, WSWES, WSWIS, WWBODM, WWBURN, WWBWAT, WWCAMB, WWCRWN, WWDPR, WWEXMO, WWEXTR, WWFALM, WWHEL, WWIVYB, WWNABB, WWNEWQ, WWPAIG, WWPENZ, WWPSTK, WWPTON, WWPYTH, WWREDR, WWSAUS, WWSBUD, WWSMAR, WWTAUN, WWTORQ, WWTRUR

Annex 2

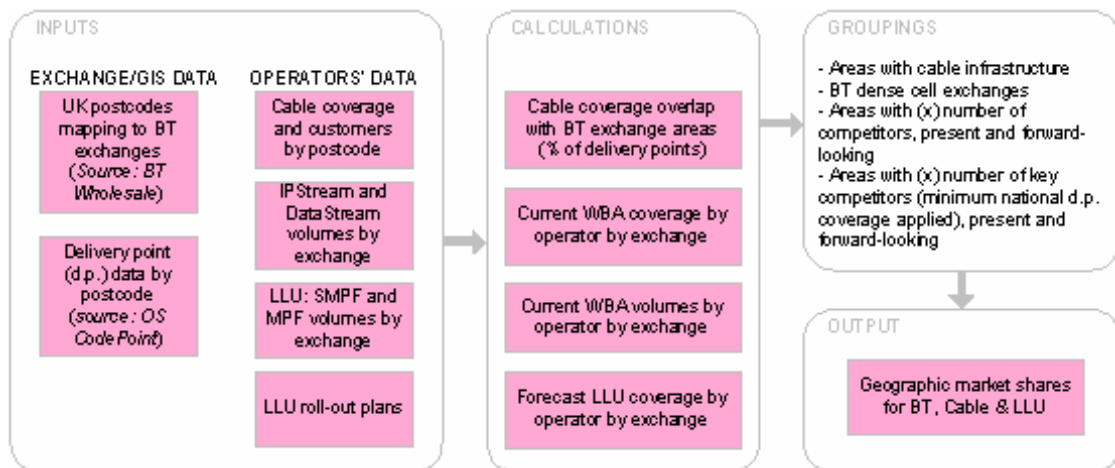
Geographic Data Analysis

- A2.1 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. This Annex describes in more detail the process and results of the geographic analysis undertaken by Ofcom.
- A2.2 The principal purpose of the geographic data analysis described in this Annex is to update the market definitions proposed in the November 2007 consultation taking into account the latest data available to Ofcom.
- A2.3 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.
- A2.4 The analysis conducted for this statement is identical to that conducted for the November 2007 consultation. However, more up-to-date information, both actual and forecast, has been used. Ofcom has analysed the data at two points in time; actual data to the end of February 2008 and forecast data to the end of February 2009. Ofcom has defined the geographic markets using LLU rollout forecast data to the end of February 2009.

Overview of the model structure

- A2.5 The model structure used for the UK (excluding the Hull area) geographic analysis is illustrated in Figure A2.1.

Figure A2.1: Model structure for the Geographic Data Analysis



Data provided by BT and Virgin Media

- A2.6 The data provided by BT and Virgin Media is summarised in Table A2.1.

Table A2.1: 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

A2.7 In February 2008 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 forecast to provide and the type of LLU (shared or full) that will support the services.

A2.8 Specifically, the request was sent to the LLU operators classified as “Principal LLU Operators” in the November 2007 consultation document (Carphone Warehouse, Cable and Wireless Access, Orange, O2, Sky and Tiscali).

Other input data

A2.9 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

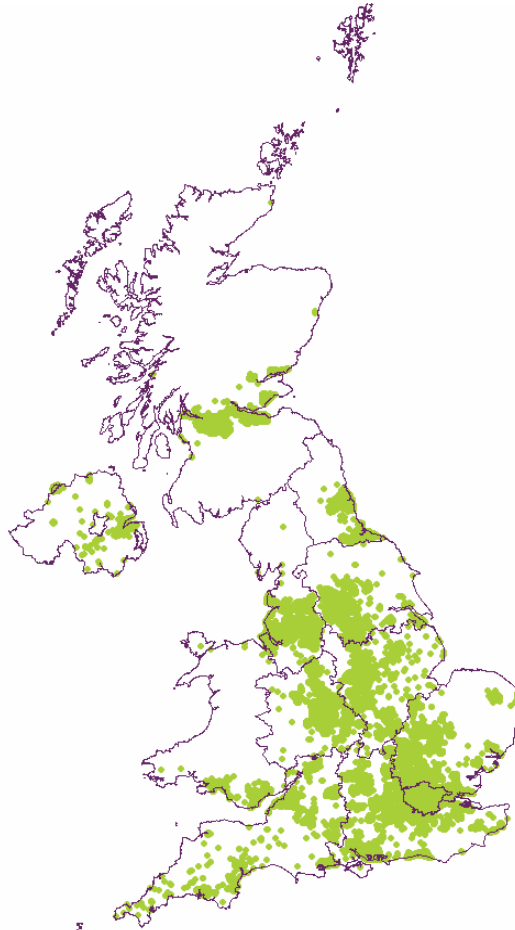
A2.10 The first step in this analysis was to map all the delivery points in the UK, as provided in the Ordnance Survey data, to the local exchange that serves it. This resulted in Ofcom estimating the size of each individual exchange in terms of the total number of residential and business delivery points served.

A2.11 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%.

Cable overlap calculations

A2.12 Virgin Media provided data on their broadband cable coverage by specifying the number of premises it can offer service to for each postcode. Figure A2.2 shows the data provided by Virgin Media on a map.

Figure A2.2: Virgin Media's broadband cable network coverage



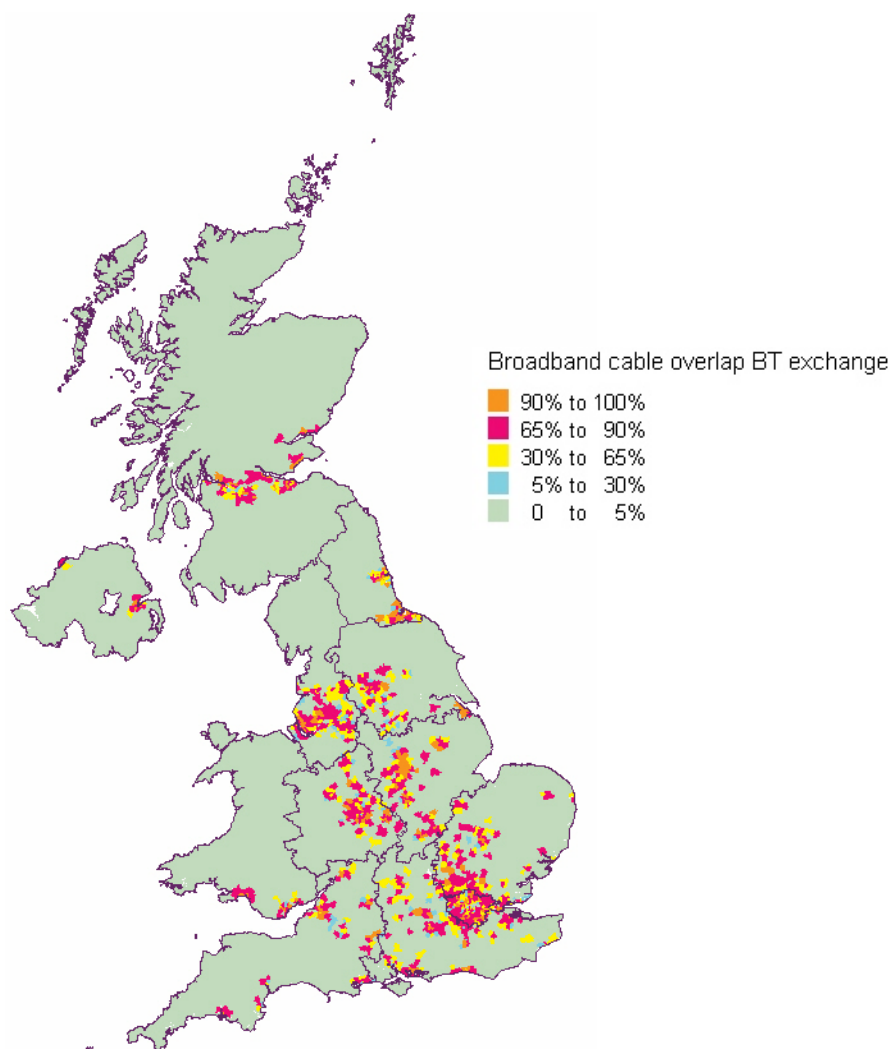
A2.13 However, Ofcom has decided to use the geographic areas covered by individual local exchanges as the basic geographic unit for its analysis and thus Ofcom was required to map the postcode information provided by Virgin Media onto the BT exchange footprints.

A2.14 The cable network is, however, independent of BT's local exchanges and thus the two do not necessarily align. In some cases only a few premises within a given exchange footprint are covered by the cable network, whereas in others all the premises may be covered. This presents a problem, as when assessing the number of Principal Operators present in the geographic area covered by a particular exchange Ofcom needs to decide whether to count Virgin Media, or not. To overcome this problem Ofcom has decided to count Virgin Media as being present where its coverage of the geographic area covered by an exchange is 65% or more of the premises in the area.

A2.15 At the end of February 2008 there were 844³⁴ exchanges where cable coverage is 65% or more. These 844 exchanges serve 44.5% of delivery points in the UK.

A2.16 Figure A2.3 shows broadband cable coverage when overlaid onto BT's exchange areas. Different colours are used to identify the different levels of overlap.

Figure A2.3: Broadband cable overlap with BT exchange footprints



LLU Coverage

A2.17 Analysis of the February 2008 LLU data indicates that there are 21 active (non-BT) LLU operators³⁵.

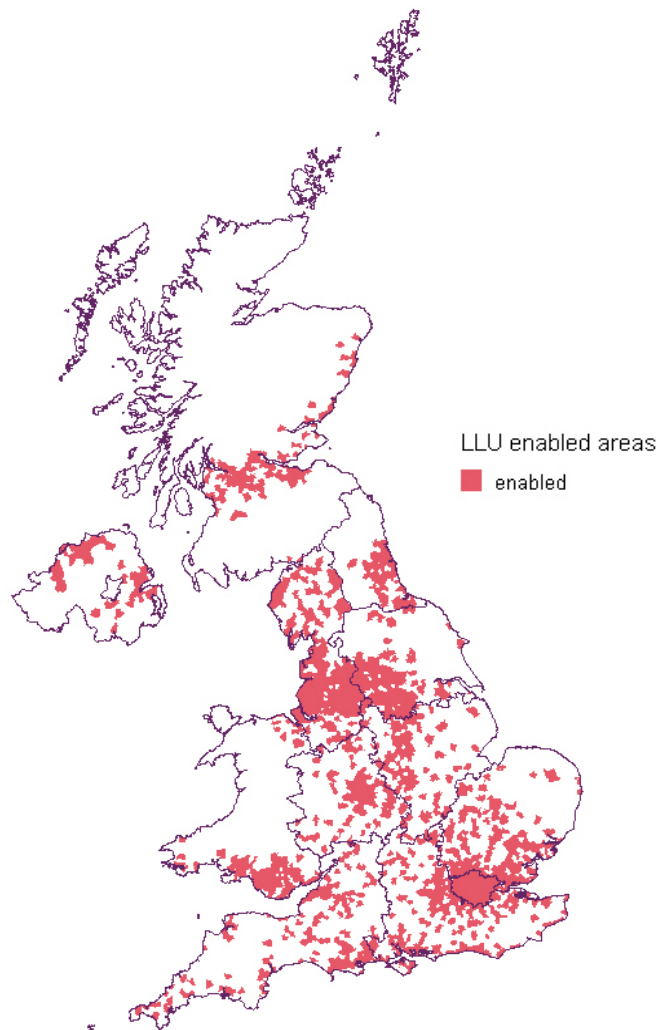
A2.18 Specifically, 1,834 BT exchanges (82.3% of UK delivery points) are enabled by at least one LLU operator, and the maximum number of operators active in any one

³⁴ In the November 2007 consultation document (paragraph A4.17) Ofcom stated that at the end of July 2007, 949 exchanges had at least 65% broadband cable coverage. The change between then and now is the result of a detailed review of the cable network coverage, conducted by Virgin Media in August 2007. This review assessed the cable network coverage down to the individual premises level.

³⁵ This figure excludes LLU test beds

exchange is 9. Figure A2.4 shows the location of these exchange areas along with UK regions³⁶.

Figure A2.4: February 2008 LLU enabled exchange areas



A2.19 As outlined in Table A2.2, the coverage of individual LLU operators varies considerably, with many operators focusing on narrow areas representing less than 10% coverage. As of the end February 2008 there are 6 LLU operators with coverage between 51% and 79% and the same operators will have coverage between 53% and 80% by February 2009.

³⁶ This figures includes all 21 active LLU operators

Table A2.2: Breakdown of all non-BT operators by their planned coverage

Coverage	Feb 08	Feb 09
up to 10%	21	21
more than 10%	6	6
more than 20%	6	6
more than 30%	6	6
more than 40%	6	6
more than 50%	6	6
more than 60%	2	3
more than 70%	1	1

The Principal LLU Operators

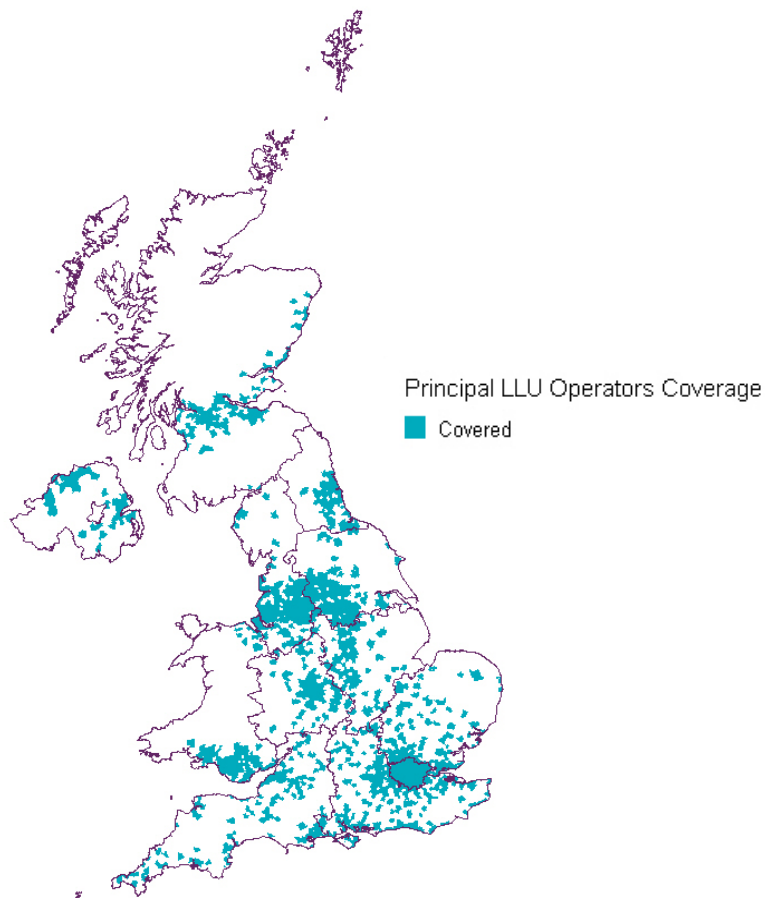
A2.20 As set out in the November 2007 consultation, Ofcom's approach is to include only Principal LLU Operators in the assessment. Ofcom has identified six Principal Operators and each of these currently has more than 50% coverage of UK delivery points.

A2.21 Table A2.3 outlines the increase in coverage expected by the Principal LLU Operators between the end of February 2008 and the end of February 2009. This represents the combined coverage of these operators. Ofcom analysis predicts a 1% increase in coverage for the Principal LLU Operators during the forecast time period. At the end of February 2009, Principal LLU Operators will be present in 1,755 BT's exchanges covering 82% of the UK premises.

Table A2.3: Current and forecast delivery point coverage for the Principal LLU Operators

	Feb 08	Feb 09
Coverage	81%	82%
No. exchanges	1,688	1,775

A2.22 Figure A2.5 shows the 1,688 exchange areas where Principal LLU Operators were present at the end of February 2008.

Figure A2.5: Principal LLU Operator coverage (as of end of February 2008)

- A2.23 The analysis of the LLU rollout plans submitted by the Principal LLU Operators showed that:
- i) 87 exchanges are planned to be unbundled between end of February 2008 and end of February 2009.
 - ii) 71, of the 87, exchanges are planned to be unbundled by the end of August 2008.
 - iii) 84, of the 87, exchanges are planned to be unbundled by the end of October 2008.
 - iv) There is no planned unbundling beyond February 2009.

The Principal Operators

- A2.24 By adding BT and Virgin Media to the Principal LLU Operators we have a total of 8 operators (“the Principal Operators”) upon which the geographic market assessment is based.
- A2.25 Table A2.4 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. Again, Ofcom has analysed the data at two points in time: end of February 2008 (actual data) and end of February 2009.

Table A2.4: Exchange breakdown by number of operators in exchange footprint³⁷

No. of Principal Operators	Feb 08		Feb 09	
	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	3,798	18.0%	3,720	16.5%
2	410	7.3%	368	5.8%
3	211	6.4%	202	5.5%
4	210	8.1%	191	6.0%
5	180	8.0%	213	8.6%
6	192	10.6%	241	11.5%
7	295	19.3%	327	21.0%
8	291	22.3%	325	25.1%

Grouping exchanges

A2.26 The next stage of the analysis is 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.

A2.27 Ofcom created three groupings of exchanges using the number of Principal Operators providing services in the geographic area covered by the exchange: BT only, 2 or 3 operators, 4 or more operators. The size of these groups and their respective UK coverage of homes/businesses, as of the end of February 2008 (actual data) and the end of February 2009 are provided in Table A2.5.

Table A2.5: Exchange groups based on number of Principal Operators present

No. of Principal Operators	Feb 08		Feb 09	
	No. Exchs	Coverage	No. Exchs	Coverage
BT only	3,798	18.0%	3,720	16.5%
2 or 3	621	13.7%	570	11.3%
4 or more	1168	68.3%	1297	72.2%

A2.28 For the forward looking part of the analysis Ofcom considers it necessary to use the number of Principal Operators forecast to be present and the exchange size (i.e. number of premises served by the exchange). In particular, Ofcom considers that exchanges where there are currently 4 or more Principal Operators should be grouped with exchanges where there are forecast to be 4 or more Principal Operators if the forecast exchange serves 10,000 or more premises. Additionally, Ofcom considers that exchanges where there are currently 2 or 3 Principal Operators should be grouped with exchanges where there are forecast to be 4 or more Principal Operators if the forecast exchange serves less than 10,000 premises.

³⁷ Note this part of the analysis does not include the Hull area

A2.29 By applying the exchange size criteria to the assessment, for the rollout that is forecast to occur between the end of February 2008 and the end of February 2009, Ofcom is able to identify the geographic markets shown in Table A2.6.

Table A2.6: Geographic markets (excluding the Hull area)

Market	Description	No. Exchs	Coverage
Market 1	those geographic areas covered by exchanges where BT is the only operator	3720	16.5%
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	670	13.8%
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	1197	69.7%

A2.30 Table A2.6 highlights the fact that of the 129 exchanges that are forecast to achieve 4 or more Principal Operators between the end of February 2008 and the end of February 2009, only 29 of them serves 10,000 or more premises. Thus, the forward looking part of the analysis only extends the size of Market 3 by 29 exchanges which cover 1.4% of premises in the UK (excluding the Hull area).

Wholesale broadband access markets

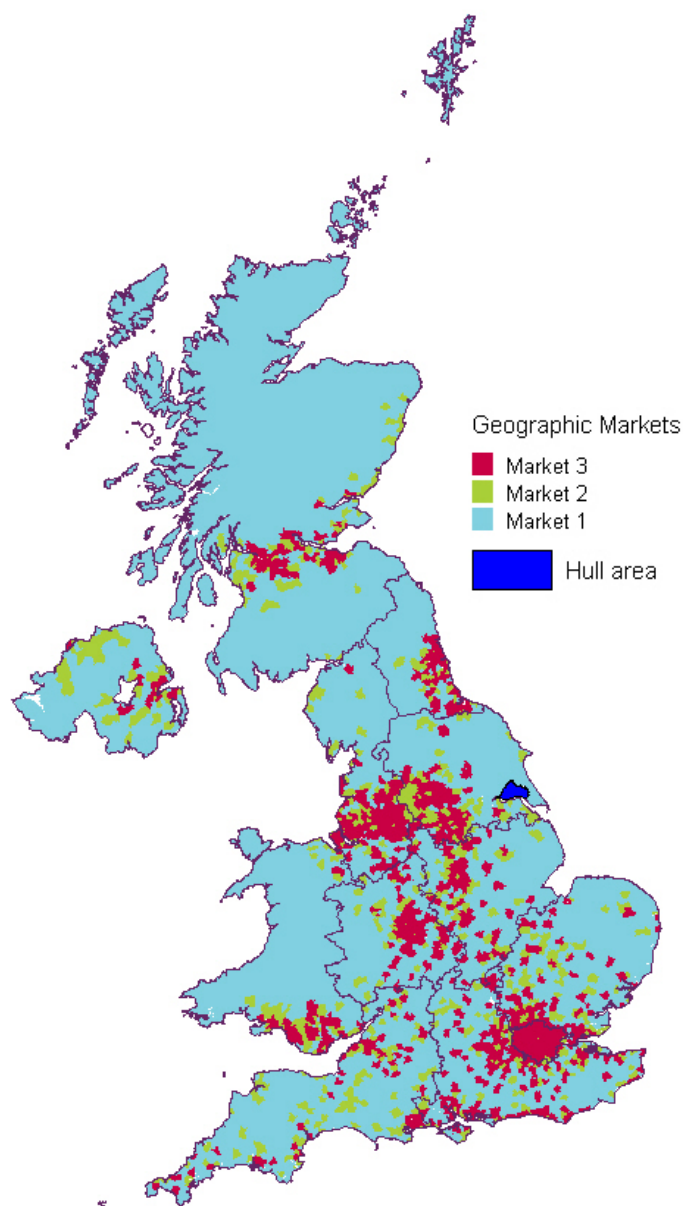
A2.31 We can now include the Hull area to establish a complete list of the geographic markets that Ofcom considers to be relevant to this review. These are shown in Table A2.7

Table A2.7: Geographic market (including the Hull area)

Market	Description	No. Exchs	Coverage
the Hull area	those geographic areas covered by exchanges where KCOM is the only operator	14	0.7%
Market 1	those geographic areas covered by exchanges where BT is the only operator	3720	16.4%
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	670	13.7%
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	1197	69.2%

A2.32 Figure A2.6 shows the geographic markets set out in Table A2.7 on a map.

Figure A2.6: Proposed geographic markets on a map



Sensitivity analysis

A2.33 In order to identify the geographic markets 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 (including the Hull area).

A2.34 Tables A2.8 shows the results of sensitivity analysis carried out on the exchange size factor (10,000).

Table A2.8: Sensitivity to changes in the exchange size factor

	8,000		10,000		12,000		14,000	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	3,720	16.4%	3,720	16.4%	3,720	16.4%	3,720	16.4%
Market 2	645	12.9%	670	13.7%	682	14.2%	691	14.6%
Market 3	1,222	70.0%	1,197	69.2%	1,185	68.8%	1,176	68.3%

A2.35 Changes in the exchange size factor only affect Market 2 and Market 3; 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 1.7%.

Table A2.09: Sensitivity to changes in the number of Principal Operators required in Market 3

	> 3		> 4		> 5		> 6	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	3,720	16.4%	3,720	16.4%	3,720	16.4%	3,720	16.4%
Market 2	475	8.1%	670	13.7%	841	19.4%	1,010	26.8%
Market 3	1,392	74.8%	1,197	69.2%	1,026	63.6%	857	56.1%

A2.36 Changes in the number of Principal Operators required in Market 3 only affect Market 2 and Market 3. As the number of Principal Operators required increases 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 19%.

Table A2.10: Sensitivity to changes in the cable overlap figure

	> 55%		> 65%		> 75%		> 85%	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	3,690	16.0%	3,720	16.4%	3,748	16.7%	3,778	17.1%
Market 2	689	13.8%	670	13.7%	656	13.7%	646	13.9%
Market 3	1,208	69.6%	1,197	69.2%	1,183	68.9%	1,163	68.3%

A2.37 Change in the minimum cable overlap has an affect on all the three markets. As the cable overlap figure is reduced some exchanges move from Market 1 into Market 2 and others move from Market 2 into Market 3 and vice versa. Between a cable overlap figure of 55% and 85%, the largest variation in the size of any one market is about 1.3%.

Exchange lists for the geographic markets

A2.38 The list of exchanges (MDF code only) that fall within Market 1, Market 2 and Market 3 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 2007 consultation

A2.39 Table A2.11 gives a direct comparison between the geographic market definitions as set out in the November 2007 consultation and the final geographic market definitions which Ofcom has identified in this statement. The table shows that market developments, since the November 2007 consultation, have resulted in the coverage of Market 1 and Market 2 reducing and the coverage of Market 3 increasing.

Table A2.11: Comparison between geographic markets

	the November 2007 consultation		Statement	
	Exchange	Coverage	Exchange	Coverage
Market 1	3,874	19.4%	3,720	16.5%
Market 2	643	15.8%	670	13.8%
Market 3	1,070	64.8%	1,197	69.7%

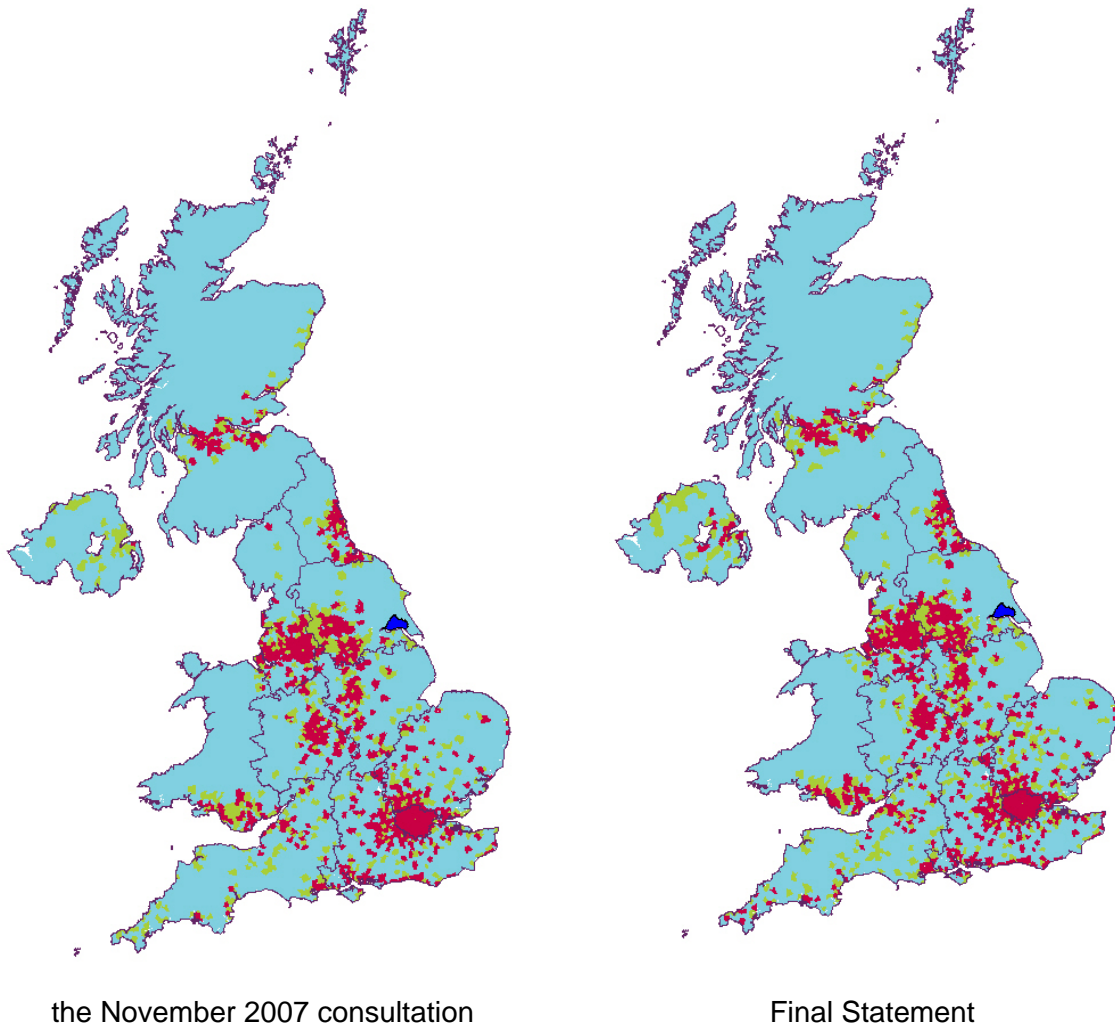
A2.40 Table A2.12 shows how these changes materialise at the exchange level. Overall, a total of 5,238 exchanges remain in the same market as per the November 2007 consultation. They cover 91.23% of the total UK delivery points (excluding Hull).

Table A2.12: Variation of market definition at the exchange level

	No. Exchs	% DPs
No change in market	5,238	91.23%
Market 1 unchanged	3,691	16.08%
Market 2 unchanged	483	10.47%
Market 3 unchanged	1,064	64.68%
Market 1 to Market 2	181	3.21%
Market 1 to Market 3	2	0.07%
Market 2 to Market 1	29	0.41%
Market 2 to Market 3	131	4.97%
Market 3 to Market 1	0	0.00%
Market 3 to Market 2	6	0.13%
Total	5587	100%

A2.41 Figure A2.7 makes a visual comparison between the geographic markets definitions as set out in the November 2007 consultation and the final geographic market definitions which Ofcom has identified in this statement.

Table A2.7 Comparison between geographic markets



Geographic Markets

- Market 3
- Market 2
- Market 1
- Hull area

Annex 3

Assessment of December 2007 data

- A3.1 In the November 2007 consultation, Ofcom's proposed geographic market boundaries were based on actual data to the end of July 2007 and forecast data to the end of December 2007. Ofcom also forecast future market shares for each of the proposed markets in its assessment of SMP. This Annex assesses what actually happened and then compares this with the forecasts.
- A3.2 The assessment shows that LLU operators, on average, unbundled 98.3% of the exchanges that they planned to unbundle and that the actual volume of unbundled lines was higher than that forecast.

LLU operators rollout plans – actual v forecast (December 2007)

- A3.3 Table A3.1 compares the actual coverage of LLU operators with their forecast coverage, as of the end of December 2007.

Table A3.1: LLU operators' coverage

Coverage	December 07 No. LLU Operators (actual)	December 07 No. LLU Operators (forecast)
up to 10%	20	20
more than 10%	6	6
more than 20%	6	6
more than 30%	6	6
more than 40%	6	6
more than 50%	5	5
more than 60%	2	2
more than 70%	1	1
more than 80%	0	0

- A3.4 In the November 2007 consultation, Ofcom grouped BT's exchanges by the number of Principal Operators present in each BT exchange footprint. Table A3.2 shows a direct comparison between the actual and forecast data, at the end of December 2007.

Table A3.2: Exchange breakdown by number of Principal Operators

No. of Principal Operators	December 07 (actual)		December 07 (forecast)	
	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	3,849	19.1%	3,874	19.4%
2	402	7.5%	394	7.7%
3	230	7.7%	215	7.2%
4	189	7.3%	186	7.1%
5	184	9.2%	189	9.5%
6	181	9.8%	172	9.8%
7	286	19.3%	276	18.2%
8	266	20.2%	281	21.0%

A3.5 Table A3.3 shows the three exchange groups based on the number of Principal Operators present.

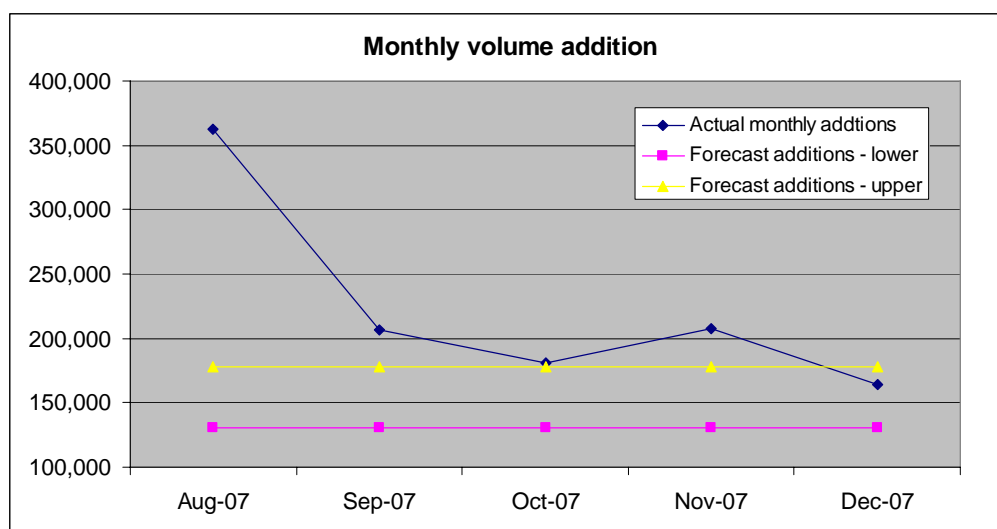
Table A3.3: Exchange groups based on the number Principal Operators

No. of Principal Operators	December 07 (actual)		December 07 (forecast)	
	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	3,849	19.1%	3,874	19.4%
2 or 3	632	15.2%	609	14.9%
4 or more	1106	65.7%	1104	65.7%

LLU volumes – actual v forecast (December 2007)

A3.6 In the November 2007 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 A3.1 shows the actual monthly additions of unbundled lines and compares this with Ofcom's lower and upper forecast for monthly additions.

Figure A3.1: Monthly LLU volume addition



Market shares – actual v forecast (December 2007)

A3.7 Table A3.4 shows the actual market shares for Market 2, as proposed in the November 2007 consultation, at the end of December 2007, and compares this with the prediction made in the November 2007 consultation.

Table A3.4: Market shares for Market 2

Market 2 shares	BT	Virgin Media	LLU Operators
December 07 (actual)	70.3%	15.5%	14.2%
December 07 (forecast)	75% - 76%	16% - 17%	8% - 9%

A3.8 Table A3.5 shows the actual market shares for Market 3, as proposed in the November 2007 consultation, at the end of December 2007, and compares this with the prediction made in the November 2007 consultation.

Table A3.5: Market shares for Market 3

Market 3 shares	BT	Virgin Media	LLU Operators
December 07 (actual)	38.3%	29.6%	32.2%
December 07 (forecast)	38% - 41%	30% - 31%	29% - 31%

Annex 4

Distribution and evolution of service shares

A4.1 The November 2007 consultation was sent to the European Commission in accordance with Article 7 of the Framework Directive and section 50 of the Act. Under the Article 7 process the European Commission requested additional information from Ofcom. The European Commission was particularly interested in BT's share of wholesale broadband access services at the individual exchange level in Market 2 Market 3 and how this had evolved.

A4.2 On the 14 February 2008 the European Commission, pursuant to Article 7(3) of the Framework Directive, issued a comments letter on Ofcom's Notification. Within its comments the European Commission invited Ofcom to

*"...further substantiate in its final measure its aggregation of geographic "units" in its proposed "markets", based on the detailed information submitted in its replies to requests for information and in particular with reference to the distribution and evolution of market shares and pricing within different geographic areas in accordance with competition law principles, as discussed in section III above."*³⁸.

A4.3 In addition to the specific comments on Ofcom's notification the European Commission also provided some general guidance for all NRAs when conducting this type of assessment. In particular section III of the European Commissions letter sets out some criteria for assessing sub-national markets. In this section the European Commission makes the following statement:

"As regards the definition of sub-national markets, the Commission considers that a geographic delineation which is primarily based on the number of operators present in a local exchange is not by itself sufficiently detailed or robust to identify real differences in competitive conditions for the purposes of market definition. In assessing whether conditions of competition within a geographic area are similar or sufficiently homogenous, additional structural and behavioural evidences is necessary.

*Relevant evidence would include information on the distribution of market shares and the evolution of shares over time. In addition, evidence of differential retail or wholesale pricing which might apply could help indicate different regional or local competitive pressure. It is also considered appropriate to look at the pricing of both the incumbent and alternative operators as well as its evolution over time in the relevant areas."*³⁹

A4.4 In accordance with the European Commission's invitation and noting the above statement, Ofcom has provided the distribution of BT's share of wholesale broadband access services at the individual exchange level in Market 2 and Market

³⁸ Page 12

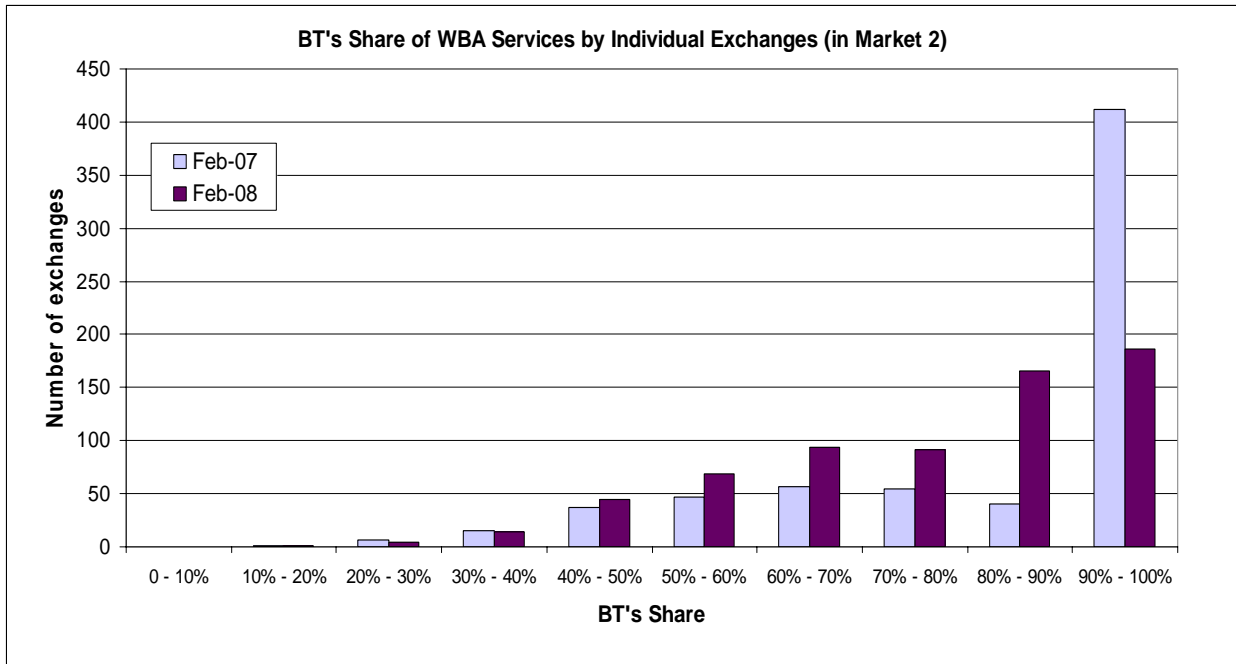
³⁹ Page 7

3. In order to show how this has evolved over time Ofcom has provided the distribution as of the end of February 2007 and as of the end of February 2008.

A4.5 However, it needs to be recognised that some of the exchanges in Market 2 and Market 3 may have only recently been exposed to competition and in some case competitive entry has not yet fully occurred, as it is part of the forward looking assessment based on forecasts. In such exchanges BT's current share of wholesale broadband access services is likely to be higher than it is in exchanges that have been exposed to competition for a period of time. To demonstrate this Ofcom has also provided the distribution of BT's share of wholesale broadband access services at the individual exchange level in Market 2 and Market 3, but only for the sub group of exchanges that met the competitive criterion as of the end of February 2007.

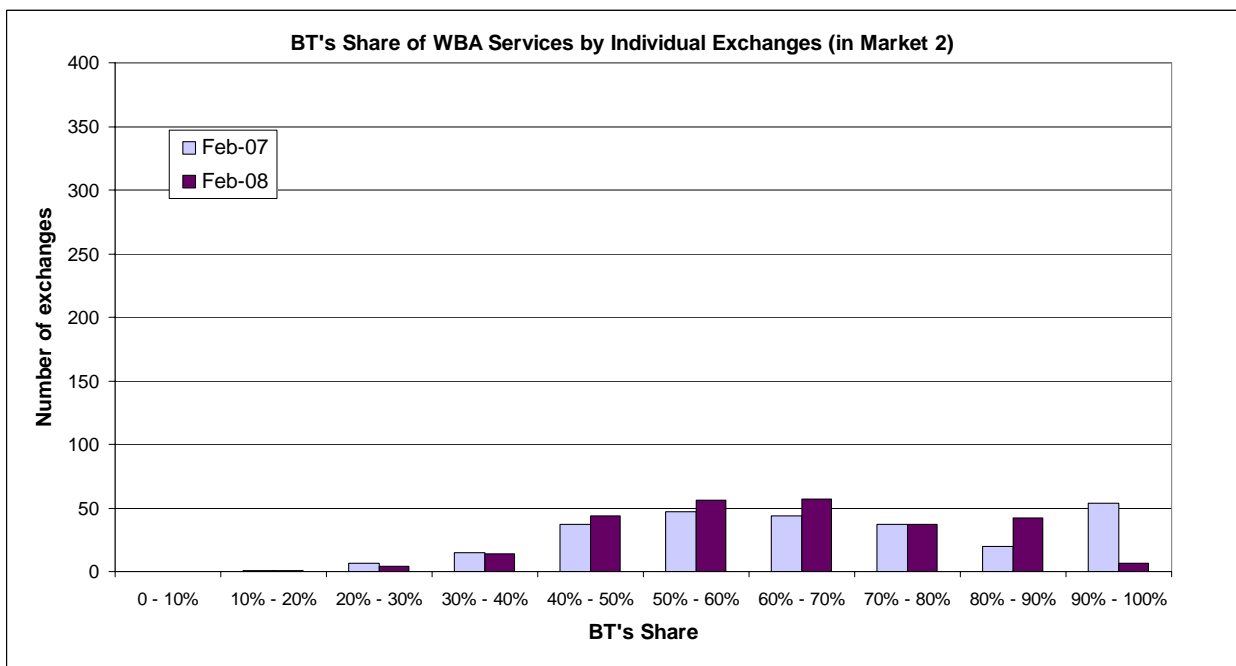
Market 2 distribution and evolution of service shares

Figure A4.1: BT's share of wholesale broadband access services at each of the 670 exchanges in Market 2



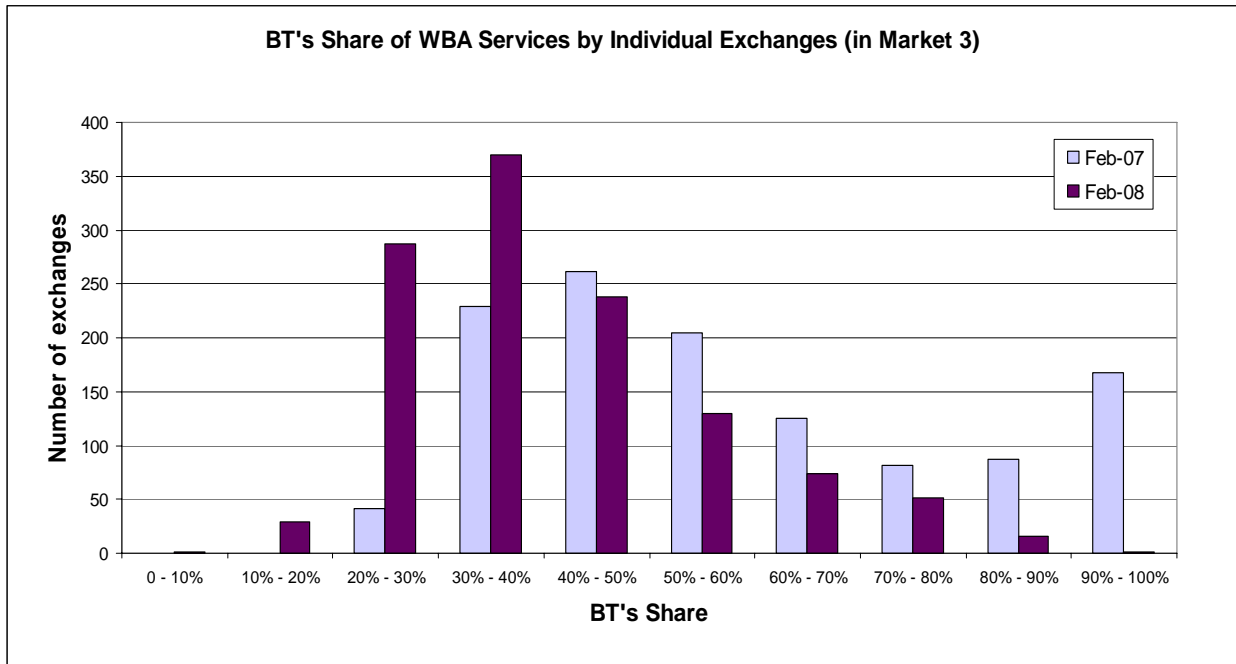
A4.6 For Market 2 there were 262 exchanges, of the 670 exchanges in the market, which had 2 or 3 Principal Operators at the end of February 2007.

Figure A4.2: BT's share of wholesale broadband access services at each of the 262 exchanges in Market 2 which had 2 or 3 Principal Operators at the end of February 2007



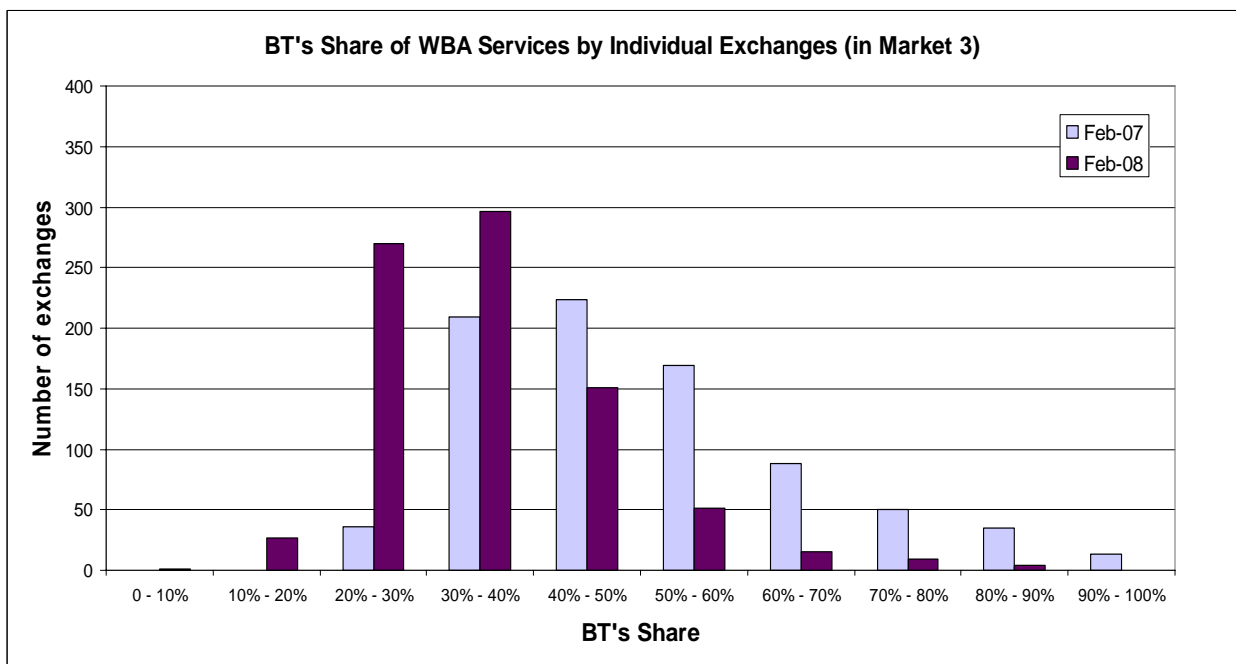
Market 3 distribution and evolution of service shares

Figure A4.3: BT's share of wholesale broadband access services at each of the 1197 exchanges in Market 3



A4.7 For Market 3 there were 824 exchanges, of the 1197 exchanges in the market, which had 4 or more Principal Operators at the end of February 2007.

Figure A4.4: BT's share of wholesale broadband access services at each of the 824 exchanges in Market 3 which had 4 or more Principal Operators at the end of February 2007



Pricing within different geographic areas

- A4.8 During the notification period, the European Commission requested information about the average prices paid in Market 1, Market 2 and Market 3 separately. At the time Ofcom noted that it is difficult to accurately calculate the average price paid by consumers for broadband. This is because each provider offers a range of broadband options and whilst we know the total number of broadband services supplied by each operator, we do not know how this total is distributed between the various options. Further, some broadband services are provided as part of a bundle of services and it is not clear how much of the total bundle price should be allocated to the broadband service.
- A4.9 Ofcom therefore estimated the average price paid by consumers for a typical entry level broadband product in Market 1, Market 2 and Market 3 separately and highlighted the difference in average price paid between these three markets. Using the final geographic market definitions and data as of the end of February 2008 Ofcom has updated its estimate and this is shown in Table A4.1

Table A4.1: Average price for retail entry level product in Market 1, Market 2 and Market 3 and price differences with Market 1

Markets	Average Price (pcm)	Price difference (wrt Market 1)
Market 1	£15.90	
Market 2	£13.45	£2.45
Market 3	£9.84	£6.06

Annex 5

Competition in the Hull area

Comments from Hull residents

- A5.1 Ofcom received 111 responses from Hull residents.
- A5.2 These respondents overwhelmingly agreed with Ofcom's proposed market definition and SMP finding for the Hull area. Many reiterated Ofcom's finding that KCOM's retail division, Karoo, is currently the only retail provider of broadband access in the Hull area and that in turn KCOM is currently the only wholesale broadband access provider in the Hull area.
- A5.3 However, there was generally discontentment amongst these respondents about not having a choice of retail broadband provider. A number of the respondents felt that the level of service provided by Karoo was poor and that its broadband offerings were generally more expensive and/or had a lower specification when compared with other retail broadband offerings that are available in some other parts of the UK, in particular products offered by Sky and Talk Talk were mentioned.
- A5.4 The majority of these respondents felt that the lack of choice of provider in Hull and the apparent price and service options inequity, compared with some other parts of the UK, demonstrated that Ofcom was not doing enough to protect the interests of consumers in the Hull area.

Ofcom response

- A5.5 Ofcom recognises that KCOM's retail division, Karoo, is currently the only retail provider of fixed-line broadband services in the Hull area and that in turn KCOM is currently the only wholesale broadband access provider of such services in the Hull area. Ofcom has therefore found KCOM to hold a position of significant market power (SMP) in the Hull area and accordingly has proposed to place a number of regulatory obligations on KCOM.
- A5.6 Under the wholesale broadband access (WBA) market Ofcom is proposing to require KCOM to provide wholesale access to its broadband network to alternative providers so that they can provide their own retail services to consumers. This access requirement is supported by the following additional requirements:
- Requirement not to discriminate unduly;
 - Requirement to publish a reference offer;
 - Requirement to notify terms and conditions;
 - Transparency as to quality of service
 - Requirement to publish technical information; and
 - Requirement to have accounting separation.
- A5.7 In addition, under the wholesale local access (WLA) market KCOM is also required to provide access to its exchanges so that alternative providers can install their own

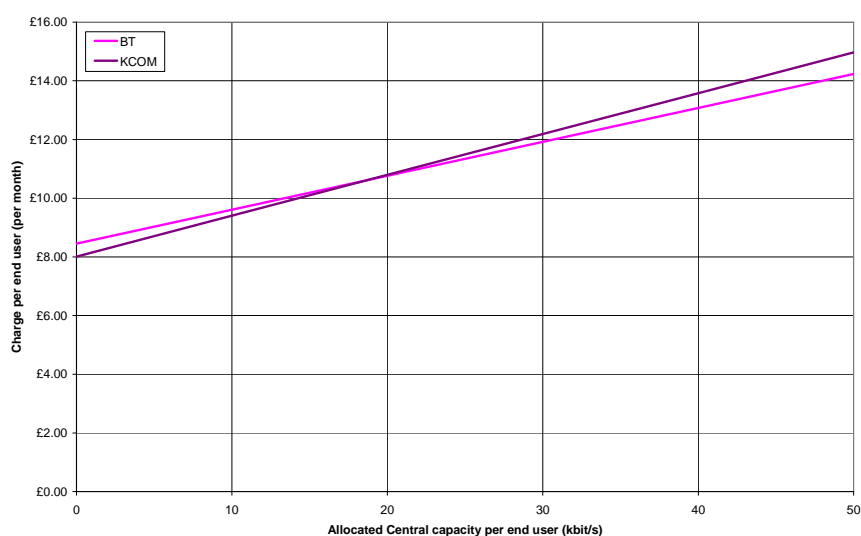
equipment and provision their own services. This process is known as local loop unbundling (LLU).

- A5.8 The proposed requirements on KCOM under the WBA review and the requirements on KCOM under the WLA review are very similar to the requirement that apply to BT in the rest of the UK.
- A5.9 Ofcom is aware that KCOM has been required to provide access to its broadband network and its exchanges for several years and that to date there has been little interest in this from alternative providers. In light of this and given the concerns raised by the respondents Ofcom conducted an assessment of the situation in Hull, to determine if there is anything more that Ofcom could do to improve the situation. This assessment considered; KCOM's wholesale broadband access reference offer, the views and plans of alternative providers and the retail offers available in Hull and in other parts of the UK.

KCOM's wholesale broadband access reference offer

- A5.10 KCOM's wholesale broadband access product consists of two parts; end user access connections (IP Line) and aggregated handover connections (Central) and there is a charge associated with each of these parts. This product is structurally very similar to BT's wholesale broadband access product, which consists of IPStream and BT Central.
- A5.11 In order to use these wholesale products an alternative provider needs to purchase at least one Central connection, which will have a specified capacity. End user access connections are delivered over a Central connection. The number of end user access connections delivered over a Central connection can be specified by the alternative provider. A higher number of end user access connections per Central connection will result in a lower cost per end user, as the charge for the Central is spread over more end users. However, it will also result in a lower quality service, as the Central capacity is shared between more end user and thus the average allocated Central capacity per end user is lower. This trade-off between cost and quality is a common feature of broadband access products.
- A5.12 Figure A5.1 shows the charge per end user for BT's and KCOM's wholesale broadband access products, as a function of allocated Central capacity. Currently providers are typically allocating about 10kbit/s to 20kbit/s per end user, for their residential customers, when dimensioning their broadband services.

Figure A5.1: Comparison of BT's and KCOM's wholesale broadband access charges⁴⁰



Source: Ofcom

A5.13 KCOM's wholesale broadband access product offering is therefore broadly similar to BT's in terms of its structure and its price.

Views and plans of alternative providers

A5.14 In order to determine why alternative providers have not yet entered the Hull market we actively sought the views of a number of providers who are currently providing broadband services in other parts of the UK. These alternative providers stated that the Hull market was as attractive to them as other markets but that they faced the following additional challenges when entering the Hull market:

- market is very small, c.190k premises in total;
- cost of developing operational processes and systems in order to interconnect with KCOM is prohibitive given potential revenues;
- belief that a significant portion of KCOM's customers are loyal to the brand; and
- opportunity cost of diverting resources away from other projects to which they are already committed.

A5.15 None of the providers questioned claimed that KCOM was acting to prevent them from entering the Hull market or that the regulatory framework was insufficient.

A5.16 The reasons why alternative providers have not yet entered the Hull market therefore appear to be due to factors that are beyond regulatory control.

Summary of wholesale situation in the Hull area

A5.17 It has been discussed above that; KCOM is required to provide access to its exchanges (aka LLU) on a cost orientated basis and to provide wholesale access to

⁴⁰ Includes end user access charges (connection and rental) and Central charges (connection and rental) and compares the average BT charge with the average KCOM charge for the lowest cost option.

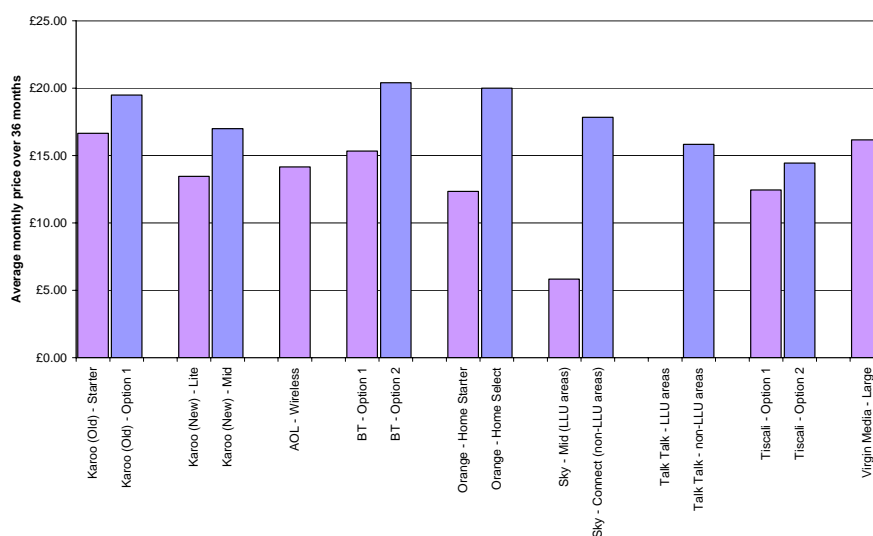
its broadband network on the basis of no undue discrimination. These regulatory requirements are broadly similar to those imposed on BT in the rest of the UK. Further, KCOM's wholesale broadband access product offering is broadly similar to BT's in terms of its structure and its price. Even so, alternative providers have not yet entered the Hull market.

- A5.18 This has resulted in Hull residents not having a choice of retail broadband provider. Ofcom does not have the power to address this lack of choice directly, as it cannot require alternative providers to offer services in Hull. It can however ensure that all the technical and regulatory conditions exist to make it possible for alternative providers to enter the Hull market and it is committed to doing this.
- A5.19 Given the lack of competition in the Hull area there is an argument for retail regulation, although this would require a retail review to be conducted. Retail regulation will not result in choice, as Ofcom cannot require alternative providers to offer services against their will. Retail regulation can only address issues such as; terms, conditions and charges.
- A5.20 However, the need for retail regulation depends on whether Hull residents are being forced to pay excessive prices. Ofcom has therefore conducted some retail price comparisons between Hull and the rest of the UK to see if there is an obvious problem.

Retail prices in the Hull area

- A5.21 Making fair comparisons between retail broadband prices is quite difficult as factors such as speed, download limit, connection charge, modem charge, introductory offer and product bundling all have an impact but are often very different. With this in mind Ofcom decided to compare the cheapest 'up to' 8Mbit/s service available from a number of providers. In doing this Ofcom assessed the average monthly price over a 36 month period, which included connection charges, rental charges and introductory offers. In addition, for some providers Ofcom also included an assessment of a second product. This second product was either the next cheapest 'up to' 8Mbit/s service available or the price of an equivalent off-net service, eg LLU areas v non-LLU areas. These comparisons are shown in Figure A5.2.

Figure A5.2: Retail broadband price comparisons⁴¹



Source: Ofcom

A5.22 It needs to be recognised that Figure A5.2 is not simply a comparison between the Hull area (Karoo) and the rest of the UK, as some of the products included are only available in certain parts of the UK, usually areas where the provider is using LLU. Further, in some cases these broadband offers are only obtainable if the customer also purchases other services, such as satellite TV services or call plans, the most notable being the offers from Sky and Talk Talk.

A5.23 From Figure A5.2 it is apparent that in some parts of the UK consumers are being offered some very attractively priced product bundles, for instance from Sky and Talk Talk. However, these offers are available because the telecoms providers have decided to install their own equipment in BT’s exchanges. This is something they can do anywhere in the UK, including Hull, but currently this has only happened in certain areas of the UK which cover about 70% to 80% of the population (depending on provider). For the remaining 20% to 30% of the population a different price applies and this is also shown in Figure A5.2.

A5.24 What is clear from Figure A5.2 is that whilst Hull residents may not have choice of retail provider or be able to take advantage of certain product bundles that are available in parts the UK, they are being offered deals that are comparable with a large majority of competitive providers that offer services elsewhere.

A5.25 On this basis the introduction of retail regulation in the Hull area would seem to unnecessary and inappropriate at this time. This being said the broadband market is very dynamic and for this reason Ofcom will continue to monitor the situation to ensure that residents in the Hull area are not materially disadvantage compared with consumers in other parts of the UK.

⁴¹ The data for this comparison was gathered from the providers’ web sites on 11 April 2008. The Karoo (Old) prices were applicable before April 2008. The Karoo (New) prices apply from 1 April 2008. The Virgin Media – Large product is ‘up to’ 4Mbit/s. Some of these offers are only available in selected areas.

Annex 6

Respondents to the November 2007 Consultation

1. BT
2. Cable & Wireless
3. Carphone Warehouse
4. Colt
5. Communication Management Association (CMA)
6. Hitchin Boys School
7. Hull City Council
8. John Walters (representing self)
9. KCOM (formerly known as Kingston Communications)
10. O2
11. Scottish Executive
12. Scottish and Southern Energy
13. Strathclyde Business School
14. Transport for London
15. Thus
16. Tiscali
17. UK Competitive Telecommunications Association (UKCTA)
18. Virgin Media
19. Welsh Assembly Government

Ofcom also received 111 emails/letters/webmaster responses to the consultation from Hull residents.

Annex 7

Glossary

ADSL	Asymmetric Digital Subscriber Line
ATM	Asynchronous Transfer Mode
BCMR	Business Connectivity Market Review
BRAS	Broadband Access Remote Server
BT	British Telecommunications
CP	Communication Provider
DP	Delivery Point
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
EC	European Commission
ECNS	Electronic Communication Networks
ERG	European Regulators Group
HMT	Hypothetical Monopolist Test
IP	Internet Protocol
IRG	Independent Regulators Group
ISP	Internet Service Provider
LLU	Local Loop Unbundling
MDF	Main Distribution Frame
MPF	Metallic Path Facility
NGA	Next Generation Access
NRA	National Regulatory Authority
SLG	Service Level Guarantee
SMP	Significant Market Power
SMPF	Shared Metallic Path Facility
SSNIP	Small but Significant Non-transitory Increase in Price
VLAN	Virtual Local Access Network
VPN	Virtual Private Network
WBA	Wholesale Broadband Access
WBC	Wholesale Broadband Connect
WLA	Wholesale Local Access
xDSL	x - Digital Subscriber Line