



Review of the wholesale broadband access markets 2006/07

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

Consultation

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Section 1

Overview

Introduction

- 1.1 The importance of broadband continues to grow. It plays a central role in communications used by many consumers and businesses to keep in touch, access information and conduct business. Over the last few years the market has seen rapid improvements in availability, take-up, speeds and prices and this has put the UK near the top of international best practice. In line with its legal duties, Ofcom aims to ensure that we build on this significant progress.
- 1.2 Competition has an important role to play in delivering what consumers and businesses need. Increased competition in certain parts of the retail market for broadband has led to a fall in prices and internet service providers (ISPs) have looked to offer different speeds and product bundles to attract customers. As a result take-up has grown, reaching more than 12 million broadband connections.
- 1.3 Competition at the retail level depends on ISPs having access to wholesale broadband services or local loop unbundling (LLU) to build their services. Ofcom has identified that competition between networks based on LLU, rather than just at the retail level based on wholesale broadband products, is crucial to maintaining the UK's broadband progress. Promoting competition based on LLU continues to be central to Ofcom's approach in making sure that consumers can access the services they demand. There are now more than 850,000 unbundled lines in the UK and there is the prospect of further competition.
- 1.4 It is essential that regulation keeps pace with and anticipates these changes. This will form the key objective for Ofcom's wholesale broadband access market review which starts with this consultation.
- 1.5 Ofcom must ensure that regulation continues to protect consumers in areas where competition is limited. Simple economics mean that in some geographic areas competition between broadband networks is not possible and consumers cannot directly get the choice and benefits that competition between networks brings.
- 1.6 Where competition is delivering what consumers need, Ofcom must seek to remove unnecessary regulation so that operators are not constrained in their ability to serve their customers.
- 1.7 Ofcom's wholesale broadband access market review will assess levels of competition and how these differ for different areas across the UK. Regulation needs to adapt to variations rather than offering a 'one size fits all' approach. The review will identify areas where wholesale regulation continues to have an essential role and whether, in other areas, regulation might be removed.
- 1.8 Sustainable competition is only one element necessary for an effective broadband market. As with all market reviews, Ofcom's wholesale broadband access market review has a specific focus on this element. However, we recognise that competition is not the only issue for broadband customers and are working to address other important issues relating to broadband separately.

- 1.9 We have seen examples where consumers have been unable to easily switch between ISPs so denying them the choice that competition promises. In August 2006 Ofcom published the broadband migrations review which is focussed on ensuring that consumers can easily switch ISPs.
- 1.10 Ofcom is also looking at ways to ensure that consumers have the information they need to consider broadband options available to them. This could cover access to comparative pricing information and access to quality of service metrics. The latter is currently available for fixed telephony under the TopComm initiative.
- 1.11 As broadband in the UK continues to develop legitimate questions will be raised about whether the existing scope of Universal Service Obligations (USO) should be extended from narrowband services. A USO would require one or more operators to offer certain broadband services to all customers. Changes to the scope of USO are matters for Government and the European Commission (the Commission) and are therefore outside Ofcom's remit. However, Ofcom nevertheless has a direct interest in encouraging the availability of affordable quality broadband services in rural areas. This issue is being considered by Ofcom as part of its digital inclusion work, which will look specifically at understanding the market, technological options available for rural broadband supply, incentives on providers, the importance of service for social inclusion and the role of Ofcom and other public bodies.
- 1.12 The wholesale broadband access market review therefore represents one tightly defined element of Ofcom's wide programme of work on broadband. Nevertheless the issues it raises are important and stakeholders are encouraged to participate in the consultation process. Below we describe the key elements of our proposals.

Summary of market review proposals

- 1.13 This consultation, the wholesale broadband access market review, assesses the continuing need for regulation on BT and Kingston Communications (Kingston) in the Hull area, to offer wholesale broadband services to other operators. This overview describes the key elements and implications of the review.
- 1.14 Based on the last review carried out in 2003/2004, BT (and Kingston in the Hull area) are currently obliged to provide wholesale broadband products to other ISPs which in turn allows them to offer competing retail services. These obligations were necessary to ensure competition for consumers by ensuring that ISPs can access wholesale broadband services to allow them to develop their own competitive retail offerings.
- 1.15 Since 2004, when the market was last reviewed, there have been significant changes in the wholesale market. BT has rolled out its broadband network to over 99.8% of the UK (excluding the Hull area) and Kingston covers the whole of the Hull area. Cable now offers broadband services in around 50% of the UK. The most significant change though has been the entry of LLU operators who have used local loop unbundling to offer retail and wholesale broadband services.
- 1.16 LLU operators have focussed their initial network deployments in more densely populated areas where the commercial case is strongest. Further roll-out is planned over the next year. This will result in competitive conditions differing between areas. By January next year, we estimate that at one extreme an area of over half of the UK population will be served by four or more operators. At the other extreme a quarter of the population will only be served by BT.

- 1.17 Regulation of this market must adapt to these changes in order to continue to ensure effective competition in the retail market. In particular, we need to avoid a 'one size fits all' approach to regulation that treats all these areas the same.
- 1.18 Accordingly, in our economic analysis we have found that there are sub-national, or local, geographic markets reflecting the different competitive conditions. The relevant wholesale geographic markets and their population coverage based on January 2007 forecasts that we have identified are:
- exchanges where Kingston is the only operator ("the Hull area") which covers 0.7% of the UK population;
 - exchanges where BT is the only operator ("Market 1") which covers 24% population;
 - exchanges where there are 2 or 3 operators (inc BT and ntl:Telewest) AND exchanges where there are 4 or more operators (inc BT and ntl:Telewest) but where the exchange serves less than 10,000 homes and businesses ("Market 2") which covers 21% population; and
 - exchanges where there are 4 or more operators (inc BT and ntl:Telewest) and where the exchange serves 10,000 or more homes and businesses ("Market 3") which covers 54% population.
- 1.19 In three of these markets where competitive pressures are weaker (the Hull area, Market 1 and Market 2) we consider that BT (in Market 1 and Market 2) and Kingston (in the Hull area) have significant market power (SMP). An operator with SMP is one who is not sufficiently constrained by competition to prevent them from acting to the detriment of consumers by, for instance, limiting choice and availability.
- 1.20 The limited competition in these markets means that we are proposing to continue with comparable regulation to that imposed in the previous market review. Ofcom is also proposing to update these regulatory rules to reflect changing technology. Broadly, the proposed regulations would require BT and Kingston to provide a wholesale broadband access service on reasonable terms in order to allow other ISPs to offer competing retail broadband services. We are not proposing any price controls on BT or Kingston at this time since we believe that, given the dynamic nature of the market, on-going innovation and investment, it is premature for regulation to set prices.
- 1.21 In Market 3 the competitive conditions are changing very rapidly, with a significant proportion of this change forecast to take place over the next 12 to 18 months. In this consultation document Ofcom has set-out the current situation in this market and has made projections about how this may change in the future. However, because these are projections and given that Ofcom is planning a second consultation document, Ofcom does not believe that it is appropriate or necessary to reach a firm conclusion on whether, or not, BT would hold a position of SMP in this market. Ofcom will make this assessment in the second consultation document, planned for around May 2007.
- 1.22 If BT is found to have SMP in this market, then Ofcom will propose appropriate regulatory remedies. Conversely, if no-SMP is found, then Ofcom will not be able to impose any remedies. However in this case it may be necessary to allow operators an appropriate period of notice before removing regulation in order to avoid consumer detriment in the short term.

Section 2

Summary

Summary of proposals

- 2.1 Significant developments have taken place in the wholesale broadband access markets since Ofcom concluded its previous review in May 2004. Between May 2004 and October 2006, the total number of broadband subscribers increased from c.4 million to c.12 million. At the same time, LLU has developed from a low volume niche product to one that allows Communications Providers to bypass the incumbent's wholesale offerings and to instead provide their own. Increased competitive pressure, particularly from LLU, has resulted in BT geographically de-averaging its wholesale broadband prices and in providers offering retail prices and products that vary by geography.
- 2.2 Ofcom has attempted to capture these developments in its approach to reviewing the wholesale broadband access market and to propose regulatory remedies that are appropriate to the prevailing market conditions. This consultation document sets this approach out in detail and Ofcom is keen to hear the views of all interested parties. Ofcom has followed the procedure under the regulatory framework of defining markets, assessing competitive conditions and considering remedies in reaching the conclusions set out in this document. A summary of Ofcom's findings and proposals in these areas is given below.

Identification of relevant markets

- 2.3 There are two dimensions to the definition of relevant market: the product dimension and the geographic dimension.
- 2.4 With respect to the definition of the relevant product market, Ofcom considers that the relevant wholesale broadband access product is:
- 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 service to be used simultaneously and provides data at speeds greater than a dial-up connection. This market includes both business and residential customers in the UK.
- 2.5 With respect to the definition of the relevant geographic market, Ofcom considers that there are four distinct areas in the UK where the competitive conditions within each area are sufficiently homogeneous but where the competitive conditions between each area are heterogeneous.
- 2.6 Ofcom considers that the following geographic markets may be identified:
- i) exchanges where Kingston is the only operator ("the Hull area");
 - ii) exchanges where BT is the only operator ("Market 1");
 - iii) exchanges where there are 2 or 3 operators (including BT and ntl:Telewest) AND exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves less than 10,000 homes and businesses ("Market 2"); and

- iv) exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves 10,000 or more homes and businesses ("Market 3").

2.7 The detail of the definition of these markets and the approach taken by Ofcom when identifying them is contained in Section 4 and Annexes 3 and 4. Ofcom is aware that these definitions are based on a complex analysis and is keen to hear stakeholder views on the approach proposed by Ofcom and the rationale behind it.

Assessment of market power

- 2.8 Based on the evidence currently available Ofcom considers that Kingston has SMP in the Hull area and BT has SMP in each of Market 1 and Market 2.
- 2.9 Within this consultation document Ofcom has not made a proposal in relation to the market power assessment for Market 3. This is because Market 3 is expected to undergo significant change over the next few months as LLU operators rollout their services and grow their customer bases. Ofcom therefore believes that it is better to allow these changes to take place before conducting a full assessment, which will be included in its second consultation document.

Proposed regulatory remedies

- 2.10 Ofcom proposes the following remedies on Kingston in relation to the market for wholesale broadband access in the Hull area:
 - requirement to provide Network Access on reasonable request;
 - requirement not to discriminate unduly;
 - requirement to publish a reference offer;
 - requirement to notify terms and conditions;
 - requirement to publish technical information; and
 - requirement to have accounting separation.
- 2.11 Ofcom proposes the following remedies on BT in relation to the market for wholesale broadband access in Market 1:
 - requirement to provide Network Access on reasonable request;
 - requirement not to discriminate unduly;
 - requirement to publish a reference offer;
 - requirement to notify terms and conditions;
 - requirement to publish technical information; and
 - requirement to have accounting separation.
- 2.12 Ofcom proposes the following remedies on BT in relation to the market for wholesale broadband access in Market 2:

- requirement to provide Network Access on reasonable request;
 - requirement not to discriminate unduly;
 - requirement to publish a reference offer;
 - requirement to notify terms and conditions;
 - requirement to publish technical information; and
 - requirement to have accounting separation.
- 2.13 If Ofcom finds BT to have SMP in Market 3, it would consider similar remedies to those proposed in Market 1 and Market 2. If, however, Ofcom finds that BT does not have SMP then it will not be able to impose any remedies. In such an event it may be important to allow operators an appropriate period of notice before removing regulation in order to avoid consumer detriment in the short term.
- 2.14 Ofcom has not set out the detail of the SMP services conditions that it proposes to impose on Kingston and BT in this consultation document. Ofcom's formal Notification to the Commission of its intended approach will be included in the second consultation document.

Consultation and market review timetable

- 2.15 Ofcom is seeking comments on the proposals set out in this consultation document by 13 February 2007. Ofcom is particularly keen to hear comments on its proposals in relation to the definitions of the relevant markets which is set out in Section 4; its assessment of SMP in relation to those markets which is set out in Section 5; and its proposals in relation to the regulatory remedies which it considers should apply to counteract SMP in the markets concerned which is set out in Section 6.
- 2.16 Ofcom intends to publish a second consultation document in May 2007 in which it will revise its proposals should it be necessary to do so in light of any comments that might be made in relation to this document. The second consultation document will also include Ofcom's formal Notification of its intended approach to the Commission.
- 2.17 Ofcom intends to publish its final statement in which it will determine the relevant product and service markets, determine which Communications Providers – if any – have SMP, and set out the regulatory remedies which will apply in those markets thereafter.

Section 3

Introduction

Scope of this consultation

- 3.1 This consultation document considers the market(s) for wholesale broadband access products which are key inputs into services such as retail broadband internet access.

The regulatory framework

- 3.2 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”).
- 3.3 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.
- 3.4 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 or any updating thereof.
- 3.5 The Commission adopted the first edition of the Recommendation on 11 February 2003¹ (the Recommendation) 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”).

¹ Commission Recommendation 2003/311/EC 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.

- 3.6 The Recommendation is currently being reviewed by the Commission and on 28 June 2006 it published a draft second edition for consultation. It is expected that the second edition of the Recommendation will be adopted sometime in 2007.
- 3.7 Ofcom considers that it is not appropriate to wait until the second Recommendation has been adopted to commence this further review of wholesale broadband access markets. The prime reason for this is because Ofcom considers that there has been a change in the competitive conditions in the wholesale broadband markets in the UK and, therefore, the current market definitions and regulatory remedies may no longer be appropriate and may need revising. Ofcom considers that it should undertake a review of wholesale broadband access markets sooner rather than later to ensure that regulation is appropriate.
- 3.8 This is, in any case, consistent with the Access Directive which states that market analyses should be carried out periodically. This approach is 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

- 3.9 Each market review has three parts:
- a definition of the relevant market or markets;
 - an assessment of competition in each market, in particular whether any companies have SMP in a given market; and
 - an assessment of the appropriate regulatory obligations which should be imposed where there has been a finding of SMP.
- 3.10 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 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"² (the SMP Guidelines).
- 3.11 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. National Regulatory Authorities (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.

² 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

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

The 2003/04 review and existing regulation

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

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

Developments since the previous review

- 3.17 In the 2003/04 Review Ofcom found separate economic markets for asymmetric broadband origination and broadband conveyance. Asymmetric broadband origination was defined as extending from the end user's premises to the first suitable point of interconnection in the core network, whereas broadband conveyance was defined as conveyance of broadband traffic across the core network.
- 3.18 These market definitions were heavily influenced by the network topology, its underlying technology and the services that Communications Providers were demanding at that time. However, in the period covered by this review it is expected that all three of these factors will change. Network topologies are expected to change from a service specific arrangement to a more converged arrangement. Technologies, such as asynchronous transfer mode (ATM), are expected to be replaced by technologies, such as Ethernet and internet protocol (IP), which are capable of providing much 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. As can be seen from the analysis in Section 4 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.

- 3.19 The combination of these developments has led Ofcom to conclude in Section 4 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.
- 3.20 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;
 - 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.
- 3.21 It is, however, arguable that the common pricing constraint no longer exists at either the wholesale level or the retail level and this brings into question whether the definitions of the economic markets which were set out in the 2003/04 Review remain appropriate.
- 3.22 At the wholesale level, from 1 April 2005, BT started offering discounts which it applied automatically to customers of its broadband products (DataStream and IPStream), at so-called qualifying exchanges (or "dense cells"). These exchanges are, in general, the ones that serve the most homes and businesses. These price changes may reflect the competitive threat BT is encountering or at least expects to encounter in these areas.
- 3.23 At the retail level, providers such as UK Online, Sky and TalkTalk, for example, 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.
- 3.24 In addition, Ofcom considers that there is a strong probability that competition at the wholesale level will be stronger in some geographic areas than it will be in others. This is because the cost of rolling out a communications network is extremely 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 and the increased roll-out of LLU is highlighting the presence of these cost differences. In certain cases, this can already be seen at the present time. In the longer-term, regulatory remedies may therefore need to differ by geography.

Purpose of this review

- 3.25 For these reasons, Ofcom considers that it is necessary to carry out an analysis of competition in the provision of wholesale broadband access to understand whether the definitions of the relevant product and geographic markets, the assessment of SMP in those markets, and the regulatory remedies should continue to apply. This however, is a complex exercise as Ofcom's preliminary view is that there has been a noticeable change in competition in the provision of wholesale broadband services which varies by geographic area and that regulation needs to recognise this change in the competitive environment. In addition, the market review is required to be forward-looking over the period for which it is intended to cover. In this case, Ofcom is assuming the conclusions of the review will be in place for a period of two to three years. Ofcom has conducted its analysis on this basis.
- 3.26 In particular, Ofcom is keen to ascertain stakeholders' views on whether the market for wholesale broadband access remains national in scope. If respondents consider that the market does not remain national in scope, Ofcom wishes to understand views on the geographic extent of the markets concerned, how boundaries for these markets might be defined, and whether competitive conditions between geographic areas are sufficiently homogenous for it to be reasonable to conclude that, in fact, they should be considered to be part of the same economic market despite the fact that they may not be geographically adjacent to each other.
- 3.27 In addition, Ofcom is keen to receive comments on the precise definitions of the relevant economic markets, Ofcom's assessment of SMP within those markets and on the proposed remedies.

Outline of this document

- 3.28 The rest of this document is structured as follows:

Section 4	Market Definition
Section 5	Market Power Assessment
Section 6	Regulatory Remedies
Section 7	Responding to this Consultation
Annex 1	Regulatory Impact Assessment
Annex 2	Alternative Broadband Technologies
Annex 3	Geographic Data Analysis
Annex 4	Consumer Research
Annex 5	Ofcom's Consultation Principles
Annex 6	Consultation Response Cover Sheet
Annex 7	Consultation Questions
Annex 8	Glossary

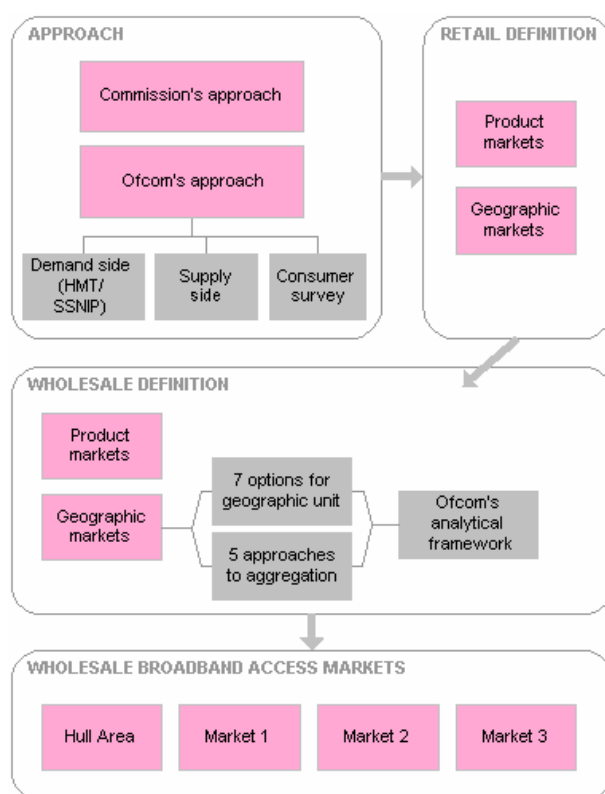
Section 4

Market Definition

Introduction

- 4.1 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 utmost account of all applicable guidelines and recommendations issued by the Commission and to issue a notification of its proposals³. Once markets are appropriately defined Ofcom can then analyse the competitiveness of those markets and identify appropriate remedies (if any).

Figure 4.1 – Diagrammatic representation of Section 4



- 4.2 The purpose of this Section is to define the relevant wholesale markets in which the assessments of market power are to be undertaken. Its structure is as follows: first, the Commission's approach to market definition is set out based on its applicable guidelines and recommendations. This is followed by a discussion of Ofcom's general approach to market definition which is consistent with that of the Commission. Next, definitions of the relevant retail market are considered insofar as they are logically prior to and affect wholesale market definitions. Then the relevant wholesale markets are defined. A diagram of the structure of this Section is set out in Figure 4.1.

³ It is required under Section 79(4) of the Act to issue a notification of its proposals. It is entitled, by virtue of Section 79(5) of the Act, to issue this notification with its proposal as to a market determination and with its proposals for setting SMP services conditions. This document does not contain such a notification. Ofcom will include a notification of its proposals to the Commission in the consultation document proposed for May 2007.

Commission's approach to market definition

- 4.3 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 (the Explanatory Memorandum) to that document.
- 4.4 Recital 7 of the Recommendation clearly states that the starting point for market definition is a characterisation of the retail market over a given time horizon, taking into account the possibilities for demand and supply-side substitution. The wholesale market is defined identified subsequent to this exercise being carried out. This approach is repeated in Section 3.1 of the Explanatory Memorandum and is exactly that set out below and followed by Ofcom.
- 4.5 Section 3.1 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.
- 4.6 The Explanatory Memorandum goes on to state 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.
- 4.7 Section 4 of the Explanatory Memorandum further states that retail markets should be examined in a way that is independent of the 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

- 4.8 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.
- 4.9 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 12 of the Annex to the Recommendation. "Wholesale broadband access" is defined in the Recommendation as follows:

"This market covers 'bit-stream' access that permit the transmission of broadband data in both directions and other wholesale access provided over other infrastructures, if and when they offer facilities equivalent to bit-stream access. It includes 'Network Access and special Network Access' referred to in Annex I(2) of the Framework Directive, but does not cover the market in point 11 above, nor the market in point 18."

- 4.10 Ofcom has given careful consideration to the Recommendation and considers that the market definition adopted is consistent with the approach set-out in the Recommendation and the Explanatory Memorandum.

General approach to market definition

- 4.11 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.
- 4.12 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.
- 4.13 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.
- 4.14 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 frame⁴ (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.
- 4.15 Therefore, in identifying potential supply-side substitutes it is important that providers of these services have not already been included as existing suppliers of services included in the market as demand-side substitutes. 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

⁴ 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

monopolist. However, the impact of expansion by such suppliers can be taken into account in the assessment of market power.

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

4.17 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..."

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

Relationship between the wholesale and retail markets

4.19 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 wholesale service is a derived demand, i.e. the level of demand for the wholesale input depends on the demand for the retail service. The definition of a retail market is likely to affect the assessment of whether SMP in a related wholesale market exists, since the relevant wholesale market will generally, although not necessarily, be as broad as the demand-side substitutes in the relevant retail market.

4.20 In the current review it is therefore necessary to start with the retail market boundaries. Since the demand for wholesale broadband access is ultimately derived from the demand for retail broadband access, market definition at the retail level is likely to be important for determining the extent of the market for wholesale broadband access services. In some cases the wholesale service may be used as an input to markets that are defined as separate at the retail level. Ofcom needs to take this into account in its wholesale market definition.

Relevance of existing regulation

4.21 When Ofcom conducts its analysis to define the relevant retail and wholesale markets it assumes that there is no regulation in place in the market being considered. 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.

- 4.22 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 products⁵ 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 imposing 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.

Product and geographic market definition

- 4.23 This part provides Ofcom's market definition based on the approach explained above. Hence, in this Section Ofcom begins with an assessment of retail product and geographic markets in the absence of regulation in the market being considered. Following this Ofcom considers wholesale market definition taking into account the retail market definition and in the presence of any upstream remedies.

Retail market definition

Summary list of retail markets

- 4.24 In this Section Ofcom concludes that the following two retail broadband markets are relevant downstream markets to wholesale broadband access:
- asymmetric broadband internet access which as a minimum provides an always on capability, allows both voice and data services to be used simultaneously and provides data at speeds greater than a dial up connection. This market includes both business and residential customers in the UK (excluding the Hull area); and
 - asymmetric broadband internet access which as a minimum provides an always on capability, allows both voice and data services to be used simultaneously and provides data at speeds greater than a dial up connection. This market includes both business and residential customers in the Hull area.

Retail markets

- 4.25 In defining the appropriate broadband retail market boundaries, Ofcom has used the evidence available to it. There are two main retail broadband services currently available in the UK: symmetric connectivity services (leased lines which could be used to provide internet access as well as other telecommunications services); and asymmetric broadband internet access. Ofcom has started from a narrow definition of retail broadband services based upon asymmetric broadband internet access. It is appropriate to start with a relatively narrow market definition so that Ofcom can then

⁵ 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/>).

apply the HMT to examine whether the market definition should be broadened to include other products or services. In particular, Ofcom has considered whether:

- cable-based access services are in the same market as ADSL-based access services;
- narrowband internet access services are in the same or a separate market;
- mobile internet access services are in the same or a separate market;
- symmetric broadband internet access services (including leased lines) are in the same or a separate market; and
- residential and business customers are in the same or a separate market.

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

Definition of asymmetric broadband internet access

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

Asymmetric service

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

Internet access

4.29 There are other potential services (in addition to internet access) that broadband access can support in and there is evidence that some of these services will be provided within the timeframe of this review. These services include voice over IP (VoIP), video on demand, IPTV and virtual private networks. However, it is difficult to fully incorporate these services into the market analysis until the nature of the services and their economic characteristics are clearer. Consequently, the definition of the relevant economic markets focuses on the primary retail broadband service of asymmetric broadband internet access, but other retail services, as per the examples above could also fall within relevant retail markets.

Broadband service

4.30 Asymmetric broadband internet access has three distinguishing features or functionalities which are not available, in practice, using narrowband internet access and that as a group distinguish it as a higher quality service than narrowband internet access. These are:

- the service is always on, i.e. no dial up is required. This feature allows the user to maintain a permanent connection to the network so allowing real time delivery of services such as email;
 - it is possible to use both voice and data services simultaneously, whether they are provided together, for example over the same access route, or separately, perhaps using more than one access route; and
 - it has a faster downstream speed than a dial up connection⁶.
- 4.31 The importance to retail consumers of these three features of broadband can be seen via a range of consumer surveys undertaken by Ofcom. This includes research conducted as part of the last market review and the research conducted for this market review. In the latest consumer survey undertaken by Ofcom (see Annex 4) when asked to name the most important characteristics of broadband 95% of residential customers cited the reliability of the service; 86% the ability to make calls at the same time; 75% the speed of the connection; and 73% the always on connection.
- 4.32 These characteristics are also important to business users of asymmetric broadband internet access. Again this is illustrated through the results of surveys conducted by Ofcom. When asked what their most valued features of broadband are 93% of SMEs cited the reliability of service; 84% the always on connection; 79% the ability to make calls at the same time; and 69% the faster speed.
- 4.33 These defining characteristics are also used by ISPs in their marketing literature, with many of them citing the always-on nature of the service, the faster available speeds and the ability to make calls while accessing the internet. For example, on the AOL website under “frequently asked questions” there are questions relating to all three of these characteristics.⁷ On the Orange website under “compare our packages” included in the summarised features are ‘speed’ and ‘use phone while online?’⁸
- 4.34 In Ofcom’s view, it is necessary for all three of the characteristics set out above to be present simultaneously for an internet access service to be defined as broadband. Dial-up internet access using technologies such as PSTN and ISDN2 do not meet all of the above characteristics. PSTN fails on all three characteristics, whereas ISDN2 fails on the basis that it is not always on and because it cannot achieve speeds greater than 64kbit/s when providing voice and data services simultaneously.
- 4.35 Ofcom currently considers that these distinguishing characteristics of broadband internet access services capture the relevant demand-side distinction for the UK’s existing broadband internet access services.

Bandwidth

- 4.36 Ofcom has also considered whether there is an upper bound on speed. For asymmetric internet access, Ofcom considers that the only speed at which it can

⁶ Ofcom considers that the internet access speeds that are currently attainable over a dial up connection are: 56kbit/s over an analogue line; 64kbit/s over an ISDN 2 digital channel and 128kbit/s over the two bonded digital channels of an ISDN 2 line.

⁷ <http://info.aol.co.uk/products/broadbandFaq.s.adp?promo=228937&promoCode=228937>

⁸ <http://www.orange.co.uk/time/compareall.htm>

identify a break in the demand-side chain of substitution⁹ for the time-scale of this review is that consistent with the step-change of the other two functionalities of being always on and capable of supporting simultaneous voice and data services, i.e. faster than dial-up. In the period since the 2003/04 Review, there has been a significant development of high speed internet content, such as gaming, music and film downloading and video telephone calls.

- 4.37 However, despite these developments, there does not yet appear to be a break in the chain of substitution between asymmetric broadband internet access services available today, which can go up to 24Mbit/s. This means that, although direct substitution between the fastest and the slowest speed broadband services may be limited, there is sufficient substitution between adjacent packages (for example, the fastest and the next fastest) for all speeds greater than dial-up to be subject to a common pricing constraint (given that they all have the other characteristics of broadband internet access products) i.e. there is a chain of substitution through the currently available broadband internet access speeds. It is possible that available speeds may increase over the period of this review and as such it is important that these developments are kept under review. If it transpires that new higher speed applications are developed and increasingly taken up by end consumers, it may be necessary for Ofcom to consider further its definition of broadband internet access services in future market reviews.
- 4.38 Therefore, the product to which Ofcom has applied a hypothetical 10% price increase to in order to identify the boundary of the market is asymmetric broadband internet access. The analysis set out below shows that if a hypothetical monopolist were to increase its prices for asymmetric broadband internet access, insufficient customers would substitute away to other products to render the price increase unprofitable.

Customer survey evidence

- 4.39 The information Ofcom has collected from customer surveys relates to claimed behaviour of customers who are asked questions about their willingness to pay for internet access services given hypothetical price rises. Given the hypothetical nature of the questions asked it is important to interpret the conclusions of the surveys with care. In general, experience shows that when asked hypothetical questions, customers tend to overestimate the extent to which they will take actions, (i.e. switching away from a supplier in response to a price rise). Therefore, consumer survey evidence based on hypothetical questions may be useful in indicating the maximum extent to which consumers will react to different events. Ofcom, in developing the consumer survey questionnaire, sought to include questions that helped to identify the extent to which respondents may overestimate the extent to which they act.
- 4.40 As discussed in Annex 4 there appear to be particular issues relating to residential customers' claimed behaviour in response to a SSNIP, where an unrealistically high proportion of consumers claim that they would stop using the internet. This has led to Ofcom being unable to conclude definitively on the precise scope of the product market. However, as explained below and in Annex 4, taking into account other more

⁹ A chain of substitution may exist, for example where a customer would not substitute from product A to product C to avoid a SSNIP, but would substitute to product B. This may suggest that products A and B are in the same market but that products A and C are in separate markets. However, if there are customers who would substitute from product B to product C to avoid a SSNIP then this may suggest that products B and C are in the same market. Because of a chain of substitution between products A and B and products B and C, products A and C would be defined to be in the same market.

qualitative evidence it appears likely that at the retail level the product market includes ADSL and cable, but excludes narrowband. To conclude definitively on these questions Ofcom intends to conduct further consumer research before its next consultation document.

- 4.41 When conducting the SSNIP test in relation to customers' current claimed willingness to pay for broadband internet access services, Ofcom estimated the relevant critical loss (i.e. the required percentage reduction in demand for the SSNIP to be unprofitable)¹⁰. As the price rises above the competitive level, the hypothetical monopolist's revenue experiences two conflicting effects. It gains more revenue from customers paying the increased prices and it loses revenue it previously received from customers who substitute away from the service as a result of the price rise. In addition to the effect of changes in revenue on the hypothetical monopolist's profitability, it is also necessary to take into account the costs that it saves by not supplying service to the customers who substitute away from the service.
- 4.42 When interpreting research results care is needed for reasons including the following:
- end users may overstate the likelihood that they would always take the lowest price technology if it offers equivalent services;
 - some technologies may be able to offer a greater range of services and as such it may be that end-users find it difficult to isolate the service that is of interest, e.g. asymmetric broadband internet access where the service is provided as a bundle alongside voice access or access to cable television;
 - there may be other factors that influence consumer choice, such as whether they have an affinity to a particular service provider's brand which means that the customer would be willing to pay a premium to access that brand if it is only available on a sub-set of technologies; and
 - In this case, the survey itself has shortcomings which mean that the replies or residential customers cannot be relied on for market definition purposes.

SSNIP test based on consumer survey information

- 4.43 Ofcom has considered consumers' reactions to the SSNIP test at an aggregated level for both residential and business consumers. In applying the SSNIP test, it is appropriate to consider whether all the substitution effects, jointly, are sufficient to constrain the hypothetical monopolist. If they are, then the market can be broadened to include the closest substitute.

Importance of a forward-looking assessment

- 4.44 Paragraph 20 of the SMP Guidelines notes that the current market reviews are designed to be forward-looking in nature. Therefore, it is important to recognise and take into account when defining the economic markets that the end-user services available from broadband internet access have developed over recent years and are predicted to continue developing over the coming period, with higher speed access being made available and higher bandwidth applications being developed and utilised by greater numbers of consumers.

¹⁰ The details of this critical loss analysis are set out in Annex 4.

Cable-based and ADSL-based broadband internet access

- 4.45 The definition of asymmetric broadband internet access set out above includes internet access through cable. For the period covered by the market review, Ofcom considers that cable and ADSL broadband internet access form a single relevant economic market.
- 4.46 The Commission, in its public consultation on a draft Commission Recommendation on the relevant markets recognised that where prices between internet access technologies that provide equivalent services are comparable then a consumer would be indifferent between the technologies used¹¹. This is consistent with the approach adopted by Ofcom in relation to the treatment of cable and ADSL.
- 4.47 Ofcom's consumer research sought to test the hypothesis that consumers would be indifferent between different internet access technologies at similar prices. Ofcom relied on its SSNIP analysis to test end-users' preferences between different access technologies. A finding that a SSNIP on the price of service provided using any subset of the available technologies would be unprofitable would imply that there would be a single market for that service, whichever of the technologies in question was used to provide it. Such a finding would be consistent with the Commission's view that consumers are indifferent between different technologies at comparable prices.
- 4.48 Ofcom's consumer research shows that at the retail level there is a sufficient constraint from end-users switching from ADSL-based broadband internet access to cable-based internet access in response to a price rise by a hypothetical monopolist to render the price rise unprofitable. The details of this analysis are contained in Annex 4.
- 4.49 In summary, analysis of the consumer research demonstrates that users switching to cable constrains the hypothetical monopolist of ADSL by rendering a SSNIP unprofitable, for both residential and business broadband users. This provides evidence that ADSL and cable are in the same retail product market.
- 4.50 Furthermore, the research indicates that business consumers have a higher propensity to pay the increased price of a SSNIP than residential users, in so much that in the event of a SSNIP being applied to both ADSL and cable, this will be profitable for the hypothetical monopolist. Therefore, for business users, there is evidence that the market can be considered to be composed only of ADSL and cable. However, as noted above the consumer survey evidence for residential consumers has not allowed Ofcom to conclude definitively on the precise scope of the product market.

Residential broadband SSNIP test

- 4.51 Ofcom's customer survey information relating to residential customers and their willingness to pay for broadband services is from June 2006 and can be found at Annex 4.

¹¹ "Commission staff working document public consultation on a Draft 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", European Commission, page 28

- 4.52 The survey found that in response to a 10 per cent SSNIP, a large proportion of residential ADSL customers and cable customers displayed a willingness to pay the hypothetically increased price, 70 per cent and 76 per cent respectively. However, in each case there was a substantial minority who either indicated an intention to switch to a different form of internet access, in the case of ADSL 22 per cent and 15 per cent for cable. This reduction in demand, combined with the respondents who claimed they would stop using the internet altogether, has been calculated by Ofcom to be greater than the critical loss factor, thus rendering the SSNIP unprofitable for a hypothetical monopolist. This would seem to indicate that the relevant market is wider than just ADSL or just cable, and that both are part of the same market.
- 4.53 The residential respondents to the survey were also asked what their response would be to an increase in the price of both ADSL and cable. A higher percentage of answers indicated a willingness to pay the revised price than in the previous question which looked at a SSNIP on ADSL and cable individually. For ADSL and cable combined, 77 per cent indicated that they would continue to use these current services in response to 10 per cent SSNIP compared to 70 per cent on ADSL only and 76 per cent on cable only.
- 4.54 A fuller outline of the SSNIP tests as performed by Ofcom can be found at Annex 4.

Business broadband SSNIP test

- 4.55 Ofcom's customer survey information relating to business customers and their willingness to pay for broadband services is from June 2006 and can be found at Annex 4.
- 4.56 Business take up of cable internet access is very low, and as such Ofcom did not have the required base of data to perform a meaningful SSNIP test of cable on its own. However, a SSNIP test of ADSL solely and ADSL and cable jointly were performed.
- 4.57 In response to a 10% SSNIP in the price of ADSL, business users indicated a higher willingness to pay than residential users. 80% of business users indicated they would be willing to pay the higher price compared with 70% of residential users. However, the 17% of users who would switch to a different connection method or stop using the internet altogether was still greater than the calculated range of critical loss factors thus rendering the SSNIP unprofitable for a hypothetical monopolist. This indicates that the market is broader than simply ADSL in relation to business broadband.
- 4.58 Business respondents were also asked what they would do in response to a SSNIP applied to both ADSL and cable. A large proportion of respondents, 84%, indicated their willingness to pay the higher price. The corresponding reduction in demand from users switching, or stopping using the internet altogether was 11%. Since this figure is less than the range of critical loss factors calculated by Ofcom, this implies that a SSNIP on ADSL and cable products would be profitable for the hypothetical monopolist. This provides evidence that ADSL and cable taken together form a single market for broadband in terms of business users.
- 4.59 A fuller outline of the SSNIP tests as performed by Ofcom can be found at Annex 4.

Other relevant evidence

- 4.60 As well as considering the results of the consumer surveys and SSNIP analysis, Ofcom has also considered whether wider market evidence supports a conclusion of ADSL and cable being effective substitutes and thus contained in the same market. A further relevant consideration is the correlation of the prices and product specification of cable-based and ADSL-based broadband internet access over time. The price of both forms of broadband internet access has decreased significantly in the period since the previous review. In addition, the product specifications have increased significantly, with increases in the available speeds being the most noticeable development. These changes in prices and product specifications indicate that cable-based and ADSL-based broadband internet access are competing with each other at the retail level. This re-enforces the conclusion of the SSNIP analysis set out above that cable is included in the definition of the relevant economic market.

Narrowband and broadband internet access

- 4.61 As explained in Ofcom's approach to market definition, the key market definition question is whether a SSNIP above the competitive level by a hypothetical monopolist in the supply of asymmetric broadband internet access would be undermined by sufficient customers switching to other services. This section considers available evidence as to whether narrowband and broadband are in the same economic market and then goes on to assess whether a SSNIP applied to broadband internet access would result in sufficient customers switching to narrowband to make it unprofitable.
- 4.62 Ofcom's consumer research shows that although broadband internet access has been available now for a number of years and the number of end-users using broadband internet access has increased significantly, there remains a high willingness to pay for broadband by internet users. High market growth and continued high willingness to pay suggest that broadband internet access remains a market distinct from narrowband internet access. For example, Ofcom's consumer survey research suggests that 84 per cent of business customers and 77 per cent of residential customers (ADSL and cable) attach an average value to their broadband service of at least £21.01 and many are likely to value it higher. It can also be argued that a consumer's valuation of broadband will be greater after experiencing what it has to offer compared to the valuation of broadband before using the product. Customers' willingness to switch to narrowband in response to a SSNIP will likely be further reduced by the development of internet content that requires higher download speeds to access that content. This includes services such as music and video streaming/downloading, gaming and watching television.
- 4.64 It is therefore likely that customers will become so used to the quality and services of broadband that they will be increasingly unlikely to switch to narrowband or other services if a hypothetical monopolist raises the price of broadband. As explained below, Ofcom considers this is likely to be the case given the experience of broadband services to date and the seemingly increased willingness of end users to pay for broadband services as they become accustomed to the speeds and increasingly tailored services and content available over broadband. This may be reflected in Ofcom's consumer survey evidence where only 22% of businesses and 25% of residential broadband customers believed in the statement "there is a good alternative to broadband".

Application of the SSNIP test

- 4.65 A significant proportion of broadband customers have migrated from the various types of available narrowband internet access. However, increasingly broadband customers are not migrating from another method of accessing the internet but are choosing broadband as their first method of internet access. Ofcom's consumer research found that although 40% of all business broadband users had previously used dial-up narrowband internet access 45% had broadband as their first method of internet access. Similarly, in the case of residential broadband users, 57% had previously used dial-up whereas 38% had gone straight to broadband.
- 4.66 It would be useful to have evidence on the extent to which changes in the relative competitive prices of broadband and narrowband internet access affect the quantities demanded of the two services. Such information would allow the relevant cross-price elasticities to be calculated. However, because of the significant changes that have occurred in the provision of narrowband and broadband internet access services over the last few years, it is not possible to isolate such evidence from the data available. Although information on price trends is obtainable, it is not possible to isolate fully whether any switching between narrowband and broadband services has been in response to relative price changes or simply part of an underlying trend of increased demand for broadband. While retail broadband internet access services have been available for a number of years now, there has continued to be migration from narrowband services to broadband services. This migration may well have occurred even if relative prices of narrowband and broadband had remained unchanged.
- 4.67 Over the last few years there have also been developments in the nature of broadband internet access services being offered (e.g. continued reduction in price due in part to significant reductions in the cost of providing end-user services, the introduction of capped usage tariffs, increases in download and upload speeds available etc.). Therefore, the evolution in broadband services also makes any inferences of potential cross-price elasticities difficult.
- 4.68 As there are difficulties in isolating these effects based on observed customer switching and relative price trends, Ofcom has considered demand-side substitution issues through the examination of different types of broadband customers' willingness to pay, using evidence on current relative broadband and narrowband prices and customer surveys.
- 4.69 Given the fluid nature of the market with migration from narrowband services continuing, it would also be relevant to consider the effect of a broadband SSNIP above competitive levels on narrowband internet access customers that are considering whether to upgrade to broadband internet access at current prices. The impact on the hypothetical monopolist raising broadband prices would not be on customers switching away, as such, but potentially from narrowband users deciding not to migrate to broadband following a SSNIP. Ofcom has sought this evidence in its most recent consumer survey research.
- 4.70 To test whether narrowband was a sufficient constraint on broadband, Ofcom asked residential broadband internet access customers (including ADSL, cable, wireless and satellite broadband customers) what their response would be to a SSNIP. In this case nearly 80 per cent indicated they would remain on one of these technologies. Only 7 per cent indicated they would change to an alternative way of accessing the Internet and 12 per cent indicated that they would stop using the Internet altogether.

- 4.71 The results of the consumer survey were in some cases based on relatively small sample sizes and the nature of the responses to the hypothetical questions suggested that some consumers had misinterpreted the question being asked. A further point to note in relation to the responses to the SSNIP questions to residential customers is the proportion of customers who claimed that they would stop using the internet in response to a 10 per cent price increase is unrealistically high. In light of this it appears likely that broadband is in a separate market to narrowband. However, to conclude definitively on this question Ofcom intends to conduct further consumer research before its next consultation document.
- 4.72 In the sample of business customers using narrowband internet access surveyed by Ofcom, 36 per cent are considering changing their connection type inside the next 12 to 18 months, and nearly all of these are considering switching to broadband. When asked to consider how a 10 per cent SSNIP on broadband would affect their intention to switch the majority of those considering moving to broadband would still be likely to switch. For residential users of narrowband, the numbers are similar, in that 38 per cent are considering switching, the majority to broadband and the majority of these would still switch if there were a SSNIP of 10 per cent on broadband.
- 4.73 These responses suggest that the majority of customers who might switch to broadband from narrowband would not be particularly sensitive to a SSNIP in broadband. On the other hand, there would be some narrowband customers that would apparently be deterred from switching. There is a difficulty in interpreting these results however as for the 38 per cent of residential narrowband customers considering switching some of these were more certain whereas others only considered it fairly likely that they would switch. The hypothetical monopolist of broadband would, by imposing a SSNIP, lose a proportion of those customers intending to switch to broadband. However, this sample includes some customers that are potentially uncertain as to whether they would switch, making it difficult for Ofcom to come to a robust conclusion. The SSNIP was also asked of narrowband customers that were considering switching and led to a very small sample size.
- 4.74 The above factors suggest that it would be inappropriate to draw strong conclusions from the above survey results. However, there are a range of qualitative arguments that support the conclusion that on the demand-side, narrowband and broadband internet access are in separate markets. Further details of Ofcom's analysis of its consumer survey are set out in Annex 4.

Supply-side substitution

- 4.75 Ofcom considers that the possibilities for supply-side substitution at the retail level by suppliers of narrowband internet access who are not currently suppliers of broadband would not provide a competitive constraint on a hypothetical monopolist of broadband internet access raising prices. Ofcom has identified below four different scenarios by which, at least theoretically, supply-side substitution could occur. For each scenario, Ofcom has then considered whether such supply-side substitution by suppliers of retail narrowband would prevent a SSNIP in the retail broadband price. The four scenarios for supply-side substitution that Ofcom has considered are:
- the use of narrowband wholesale inputs;
 - the building of any necessary access (and backhaul) networks;
 - the use of wholesale broadband access inputs; and

- the use of LLU.
- 4.76 In order to supply broadband services, narrowband suppliers would need necessary network or would need to purchase the necessary wholesale services. Clearly some supply-side substitution options can be ruled out on technical grounds. For example, wholesale narrowband inputs cannot be used to provide a retail broadband service. Hence, suppliers providing narrowband services could not switch in this manner.
- 4.77 An alternative approach could be for an operator to enter the market by building necessary access (and backhaul) networks. However, Ofcom considers this form of supply-side substitution is unlikely in response to a 5 to 10% increase in the price of broadband internet access. The reason for this is that the costs of providing a wholesale broadband access network (especially digging and ducting) include significant sunk costs and would be likely to include significant time delay in responding to the price increase.
- 4.78 A further potential means of supply-side substitution could be from narrowband suppliers procuring wholesale broadband access or some other downstream variation in order to supply retail broadband services. However, as noted at paragraph 4.21, the definition of the retail product market should be conducted under an assumption of an absence of regulation in the market being considered i.e. wholesale broadband access. It cannot be assumed that in the absence of regulation that a wholesale broadband access product would be provided by a hypothetical monopolist. Even if narrowband retail suppliers could obtain broadband wholesale inputs to allow them to supply broadband retail customers this would not provide a constraint on a hypothetical supplier of the broadband wholesale input. This is because, by definition, the hypothetical monopolist would be providing the wholesale inputs.
- 4.79 Instead of purchasing wholesale broadband access products, supply-substitution could occur by retail narrowband suppliers purchasing a product upstream of wholesale broadband access such as LLU. A question is whether in fact narrowband suppliers switching to provision of broadband services using LLU would actually constitute supply-side substitution. Supply-side substitution would be defined as narrowband suppliers being able to enter the broadband internet access market quickly and at low cost, by virtue of their existing position in the supply of these other services. In the case of these suppliers using LLU, it would not appear that providing retail narrowband would provide a significant advantage over a new entrant by virtue of its existing narrowband retail market presence. In such circumstances, narrowband suppliers switching to providing broadband services would be more appropriately considered as having the same characteristics as a new entrant and, as such, any additional constraint should be considered in the assessment of market power¹².

Conclusion on narrowband and broadband

- 4.80 Ofcom has considered a range of indicators in determining the extent to which narrowband internet access is a substitute for broadband internet access. The three key features of broadband set out in paragraph 4.30 provide for a clear distinction from narrowband. These features are frequently highlighted in marketing of broadband by the major players. Moreover, there is an argument that broadband is

¹² While potential entry by LLU operators is not relevant for the analysis of demand-side and supply-side substitution, the geographical extent of LLU-based competition is relevant for the definition of the geographic markets, which is based on an analysis of the homogeneity of competitive conditions in geographic areas.

an “experience” good and once end-users have tried broadband products they would be unlikely to switch back to narrowband. Ofcom considers that it is unlikely that broadband will become any less differentiated from narrowband over the period of this review. If anything, the difference is likely to increase as the scale of broadband roll out means that internet services and content will be geared towards broadband users.

- 4.81 Ofcom has also considered consumer survey evidence to inform its decision. However, given the dynamic nature of retail internet access services, Ofcom considers that care should be taken when interpreting the suggestive results of the SSNIP test based on consumer surveys and as such Ofcom has taken other evidence into account when defining the scope of the relevant economic markets. Furthermore, the results of the consumer survey were in some cases based on relatively small sample sizes and the nature of responses to the hypothetical questions was inconclusive. Given these concerns, Ofcom intends to undertake further consumer survey research in order to address some of these issues.
- 4.82 Evidence from previous consumer surveys undertaken for the previous wholesale broadband access market review suggested that narrowband and broadband were in separate markets. This conclusion is also supported by the Commission’s analysis, included in its consultation on a Draft Recommendation on relevant product and service markets, which strongly suggests that narrowband and broadband are in separate economic product markets.
- 4.83 Ofcom considers that during the time period of this forward-looking review, demand-side substitution between narrowband and asymmetric broadband internet access is likely to be limited for both residential and business broadband customers. Such that narrowband would not be expected to provide a competitive constraint on broadband. As such Ofcom considers that broadband internet access constitutes a distinct economic market to narrowband on the demand side and will continue to do so during the time period of this review.
- 4.84 Supply-side substitution at the retail level is not relevant to this market review because it is unlikely to occur and would not provide a constraint on suppliers of wholesale broadband services. Therefore, Ofcom currently considers that broadband internet access services constitute a separate and distinct economic market from narrowband internet access and other services. Ofcom believes that this will remain the case for the time period relevant to this review.

Fixed broadband and mobile internet access

- 4.85 For the period covered by this market review, Ofcom considers that mobile internet access is in a separate market from fixed broadband internet access.
- 4.86 Internet access over mobile networks is not an effective demand-side substitute for broadband internet access on fixed networks. Mobile phones offer considerably less functionality than a fixed broadband network. For example, there are a number of practical limitations that mean that there is certain internet content that can reasonably be considered to be inaccessible. These limitations include the screen resolution and interactivity.
- 4.87 Alternatively, an end-user could access the internet using a PC and a mobile network operator’s data card. However, it is likely that demand-side substitution will be limited because on a like-for-like basis there is a significant difference in the cost of

accessing internet content over a mobile network compared to fixed broadband access¹³.

- 4.88 Supply-side substitution by suppliers of mobile internet access is not relevant to this review, for similar reasons given for the discussion of supply-side substitution from narrowband to broadband. In particular, in order to enter the market for fixed broadband internet access suppliers of mobile internet access would need to purchase the relevant wholesale inputs. These suppliers would not, therefore, impose a constraint on the suppliers of the wholesale broadband services over the relevant timeframe.
- 4.89 The absence of demand-side substitution and the finding that supply-side substitution is not relevant to this market review means that the availability of mobile internet access would not provide a constraint on a hypothetical monopolist pricing above the competitive level in the supply of fixed broadband internet access. Therefore, for the period covered by this market review Ofcom considers that broadband internet access constitutes a separate economic market from mobile internet access.

Symmetric and asymmetric broadband internet access

- 4.90 Ofcom considers that, in the UK, the evidence on relative charges and results from customer surveys support the finding that asymmetric and symmetric broadband internet access are in separate markets. Ofcom considers that symmetric broadband internet access does not constrain the price of asymmetric broadband internet access and therefore should not be included in the same market.
- 4.91 Symmetric internet access can be provided using Partial Private Circuits (PPCs), leased lines, or SDSL, whereas asymmetric internet access is provided predominantly through ADSL and cable. The costs of symmetric internet access services can be compared to the costs of providing asymmetric internet access services to inform an assessment of the differential in their competitive price levels.
- 4.92 Currently, an SDSL service would cost considerably more than an ADSL service. For instance, the cost of the modems are believed to be significantly more expensive and if the end-user wished to maintain their PSTN voice service an SDSL service would require a second dedicated telephone line which means that in effect the customer would be required to pay two line rentals, one for the SDSL service and the other for the PSTN service. This difference in cost, when reflected in the retail price, means that a 10% rise in the price of asymmetric services would not result in a sufficient number of customers switching to symmetric services to make that price rise unprofitable.
- 4.93 In addition to the difference in costs of providing asymmetric and symmetric internet access services, these services are also likely to be used by different customers for different purposes. For example, asymmetric access may be preferred over symmetric access because the customer does not have high upload requirements and so is unwilling to pay the price premium for symmetric services.
- 4.94 It could be expected that current internet access patterns will change over time, with more end-users demanding increasingly symmetric internet access. This is because

¹³ At the current time this difference in cost can be very large. For example, O2 charges between 75 pence and £1 per megabyte of data received over GPRS or 3G. O2's unlimited O2 Data Max 1024 package is priced at £75 per month for a one gigabyte capped package. This compares unfavourably on price with broadband, where a similar package can cost in the region of £15 per month.

of the growth in end-users placing their own content on the internet, including video and music content. These demand trends may mean that over time there is a dilution of the boundary between asymmetric and symmetric broadband internet access. However, there currently remain significant technical challenges¹⁴ to allow the large scale delivery of symmetric services to end-users and consequently they are unlikely to be deployed significantly in the period of the current review. Thus, these issues are more likely to be relevant for future market reviews.

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

Residential and business asymmetric broadband internet access

- 4.98 Ofcom considers that the relevant market is the market for asymmetric broadband internet access which includes both residential and business customers.
- 4.99 Currently, there are different asymmetric broadband internet access products targeted at residential and business customers (with the main differences relating to service quality and repair levels). However, such distinctions in retail offers are much reduced from the time of the 2003/04 Review. There is an overlap in the types of products bought by residential and business customers, e.g. some business customers such as small-office home-office (SOHO) users find that services targeted primarily at residential customers are suitable for their needs.
- 4.100 There are business customers which tend to have a lower tolerance of delays compared to residential customers. Some businesses are also likely to have a greater need for upstream capacity in order, for example, to make information available and provide customer services on web sites. They may also require a more tailored level of customer support and a higher level of network reliability from their internet access suppliers. Thus, Ofcom considers that some business customers are likely to purchase higher quality products relative to residential customers. For

¹⁴ In the case of cable the underlying technology is currently inherently asymmetric and as such a move to mass market symmetrical services would require a significant network upgrade programme. Whereas in the case of DSL a move to SDSL would either require a second access line for each end user premise or it would require the re-engineering of the current telephone service.

example, a typical business product is likely to have better terms and conditions in the form of quicker guaranteed repair times.

- 4.101 Where business customers purchase more expensive and higher quality products, this does not in itself suggest that residential and business customers should be in separate markets. The issue of market definition depends on the existence of a chain of substitution between products of higher quality sold at higher (competitive) price levels and those lower down the quality/price scale. Moreover, as the asymmetric broadband internet access products available in the market have progressed over recent years (notably with greater upstream and downstream speeds), it could be argued that any distinction between residential and business demand has decreased.
- 4.102 It may be that suppliers will increasingly be unable to segment the market profitably between residential and business customers. The levels of service and speed demanded by residential customers are likely to continue to increase during the period covered by this current market review much in the same way as they increased during the period covered by the previous review. Residential broadband internet access customers are increasingly realising the additional advantages of higher internet access speeds as more tailored broadband content is made available to them which benefits greatly from being supplied over a better quality broadband internet access product. Thus, over time, some residential customers are less likely to tolerate delays and are more likely to seek increasing levels of service and speed. In this scenario, it is likely that the range of residential products being made available will continue to develop and improve and they will offer the levels of service and speed closer to those offered through business products.
- 4.103 The distinction between residential and business asymmetric broadband internet access is weaker than at the time of the 2003/04 Review. Moreover, as the market definition is required to be forward-looking, it is necessary to consider whether during the period covered by the market review the distinctions between residential and business customers will diminish further. On the demand side, it could be argued that there is currently a chain of substitution between the various residential broadband offers and the various business broadband offers. As products develop and the differences between the two product ranges diminish further, this chain will become even stronger, with the degree of overlap between residential and business potentially increasing.
- 4.104 Substitution on the demand side would suggest that a hypothetical monopolist in the supply of residential broadband internet access would not find it profitable to sustain prices above competitive levels because sufficient numbers of residential customers would switch to the competitively priced lower-end business products.
- 4.105 Supply-side substitution at the retail level between business and residential broadband internet access would not limit the exercise of market power in the related wholesale markets, given that similar inputs typically provided by the same wholesale supplier are required. Since the purpose of this Section of the market analysis is to determine the impact that the definition of the relevant retail markets has on upstream market power, such supply-side substitution is not important to the consideration of markets at the wholesale level.
- 4.106 In conclusion, in light of the forward-looking nature of the market definition appropriate to this market review, Ofcom considers that residential and business asymmetric broadband internet access services are in the same relevant market. This is consistent with the approach adopted by Ofcom in the previous market review

and also with the Commission's Recommendation which does not define separate markets for business and residential broadband markets.

Bundling

- 4.107 In the period since the 2003/04 review there has been a marked increase in the propensity for retail broadband internet access providers to seek to bundle their broadband offerings with other products. This includes linking broadband provision with line rental, calls, television subscription and/or mobile subscription tariffs. These services can be sold as bundles in order to benefit from economies of scope in the supply of these services e.g. marketing and billing.
- 4.108 The Commission has not addressed the issue of bundling in the Recommendation. However, in the Commission's new draft Recommendation, it has sought to address this issue. The Commission states that many offers of bundles are at an early stage of development. It goes on to say that there is little evidence (in relation to triple or quadruple plays¹⁵) to consider such a bundle as being in the same relevant market. This is because the consumer can, if it chooses, obtain particular parts of a bundle from another provider. The Commission uses the analogy of the calls and access markets, which are defined as being separate from each other, even though these two elements are often bundled by retail providers.
- 4.109 Until recently, at the retail level, broadband internet access has tended not to have been sold as part of a bundle (with the exception of access network operators, BT and ntl:Telewest). However, with BT's offer it is possible for the end-user to "unpick the bundle" and purchase broadband internet access separately from another service provider and pay BT separately for line rental¹⁶.
- 4.110 However, it is evident that a number of providers are increasingly offering broadband internet access as part of a bundle with other retail services. These include telephone, calls, television subscriptions and mobile telephone subscriptions.
- 4.111 It is Ofcom's view, consistent with the approach taken by the Commission, that there is not sufficient evidence to consider that broadband combined with those other services as offered by some retail service providers constitute a separate market. The option is available to customers to unpick such a bundle and obtain a particular service from an alternative provider if so desired.
- 4.112 It is also important to bear in mind that this review is a review of the wholesale broadband internet access market. The retail product markets are being defined in order to aid the definition of the product markets at the wholesale level. As such, the question of bundling that is of most interest is the bundling that takes place at the wholesale level. These issues are addressed below at paragraphs 4.137 to 4.138 where bundling in the context of the definition of the relevant wholesale broadband access product market is discussed.

Retail geographic market definition

- 4.113 As this market review is concerned with reviewing competition at the wholesale level, the main area of interest in terms of geographic market definition is not at the retail

¹⁵ A triple or quadruple play refers to the number of services offered within a particular bundle. Hence, for the communications sector a triple play may for instance include Fixed Voice, Broadband and Television services sold as one package.

¹⁶ This may be directly to BT or indirectly through another operator using wholesale line rental.

level, but at the wholesale level. Nevertheless, it is instructive to consider what the scope of the relevant geographic market is at the retail level. However, that said, it is not necessary for Ofcom to conclude on the precise scope of the retail geographic market in this review.

- 4.114 In general in telecommunications markets, in assessing the scope of geographic markets, the application of demand-side and supply-side substitution through the hypothetical monopolist test leads to very narrow geographic market definitions due to the limited ability for such substitution to take place e.g. end-users are unlikely to move home to benefit from lower broadband prices and supply-side substitution requires significant sunk costs.
- 4.115 Instead of assessing substitution through an analysis of demand-side and supply-side substitution using the HMT, it may be more instructive to consider the presence of any common pricing constraints to indicate where the boundary of the geographic scope of the market may be. This is because to the extent that competitive pressure in one geographic area leads to a competitive response through a price change, the effect of that competitive pressure will be felt in all areas in which that price change applies. Thus, if there are two areas (A and B) and there is an increase in competitive pressure in the retail market in area A but this leads to prices falling in both area A and area B, (i.e. there is a common price constraint across area A and area B) then the geographic scope of the market could be defined as area A plus area B.
- 4.116 The 2003/04 Review concluded that in the retail broadband internet access market in the UK, there were two distinct areas where a common pricing constraint existed. One was the Hull area, where Kingston is the incumbent operator and sets a uniform price across the Hull area. The other was the rest of the UK (i.e. the UK excluding the Hull area). As such that market review defined two separate retail geographic markets, one for the Hull area and one for the UK (excluding the Hull area).
- 4.117 In this second area, retail ISPs have historically offered uniform prices that do not vary by geography, suggesting a single geographic market for that area. However, it would seem that this pricing model has recently begun to break down, with a number of ISPs offering differential prices in different geographic areas e.g. UK Online offers lower prices to customers accessing broadband through a BT exchange which has been LLU enabled by UK Online, those customers who wish to use services outside this footprint will be charged higher prices. Other ISPs offer different functionality in different geographic areas.
- 4.118 These developments may suggest that separate geographic markets are emerging at the retail level. However, it is not clear at this time whether there are indeed separate retail geographic markets in the UK (excluding the Hull area) on a forward-looking basis as the vast majority of retail broadband customers are provided services by operators that maintain a national pricing policy. In any case, as noted above, it is not necessary for this market review for Ofcom to conclude on the precise scope of the retail geographic market in this review.

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

Wholesale market definition

- 4.119 This section considers relevant wholesale market definitions in light of the conclusions of the relevant retail market definitions as demand for wholesale broadband services is derived from retail demand. The previous Section concluded

that at the retail level there is a distinct economic market for asymmetric broadband access.

Summary list of markets

4.120 This section will define four wholesale broadband markets. The relevant product market is defined as asymmetric broadband access and any backhaul as necessary to allow interconnection with other Communications Providers which provides an always-on capability, allow both voice and data service to be used simultaneously and provide data at speeds greater than a dial-up connection. Based on this product definition, Ofcom has identified four distinct geographic markets:

- the Hull area - those geographic areas covered by exchanges where Kingston is the only operator;
- Market 1 - those geographic areas covered by exchanges where BT is the only operator;
- Market 2 - those geographic areas covered by exchanges where there are 2 or 3 operators (including BT and ntl:Telewest) AND exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves less than 10,000 homes and businesses; and
- Market 3 - those geographic areas covered by exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves 10,000 or more homes and businesses.

Wholesale product market definition

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

ADSL-based and cable-based wholesale services

4.122 This section considers whether ADSL-based and cable-based wholesale services are in the same market. For the purposes of market definition, it is necessary to consider the wholesale market definition in the absence of regulation in the market being considered. Therefore, Ofcom considers whether wholesale services are likely to be offered in the absence of regulation. Ofcom then considers whether ADSL and cable (identified as being in the same market at the retail level) are also included in the same market at the wholesale level through the operation of indirect constraints. Finally, as the market definition exercise should also assume competitive market conditions, we consider if a direct constraint could arise in the absence of regulation.

Wholesale market products in the absence of regulation

- 4.123 Ofcom recognises that cable operators do not currently offer a wholesale broadband product¹⁷. Therefore, cable is unlikely to directly constrain the pricing behaviour of an ADSL provider at the wholesale level. This is because the operators that currently purchase BT's wholesale broadband access product, DataStream, cannot substitute from it into cable wholesale products in response to a DataStream price rise. However, in defining the relevant wholesale markets for the purposes of this market review, it is appropriate (for the reasons set out at the beginning of this Section) to define the relevant markets, at the retail and wholesale level, in the absence of regulation in the markets being considered.
- 4.124 In the absence of regulation, it is quite possible that a wholesale product would not be made available at all (although the scenarios where wholesale products are made available are considered below). Cable companies do not currently offer a wholesale product, and it is questionable whether BT would do so. However, BT did provide a DataStream service prior to the ATM Direction that established a regulatory requirement for BT to provide a new version of this product on a no undue discrimination basis. Moreover, BT currently provides its (further downstream) IPStream product despite the absence of a regulatory requirement to do so.
- 4.125 Thus, it might be argued that in the absence of regulation, a wholesale product would be provided. However, in such a scenario, BT would have no obligation to continue to make such a product available or to ensure that it was commercially viable (through for instance, allowing sufficient margin). Moreover, it is unclear whether BT would have made such a wholesale product available in the absence of the potential for a regulatory obligation being imposed on it. In other words, it is reasonable to conclude that BT's offer of a wholesale product only exists because it anticipated a potential requirement for regulation. For both of these reasons, Ofcom considers that it would be inappropriate to conduct the market analysis on the assumption that BT would provide a viable wholesale product in the absence of regulation.

Indirect constraints

- 4.126 In the absence of wholesale products there would clearly be no direct competition between ADSL and cable at the wholesale level. However, it is still possible to consider the question of market definition at the wholesale level because competition would take place further downstream at the retail level. The relevant question is whether a hypothetical monopolist of a wholesale service could profitably sustain a small but significant price rise. Retail prices can be regarded as being comprised of a number of input costs and one of these input costs can be characterised as the cost of a wholesale service. If the charge for this wholesale service was to increase, and all other elements of the retail service were priced at the competitive level, this would translate into a price increase at the retail level.
- 4.127 This means that, for example, a 10% price increase for the ADSL wholesale service would translate into a price increase (but of less than 10%) for the ADSL based broadband internet access product at the retail level. This retail price increase would be less than 10% because the wholesale element is only part of the initial retail price.

¹⁷ ntl: Telewest does provide a broadband internet access product to AOL. However, since cable operators have been able to offer wholesale broadband access products since they started to broadband enable their networks in the late 1990s; there is to date only one contract with limited end-users; and the control that AOL has over the dimensioning of the product is very limited, it is Ofcom's view that the product offered by ntl:Telewest is much more aligned to a resale/ intermediate product rather than a wholesale broadband access product.

Using an estimated pricing for a typical wholesale broadband access product and the average retail price, Ofcom considers that wholesale costs constitute approximately 65%¹⁸ of the retail price of ADSL based broadband. Therefore, a 10% price increase of the wholesale element would translate into a 6.5% price increase at the retail level¹⁹.

- 4.128 Such a price increase would lead to some end users switching from ADSL to cable based broadband internet access at the retail level. The relevant question in terms of wholesale market definition is whether the scale of such switching would be sufficient to render the price increase unprofitable. Clearly, if the wholesale element of the retail price were very small, it would be unlikely that significant switching at the retail level would take place. There would thus be a case for regarding ADSL and cable wholesale services as being in separate markets.
- 4.129 However, in this case, the wholesale element of this service comprises approximately 65% of the retail price, and, in principle, ADSL and cable services are essentially the same from the end user's perspective and therefore are very close substitutes at the retail level. On that basis, it is Ofcom's current view that such a 6.5% price increase at the retail level (i.e. one corresponding to a 10% increase at the wholesale level) should lead to sufficient numbers of customers switching to cable-based broadband internet access to render the price increase unprofitable. Therefore, in this unregulated situation, cable would be an indirect constraint on the behaviour of the ADSL based wholesale internet access provider to such an extent that the appropriate wholesale market definition would include both ADSL and cable.

Direct constraints assuming competitive market conditions

- 4.130 In principle, absent regulation, cable operators might also offer a wholesale broadband product in this market. Given that the market definition exercise assumes competitive conditions and the absence of regulation, the relevant question is whether wholesale products would be offered in these circumstances, and whether a cable wholesale product would constrain the price of the ADSL wholesale product and vice versa. Under competitive market conditions, both ntl:Telewest and BT might have an incentive to offer a wholesale product. Competitive pressure would mean that, on average, their upstream (network) and downstream (retail) divisions would make only a normal return (i.e. their cost of capital). In these circumstances, ntl:Telewest or BT would find it profitable to supply a wholesale product to any alternative operator which was more efficient than them in the provision of retail services, or was one that could successfully market broadband services to a wider range of customers (perhaps through greater product differentiation or combining with its own service offering such as content).
- 4.131 Given the similarity of retail prices for cable-based broadband internet access and ADSL-based broadband internet access it is reasonable to presume that cable operators could provide a wholesale broadband product at similar cost to that of the ADSL alternative, and that the services offered would have similar capabilities. If a cable wholesale broadband access product were made available on similar terms as the ADSL product, purchasers of the wholesale product might be expected to

¹⁸ This proportion is higher than in the 2003/04 Review (where wholesale costs constituted approximately 45% of the retail price) primarily due to the reductions in retail broadband prices that have occurred during the period since the 2003/04 Review.

¹⁹ This number is derived from calculating the ratio between a wholesale price of about £10.00 (equivalent to BT's IPStream minus the core IP network and the handover elements) and a retail price including VAT of approximately £19.10 (which equates to £16.25 excluding VAT).

substitute between them. An increase in the price of the ADSL or cable product above the competitive level would lead to purchasers switching to the alternative product. Thus, cable wholesale access and ADSL wholesale access should be included in the same product market.

- 4.132 In conclusion, Ofcom considers that the indirect effects via the retail level and the direct effects at the wholesale level confirm that the appropriate wholesale market definition includes both ADSL and cable.

Wholesale broadband access product

- 4.133 The 2003/04 Review defined the relevant economic markets for wholesale broadband access to be (separately) asymmetric broadband origination and broadband conveyance. Asymmetric broadband origination extends from the end user's premises to the first suitable point of interconnection within the core network, i.e. the parent node. Asymmetric broadband origination therefore consisted of local access and backhaul. Broadband conveyance on the other hand is the conveyance of broadband traffic across the core network in such a way as to allow interconnecting operators to differentiate the technical characteristics of the services they offer to their ISP and other customers (further details are provided in Section 3).
- 4.134 In this current market review, Ofcom no longer believes that this split is necessary. This is primarily because of the migration of wholesale broadband access products to next generation infrastructure within the timeframe of this market review and the inherent unpredictability at this time of the precise method in which these services will be delivered. In these circumstances, it is more appropriate to define the scope of the relevant market as being asymmetric access and any backhaul as necessary to allow interconnection with other Communications Providers. The effect of this change in the definition is that the backhaul can extend beyond the parent core node to a point which allows interconnection with other operators.
- 4.135 As wholesale broadband access will ultimately be used to provide broadband internet access at the retail level, it is important that it can deliver the services that characterise broadband internet access. That is to say, the wholesale broadband access product must be capable of supporting broadband internet access and other multimedia applications, have the capability to be always-on and have a potential downstream speed that exceeds that achievable on a traditional dial-up service. It is worth noting that the wholesale broadband access product may also be capable of supporting multiple retail products; not necessarily limited to retail broadband internet access.
- 4.136 A point to note from this definition of wholesale broadband access is that it does not have an upper speed limit. This is because there does not yet appear to be a break in the chain of substitution between asymmetric broadband internet access services available today, which can go up to 24Mbit/s. This means that these higher speed asymmetric broadband internet access products are a sufficient substitute for lower speed asymmetric broadband internet access products i.e. there is a chain of substitution through the currently available broadband internet access speeds. It is possible that available speeds may increase over the period of this review, for example using so called next generation access technologies. If it transpires that new higher speed applications are developed and increasingly taken up by end consumers, it may be necessary for Ofcom to consider further its definition of broadband internet access services in future market reviews. However, until such a time, these new higher speed services are considered to be included within the scope of this market.

Bundling

- 4.137 As explained in the definition of retail asymmetric broadband internet access, recently there has been an increase in bundling of retail broadband services with other services. That discussion concluded that there was not sufficient evidence to consider that those other services in conjunction with broadband services constitute a single market. At the wholesale level, there is less opportunity for operators to bundle wholesale broadband access with other offerings.
- 4.138 Where there is bundling of different services at the retail level, this would create complementarities at the wholesale level rather than substitution. For example, a wholesale broadband access service would not be a substitute for a wholesale television service where broadband internet access and television are provided as a bundle at the retail level, the retail provider would need access to both. It is also likely to be the case, over the period of this market review, that in order to provide such retail bundles, the wholesale elements will need to be obtained from different wholesale suppliers. However, this may change in the future and as such may be more relevant for future market reviews.

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

Wholesale geographic market definition

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

“According to established case law, the relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which area the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different. The definition of the geographic market does not require the conditions of competition between traders or providers of services to be perfectly homogeneous. It is sufficient that they are similar or sufficiently homogeneous, and accordingly, only those areas in which the conditions of competition are ‘heterogeneous’ may not be considered to constitute a uniform market.”

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

Geographic demand-side substitution

- 4.142 The question being asked in this assessment is whether the purchaser of wholesale broadband access services would purchase the service from another area if faced with a local SSNIP by a hypothetical monopolist, to the extent that it would render the SSNIP unprofitable. If the SSNIP would be unprofitable then this other area should be grouped with the original area being considered for the purpose of defining the relevant market.
- 4.143 However, it needs to be recognised that these wholesale services are an input to other products and services that are subsequently used to supply various downstream (retail) markets. Further, wholesale broadband access, in keeping with communications networks more generally, has a fixed and pre-defined geographic presence. This means that a wholesale purchaser would only be able to switch its demand to an alternative area if the downstream (retail) customer is willing to move to that alternative area. Thus, the question becomes whether a sufficient number of downstream customers would move location (house, business premise, etc) in response to a SSNIP at the wholesale level, such as to make the SSNIP unprofitable.
- 4.144 It further needs to be recognised that a wholesale SSNIP will be diluted in any downstream markets. For example, if we have a wholesale product which is priced at £10 and this is used, in conjunction with other inputs, to make a retail product which is priced at £15 (i.e. the wholesale product would constitute two-thirds of the price of the retail product), then a 10% SSNIP at the wholesale level, which is simply passed on, would result in a price rise of around 6.5% at the retail level.
- 4.145 Given that the cost associated with moving location is likely to be significantly higher than the cost of a wholesale broadband access SSNIP, it is reasonable to conclude that geographic demand-side substitution is either a very weak or non-existent constraint. This approach would therefore lead to the definition of very narrow markets from the demand-side, which is unlikely to be practical to analyse or be representative of competitive constraints that exist. Ofcom therefore concludes that in this case demand-side substitution is not relevant to assessing the geographic market definition.

Geographic supply-side substitution

- 4.146 The question being asked in this assessment is whether a supplier of wholesale broadband access who is operating in one geographic area would start supplying in another geographic area if this other area was exposed to a SSNIP by a hypothetical monopolist, to the extent that it would render the SSNIP unprofitable. If the SSNIP would be unprofitable then these geographic areas should be grouped together for the purpose of defining the relevant market.
- 4.147 In telecommunications markets geographic supply-side substitution is generally considered to be a weak or non-existent constraint due to the high cost and long lead times associated with deploying new network infrastructure. However, the availability

of regulated LLU and backhaul products (which represent upstream regulatory remedies)²⁰ has the potential to change this.

- 4.148 LLU allows competing Communications Providers to use the ubiquitous access network by installing their own equipment in the incumbents' local exchanges. However, there are 5,587 local exchanges in BT's network and 14 local exchanges in Kingston's network. In the absence of a wholesale broadband access product, it would be necessary for a Communications Provider seeking to achieve full national coverage on the basis of LLU to install equipment in all of these exchanges.
- 4.149 Ofcom has considered whether the availability of LLU allows supply-side substitution by an operator present in one (exchange) area into another (neighbouring) area in the event of a SSNIP in the price of wholesale broadband access in this latter area. As noted in the Section above on product market definition, it may be both economic and technically possible to begin using LLU in a reasonable time frame in some, though not all, areas. Ofcom believes that the availability of LLU may be relevant to the issue of whether two (adjacent) areas form part of a single geographic market. However, because the economics of LLU vary by geographic area, this can only be decided through an analysis of each of the areas in question. Moreover, it seems likely that the plans of LLU operators already cover most of the areas where LLU might permit supply-side substitution to take place. Supply-side substitution based on LLU would not then provide an additional competitive constraint over and above that identified by the analysis of competitive conditions in each area. Ofcom believes therefore that the effect of LLU is best captured by its proposal to define geographic markets on the basis of homogeneity of competitive conditions, which largely reflect the extent of (planned) entry by LLU operators.

Common pricing constraints

- 4.150 As explained at paragraphs 4.113 to 4.118, which discussed the definition of the geographic scope of the retail markets, the presence of common pricing constraints can be used to define the boundary of geographic markets. This is the approach that Ofcom adopted in the 2003/04 Review which defined separate geographic markets covering the UK (excluding the Hull area) and the Hull area.
- 4.151 Ofcom, in this market review, has again considered whether the presence of common pricing constraints can be used to define the geographic boundaries of the markets. The 2003/04 Review concluded that there was a separate geographic market for the Hull area from the rest of the UK national market (by which we mean the UK excluding the Hull area) for asymmetric broadband origination. Ofcom noted that the only provider of retail fixed broadband internet access in the Hull area was Kingston. Neither BT nor the cable operators, which at that time offered common prices across the rest of the UK, offered a broadband internet access service in the Hull area. Therefore, the Hull area was subject to a common pricing constraint (Kingston's prices) but was not subject to the common pricing constraint that was present throughout the rest of the UK.
- 4.152 Since the 2003/04 Review there have been a number of developments across the UK as a whole. However, Ofcom considers that these developments do not act to

²⁰ These remedies were imposed as a result of Ofcom's review of the wholesale local access markets <http://www.ofcom.org.uk/consult/condocs/rwlam/statement/> and its review of retail leased lines, wholesale symmetric broadband origination and wholesale trunk markets <http://www.ofcom.org.uk/consult/condocs/llmr/statement/>.

undermine the previous reasons for concluding that a separate geographic market exists in the Hull area. BT, cable operators or LLU operators still do not have a presence in the Hull area and as such a common pricing constraint continues to exist across the whole of the Hull area. Therefore, Ofcom has again defined a separate geographic market for the Hull area based on the presence of a common pricing constraint.

- 4.153 However, in the rest of the UK, market developments have seen geographic variations in wholesale broadband access prices, most notably BT's decision to geographically vary its DataStream and IPStream prices in April 2005. Therefore, it may be the case that the identification of common pricing constraints in the rest of the UK is no longer appropriate, for reasons discussed further below.
- 4.154 Given the limitations of demand-side and supply-side substitution to inform the relevant scope of the geographic wholesale broadband access market and BT's decision to geographically vary its DataStream and IPStream prices, Ofcom has adopted the approach of assessing the extent to which there are, or could be expected to be on a forward-looking basis, geographic variations in competitive conditions and using this assessment as the basis for defining the boundary of the geographic market in the UK (excluding the Hull area). Ofcom's approach is set out in detail in the remainder of this Section.

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

Geographic Market Assessment

- 4.155 As noted above, Ofcom, in the 2003/04 Review concluded that there were two geographic markets for asymmetric broadband origination: the UK (excluding the Hull area) and the Hull area. The main reasons for Ofcom concluding a national (the UK excluding the Hull area) geographic market definition for asymmetric broadband origination were that:
- BT had priced and continued to price on a national basis at both the retail and the wholesale level;
 - the cable operators priced on a national basis, even though their cable franchise areas were in geographically distinct locations;
 - ISPs designed and priced their products on a national basis; and
 - available evidence on advertising practices suggested that all operators in the broadband Internet access market advertised on a national basis.
- 4.156 Ofcom recognised however that within the national market there were local characteristics including some variation in the degrees of competitive pressure. These variations in competitive pressure were, at the time, primarily from cable operators.
- 4.157 Since the 2003/04 Review there have been a number of developments that suggest that there may no longer be a national geographic market. In particular, in April 2005 BT introduced geographically de-averaged prices for its wholesale broadband products by reducing its prices by £1.10 in 561 "dense cell" exchanges that tend to serve more densely populated geographic areas. In addition, the rollout of LLU-

based services has increased local competitive pressures and has led to ISPs offering retail prices and products that vary by geography.

- 4.158 When assessing the geographic scope of a market on the basis of the homogeneity of competitive conditions it is normal practice to start with a narrow definition (small area) and then to see how this can be augmented. This raises the following questions:
- i) What geographic unit should be used for the geographic market assessment? That is, what is the smallest unit of area to be considered and how should it be defined?
 - ii) What factors should be used to identify similar conditions of competition?
- 4.159 In some cases there will be an interaction between these two questions. However, in the first instance, the question relating to what constitutes an appropriate geographic unit will be considered in isolation. Following this the factors that should be used to identify similar conditions of competition will be considered.

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

- 4.160 For any geographic market assessment it is necessary to define the geographic units, or building blocks, to be used. At the extreme, but in keeping with the view that retail customers are unlikely to move house/business premises in response to a SSNIP, it could be concluded that the geographic unit should be individual premises, i.e. each house and business premises would be considered separately. In the UK there are about 28 million individual premises and therefore such an extreme position may be impractical. Ofcom therefore needs to consider a more practical building block. Table 4.1 sets out some options for possible geographic units and identifies the approximate number of units needed to cover the entire UK.

Table 4.1: Geographic unit options

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

- 4.161 When selecting an appropriate geographic unit it is likely that there will need to be a trade-off between granularity and practicality. Using individual houses and business premises would certainly allow a very granular assessment to be conducted, but obtaining accurate data, conducting the analysis and specifying/implementing the findings is likely to be impractical. On the other hand, the geographical unit selected needs to be capable of mapping the local competitive constraints that exist in the market and in effect this means that the unit should not be so large as to arbitrarily mix together areas that have heterogeneous competitive conditions. For example, using the nations and regions areas may seem to be attractive from a presentational

point of view, but such large areas are likely to comprise very diverse competitive conditions within each area and as such their use would fail to capture the local competitive conditions that are being assessed. Each of the options identified in Table 4.1 are discussed in more detail below.

Option 1 - Premises

- 4.162 The use of individual premises would support very granular assessments and if implemented accurately would avoid the inadvertent mixing of consumers that face different competitive conditions. However, with approximately 28 million individual premises in the UK obtaining accurate data, conducting the analysis and specifying/implementing the findings is likely to be impractical.

Option 2 – Full postcode

- 4.163 Full postcodes represent an aggregation of a small group of premises that are geographically close to one another, thus reducing the total number of geographic units needed to cover the UK. The grouping of premises into postcodes is independent of any Communications Provider and technology and this may be considered desirable from a neutrality point of view. However, because of this independence it is possible that the competitive conditions will vary within a postcode. This is because network rollout will not necessarily follow postcode boundaries and thus there may be some premises within a postcode that have access to a certain service and others that do not. This type of misalignment is an inherent consequence of aggregating premises. However, from a practicality point of view, some level of aggregation will be necessary. Therefore, when selecting the geographic unit, Ofcom is mindful of this issue and aims to minimise any adverse affects. There is thus a trade-off between granularity/precision and practicality.
- 4.164 The use of postcodes compared to individual premises is clearly a move towards practicality in the trade-off between granularity and practicality. However, with c.1.8 million postcodes in the UK it is likely that this option remains biased towards granularity, as the practical implications of handling c.1.8 million units are still formidable.

Option 3 – Postal sector

- 4.165 Postal sectors represent an aggregation of a group of postcodes that are geographically close to one another, thus reducing the total number of geographic units needed to cover the UK. Compared with premises and postcodes their use would therefore be a move towards practicality in the trade-off between granularity and practicality.
- 4.166 As with postcodes, postal sectors also provide a technology neutral approach to aggregation and again this means that it is possible that the competitive conditions will vary within a postal sector. Indeed with greater aggregation there is a greater likelihood that the competitive conditions will vary within any given geographic unit and/or that any variation will be larger. However, this has to be accepted as a natural consequence when trading-off granularity and practicality. With approximately 11,000 unique postal sectors in the UK this may represent a reasonable trade-off. Indeed Ofcom elected to use postal sectors as the geographic unit when assessing geographic variations in competitive conditions in the leased lines markets in its recent discussion document²¹, although this does not mean that, if geographic

²¹ <http://www.ofcom.org.uk/consult/condocs/disagg/consultation.pdf>

markets for leased lines are defined, it will necessarily be on the basis of postal sectors.

Option 4 – BT local exchanges

- 4.167 With approximately 5,600 individual exchanges, the use of BT's local exchange footprints offers about twice as much aggregation as postal sectors, but still offers a reasonable level of granularity. It therefore probably strikes a reasonable balance in the trade-off between granularity and practicality. However, this approach is not technology neutral as it has as its basis the network topology of BT. However, if a truly technology neutral approach to aggregation were to be adopted it is possible that the competitive conditions will vary within the resultant geographic unit. This is because network rollout, and thus service availability, will not necessarily follow any particular identifiable boundary, such as postal sectors or county boundaries. This will lead to a misalignment between a network specific geographic unit and a technology neutral geographic unit.
- 4.168 If there were only one access network within a specific geographic area then basing the geographical unit on this would seem to be a sensible approach. However, where there is more than one type of access network a decision would need to be made over which access network would be used to define the boundary of the geographic unit. In these circumstances it would seem appropriate to define the boundary of the geographic unit in reference to any upstream remedy that may be influencing any variations in competitive conditions, because any geographic variations in these conditions will tend to reflect the structure of the network on which the upstream remedy is imposed.
- 4.169 This suggests that BT's local exchanges may be an appropriate geographic unit as BT has obligations flowing from the review of competition in the provision of wholesale local access where it was found to have SMP²². As explained below, in the discussion of the factors which could be used to identify areas of similar competitive conditions, it is the imposition of these upstream remedies (including the requirement for the provision of LLU, which is provided at the local exchange level) that is in large part responsible for the variations in competitive conditions that can be observed in the wholesale broadband access market. These variations stem in a large part from the cost conditions of LLU, which mean that once an operator has entered an exchange using LLU that operator has strong incentives to maximise the number of end-users that it serves from that exchange, so there is homogeneity of competitive conditions within the exchange area.
- 4.170 Moreover, BT's geographic de-averaging of its wholesale broadband access prices is based on its local exchange footprints, which further reflects the presence of actual or prospective competition from LLU operators. A further relevant factor that supports this option is that in the event that Ofcom finds BT to have SMP in any of the relevant geographic markets defined, then any regulatory remedies will inevitably need to be based on its network architecture.

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

- 4.171 It could be appropriate to use groups of exchanges as the relevant geographic area from which to conduct the geographic analysis. This may be especially relevant where the wholesale broadband access product is provided at some point (or points)

²² Similar obligations were imposed on Kingston in the Hull area but as explained in paragraphs 4.150 to 4.154 Ofcom is using the presence of a common pricing constraint to define the geographic boundary in the Hull area.

downstream of local exchanges, that is, at a point closer to the core of the network where traffic from a number of different exchanges is aggregated.

- 4.172 However, such an approach may be considered to be circular as it is assuming what in essence is a remedy (the provision of a wholesale broadband access product) when analysing whether there are local geographic markets. Moreover, Ofcom's understanding is that the variations in competitive conditions on a geographic basis are being driven by the increased take-up of LLU. This means that basing the geographic analysis on groups of local exchanges risks mixing areas of competitive conditions within that geographic unit i.e. within a group of exchanges there could be exchanges in which LLU entry has occurred and exchanges where there has been no entry and there is little prospect of entry. This is particularly true if the exchange groupings are based on an operator's network hierarchy.

Option 6 – Counties/metropolitan districts

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

Option 7 – Nations and regions

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

Conclusion on geographic unit

- 4.175 Ofcom believes that the most appropriate geographic unit for assessing the wholesale broadband access geographic market definition is BT's local exchange footprints (Option 4). This is based on the following reasons:
- these exchange footprints align perfectly with the upstream regulatory remedy LLU;
 - the belief that LLU is a significant driver in the changing competitive conditions in the wholesale broadband access market;
 - the fact that BT's geographically de-averaging of wholesale broadband prices is based around its local exchange footprints which reflects LLU competition; and
 - recognition of the fact that the imposition of remedies to address a finding of SMP within a market will inevitably need to be based on network architecture.

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

- 4.176 Having determined the geographic unit to be used it is necessary to analyse the conditions of competition in each local exchange so that areas where the conditions

of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different can be grouped together for the purpose of the geographic market assessment.

- 4.177 As discussed earlier in this Section, defining the scope of geographic markets on the basis of demand and supply-side substitution may result in impracticably narrowly defined markets. The standard methods used to define markets may be characterised as largely focussing on the behaviour of customers and suppliers, that is, the way in which they respond to price changes (in the SSNIP test) and their buying and pricing patterns (in considering the extent of a common pricing constraint). On the other hand, an assessment of the homogeneity of competitive conditions between geographic areas places more weight on the structural factors that are most relevant in determining how competitive a market is. These structural factors include the number of competitors and the economic viability of entry in an area and can help identify the actual and/or potential level of competitive constraint in a particular geographic area.
- 4.178 In applying this approach to market definition which involves assessing variations in competitive conditions, the types of analyses used to assess such variations are similar to some of those which Ofcom would adopt when assessing SMP in a relevant economic market. The difference here though is that the competitive conditions for different products are assessed on a geographic basis to define the geographic market. Thereafter, once the scope of the product market and geographic market has been identified, the relevant SMP analysis would be conducted in reference to those markets.
- 4.179 The use of a consistent set of indicators to define the geographical scope of the market and in the analysis of SMP should help ensure that competitive conditions in a defined area are indeed broadly homogenous and that any finding of SMP or non-SMP is appropriate to the market as a whole. Therefore, this approach is likely to reduce the occurrence of “black holes”²³ in any SMP assessment and makes it much more likely that, when the analysis of SMP and the need for remedies is performed using data for the combined area, its conclusions will be appropriate throughout the combined area as a whole.
- 4.180 Ofcom has identified the following possible structural factors that could be used to identify geographic areas of similar competitive conditions in the wholesale broadband access market:
- i) current availability of cable-based services
 - ii) current availability of LLU-based services
 - iii) planned availability of LLU-based services
 - iv) LLU-based entry likely
 - v) presence of a common pricing constraint

²³ “Black holes” being those small areas within a larger area where the incorrect conclusion on SMP is found, e.g. no SMP is found in a broad area, but that area contains pockets within that area where there is indeed SMP. Alternatively, SMP could be found in a broad area but that area contains pockets within that area in which there are competitive constraints such that SMP should not have been found.

vi) presence of alternative network infrastructure

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

Approach 1: Current availability of cable-based services

- 4.182 Cable-based retail broadband services are available to c.45% of premises in the UK and it seems unlikely that there will be any further rollout of cable networks in the short to medium term. One approach would be to group together all areas (geographic units) where cable is available and all areas where it is not. The rationale for doing this would be that areas where cable-based services are available could be said to have conditions of competition that are similar or sufficiently homogeneous and equally areas where cable-based services are not available could also be said to have conditions of competition that are similar or sufficiently homogeneous. Furthermore the prevailing conditions of competition within each of these two areas are appreciably different.
- 4.183 As recognised in the 2003/04 Review, competition from cable-based services leads to variations in the competitive conditions on a geographic basis. However, at that time, Ofcom concluded that the variation in competitive conditions caused by the presence of cable-based services was not sufficient to lead to a definition of local markets. Furthermore, since the 2003/04 Review there have been increases in the competitive pressure within the wholesale broadband access market as reflected (at least in part) in BT's decision to geographically de-average its wholesale prices. This appears however to be driven by the increased roll-out by LLU operators rather than by the presence of cable. This would suggest that whilst the availability of cable-based services has some impact on the geographic competitive conditions within wholesale broadband access it would not be appropriate to define the boundary of the relevant geographic market solely on the basis of the presence of cable infrastructure.

Approach 2: Current availability of LLU-based services

- 4.184 Like cable-based services, LLU-based services are currently only available in certain geographic areas and this leads to variations in the competitive conditions on a geographic basis.
- 4.185 Although BT has an obligation to make LLU available in all parts of the UK, with this obligation being derived from the remedies imposed as a result of BT's SMP in the upstream wholesale local access market, it is apparent from the publicly stated plans of LLU providers that LLU is unlikely to be successful in all geographic areas. This view is consistent with Ofcom's own analysis in its Strategic Review of Telecommunications which recognised that LLU would be unlikely to be economically viable across all geographic areas²⁴.
- 4.186 The economics of telecommunications access networks are such that the provision of services based on LLU are economically viable only from those exchanges where an LLU operator can serve a sufficient number of end users in order to benefit from the economies of scale within an individual exchange. This means that in general

²⁴ For example see Ofcom's Strategic Review of Telecommunications phase 2, paragraph F.71.
http://www.ofcom.org.uk/consult/condocs/telecoms_p2/tsrphase2/PolicyAnnexes_FL.pdf

LLU will be economically viable in those exchanges that are used to provide services to a sufficiently large number of end users.

- 4.187 The effect of this is that LLU-based competition in markets downstream from wholesale local access (including wholesale broadband access) will only be viable from a proportion of local exchanges. This means that it could be expected that there will be significant differences in competitive conditions in the wholesale broadband access market between the geographic areas which are served by local exchanges where LLU operators have rolled-out network and those local exchanges where they have not.
- 4.188 If it is the case that LLU is expected to be one of the main determinants of differential competitive conditions on a geographic basis in the wholesale broadband access market (which it could be, as LLU-based competition is not expected to be possible everywhere in the UK) then using areas where LLU-based services are currently being offered could provide a basis for identifying the boundary of the geographic wholesale broadband access markets.
- 4.189 However, LLU operators are still in the process of investing in LLU infrastructure at BT's exchanges. This process is likely to continue for many months. Therefore, at this time, Ofcom does not consider that the availability of LLU-based services to set the geographic market boundary would accurately reflect the areas in which LLU-based competition could be expected to develop during the period until the next market review. Nevertheless, this approach could be appropriate for some future market review after LLU operators have invested in all of the areas that they intend to i.e. at a time when the market is much more stable.

Approach 3: Planned availability of LLU-based services

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

Approach 4: LLU-based entry likely

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

Approach 5: Presence of a common pricing constraint

- 4.194 As noted in paragraph 4.157, since the 2003/04 Review, BT amended its DataStream and IPStream prices so that they now vary by geographic area. This geographic variation in its prices appears to be largely in response to actual and expected competition from alternative operators providing services using LLU inputs.
- 4.195 The merit of using BT's DataStream and IPStream prices to identify the boundary of separate geographic markets is that market dynamics are delivering the boundary. Geographic differentiation in BT's prices is in response to a change in competitive conditions, prompted by the increase in competitive pressures from entry by LLU operators. Therefore, differentials in market prices could be taken as an indicator of the homogeneity in competitive conditions. Moreover, this approach would be consistent with the approach in the 2003/04 Review which considered the presence of a common pricing constraint to indicate the boundary of the geographic market. This approach would also allow the market definition in future reviews to be amended in light of BT further changing its prices in response to changing competitive conditions in the wholesale broadband access market.
- 4.196 However, it could be argued that this approach to setting the geographic market boundary for wholesale broadband access would give discretion to a dominant operator to set the market boundary. This discretion may allow a dominant operator to "game" the regulatory structure, e.g. by changing prices in order to change where the market boundaries lay in any future market review. Another potential criticism of using this approach to determine the geographic market boundary would be that it would not appear to be sufficiently forward-looking to capture the geographic variations in competitive conditions that could be expected over the period of the current market review. However, market participants may to some extent set their prices in light of expected future, as well as current, market conditions. Included in this may be a consideration of how competitive conditions in different parts of the country may change. It is possible that considerations of this sort are reflected in the fact that when BT reduced its DataStream and IPStream prices, it did so at some exchanges where there were no LLU operators or indeed cable operators at that time.

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

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

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

Conclusion on the methodology to assess geographic variations in competitive conditions

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

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

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

Using number of operators within each exchange footprint

- 4.200 Given that the geographic market definition is required to be forward looking, the fact that LLU is expected to provide a significant constraint in the wholesale broadband access markets within the period of the review means that the forecast number of operators, within each exchange footprint, is a key factor when identifying areas with sufficiently homogenous competitive conditions. However, using this factor alone would be inappropriate as LLU operators' rollout plans are forecasts (and therefore subject to change) and there is a significant divergence between LLU operators' business plans.
- 4.201 Ofcom's approach is therefore to include in its assessment of geographic variations in competitive conditions only those cable and LLU operators that are expected to provide a material competitive constraint during the period covered by this review. Additional factors such as ease of market entry and sustainability will also be relevant to ensure that the resultant areas possess similar conditions of competition. These factors are addressed in the discussion of exchange size at paragraphs 4.219 to 4.224 below.

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

- 4.202 At the current time there are 22 (non-BT) operators in the UK (excluding the Hull area) that offer broadband internet access services based on LLU inputs provided by BT. Each of these operators has its own unique business plan. Certain of these operators are concentrating on the provision of services to businesses or to fulfil local government contracts and, as such, they do not intend to compete in the provision of wholesale broadband access beyond those narrowly-defined areas. It is Ofcom's view that LLU operators such as these should not be included in the assessment of geographic variations in competitive conditions in the provision of wholesale broadband access services as they will have a limited impact on competition.
- 4.203 A further class of LLU operator is those which may be considering offering wholesale broadband access services (albeit for self-supply) but only have very limited coverage in terms of population and currently have no plans to extend this or have very limited extension plans. To include operators such as these when assessing geographic variations in competitive conditions could lead to erroneous conclusions as there is a greater risk that such operators will not provide a material competitive constraint in the market within the period covered by the market review. In order to decide as objectively as possible which operators are likely to provide a material competitive constraint and those that will not, Ofcom proposes to include in its analysis LLU operators' planned coverage as an indicator of whether they are likely to provide a competitive constraint within the period covered by the review.
- 4.204 Ofcom's methodology assumes that only those LLU operators who plan to compete in the broadband internet access market and who intend to unbundle at exchanges able to serve at least 10% of homes and businesses in the UK (by January 2008) should be included for the purposes of the geographic market assessment²⁵. There are currently eight such operators. Table 4.2 shows a breakdown of all LLU operators by their planned coverage over time.

Table 4.2: Breakdown of all LLU operators by their planned coverage over time

Coverage	Jul 06	Jan 07	Jan 08
up to 10%	22	22	22
up to 20%	7	8	8
up to 30%	4	8	8
up to 40%	1	7	8
up to 50%	0	5	7
up to 60%	0	3	7
up to 70%	0	0	2

- 4.205 If BT and ntl:Telewest are added to the 8 LLU operators that plan to compete in the broadband market and unbundle at least 10% of homes and businesses in the UK, then there is a total of 10 operators (the "Principal Operators") upon which the assessment of geographic variations in competitive conditions can be based.

²⁵ Note from Table 4.2 that given current forecast information, if a threshold of any value between around 5% and 40% were used the same conclusion would be reached i.e. 8 operators in January 2008.

Inclusion of ntl:Telewest

- 4.206 The proposed approach relies on being able to determine whether an operator provides a service in a particular exchange area. With the eight LLU operators and BT the assessment is fairly straightforward, as these operators map precisely onto the exchange footprints and thus they are either active in an exchange area (in which case they are able to supply the customers in the exchange footprint) or they are not. However, the situation with ntl:Telewest is different as it has its own access network which does not match BT's exchange footprints. It is therefore possible that ntl:Telewest is able to supply only a proportion of the customers within a given BT exchange footprint. Therefore, it is necessary to develop a proxy for cable coverage by exchange.
- 4.207 The test used by Ofcom to determine whether a particular operator is present within an exchange footprint is whether that operator is able to provide a competitive constraint. Suppose there is one operator (a hypothetical monopolist) serving the whole of an area and ntl:Telewest serving only part of it. Then could this hypothetical monopolist within the exchange footprint introduce a profitable SSNIP, or would it lose sufficient customers to render the SSNIP unprofitable? Clearly, if ntl:Telewest is only able to supply (say) 10% of the potential customers within an exchange footprint then this leaves 90% that would have no choice but to stay with the hypothetical monopolist, thus suggesting that a SSNIP is likely to be profitable. On the other hand, if ntl:Telewest is able to supply (say) 90% of the potential customers within an exchange footprint then this only leaves 10% that would have no choice but to stay with the hypothetical monopolist, thus suggesting that a SSNIP is less likely to be profitable (assuming that prices are uniform within the area). The minimum overlap required would be where a SSNIP is profit neutral and to determine this value on this basis would require accurate information about marginal costs, prices/profitability and cross price elasticity, which is not available with sufficient accuracy. It is clear, however, that for ntl:Telwest to provide a competitive constraint in a given exchange footprint, it must be able to supply a significant part of that area, probably above 50%, though not necessarily as high as 90%. Therefore, Ofcom has proposed to use a value within these bounds and has conducted sensitivity analyses on this, which are included in Annex 3.
- 4.208 Ofcom has considered ntl:Telewest as being present within an exchange footprint if it is able to supply at least 65% of the homes and businesses within the footprint. Sensitivity analysis set out in Annex 3 shows that for variations of cable overlap between 55% and 85% of all delivery points within an exchange coverage area, the maximum variation in an area covered by any one market is 2.3% of UK (excluding the Hull area) delivery points (Market 1).

Grouping exchanges by the number of operators within each exchange footprint

- 4.209 Individual exchanges can be grouped by the number of operators within each exchange footprint. Table 4.3 provides a breakdown of the number of exchanges (and the percentage of homes/businesses they cover) by the number of Principal Operators within each exchange footprint. Ofcom has used data at three time points to inform its geographic market definition: actual data from July 2006 and forecast data for January 2007 and January 2008. This forecast data was obtained through formal information requests sent by Ofcom to BT, cable operators and each of the LLU operators.

Table 4.3: Exchange breakdown by number of operators in exchange footprint

No. of Principal Operators	Jul 06		Jan 07		Jan 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	4,412	37.4%	4,074	24.1%	3,932	20.4%
2	582	22.1%	363	8.8%	312	5.9%
3	249	13.9%	201	7.7%	173	5.4%
4	88	6.6%	159	7.3%	155	6.2%
5	70	6.0%	135	7.8%	110	4.6%
6	54	3.8%	131	7.2%	139	6.6%
7	47	3.5%	119	7.4%	147	8.0%
8	77	6.2%	153	10.6%	170	10.3%
9	8	0.6%	172	12.7%	272	19.2%
10	0	0.0%	80	6.4%	177	13.6%

- 4.210 Not surprisingly, there are some exchanges where one Principal Operator (BT) is present, some where two Principal Operators are present, some where three Principal Operators are present and so on all the way up to ten operators present (i.e. all the Principal Operators). The number of Principal Operators clearly represents a continuum of competitive conditions, with those geographic areas served solely by BT being significantly less competitive than those geographic areas where all the Principal Operators stated that they would provide services. In defining the boundary of the geographic market in terms of the homogeneity of competitive conditions a decision will need to be taken as to whether these geographic areas can be consolidated.
- 4.211 Exchanges where BT is the only Principal Operator present would appear to be a sensible grouping for the purpose of geographic market definition, as it seems reasonable to argue that the competitive conditions within this group are sufficiently homogenous (BT is the only Principal Operator) and that the competitive conditions within this group are appreciably different from other (neighbouring) areas (in every other area there is at least one competitor to BT which demonstrates that entry is possible in these geographic areas).
- 4.212 Having identified areas where BT is the only Principal Operator, there is left a large number of exchanges in the UK where there are anywhere between 2 and 10 Principal Operators that might be present. The next consideration is whether all of these areas have sufficiently similar competitive conditions to define them as a single geographic market. If by focussing on the extremes this appears to indicate that competitive conditions in these geographic areas are sufficiently similar, then this would indicate that the two extremes (and hence all intervening markets between the two extremes) can be defined as a single geographic market. On the other hand, if the competitive conditions in the two extremes are not sufficiently similar this suggests at least one further geographic market boundary between these areas.
- 4.213 In relation to Table 4.3, once BT-only exchanges are excluded, the lowest number of Principal Operators is two and the largest is ten. The geographic areas where there are only two Principal Operators present are unlikely to have similar competitive conditions as those geographic areas where there are ten Principal Operators present. Whilst it is difficult to identify a definitive and unambiguous break in the

competitive conditions, Ofcom believes that it is appropriate to define a further break between these extremes for this reason.

- 4.214 Ofcom believes that this break falls between areas where there are three Principal Operators and those areas where there are four. The rationale for this proposal is that, as the number of Principal Operators competing with one another increases, the incremental effect on competitive conditions of an additional competitor is likely to decrease. The precise number beyond which there is no further additional effect will vary from market to market depending, *inter alia*, on cost and entry conditions.
- 4.215 It is Ofcom's view that an area with two or three wholesale broadband access Principal Operators (one of which is BT and one is likely to be cable) would have an appreciably lower level of competitiveness than one with four Principal Operators. It is less apparent whether, once the number of competitors has reached four, the addition of more competitors would appreciably change the competitive conditions. Given the cost structures in the wholesale broadband access market, particularly those faced by LLU operators who have a high proportion of fixed costs and as such may be expected to compete strongly to expand their subscriber base in order to lower their per end-user costs, it is Ofcom's view that it is reasonable to regard areas with four or more Principal Operators as having sufficiently similar competitive conditions to be regarded as a single geographic market for the purposes of this review²⁶.
- 4.216 Therefore, Ofcom's proposal is to identify separate geographic markets in the UK (excluding the Hull area) based on the number of Principal Operators present in an exchange area. Those geographic areas where there is one Principal Operator present, those geographic areas where there are two or three Principal Operators present and those geographic areas where there are four or more Principal Operators present. These three groups with the number of exchanges in each and the coverage are shown in Table 4.4.

Table 4.4: Three exchange groups using number of Principal Operators within each BT exchange footprint

No. of Principal Operators	Jul 06		Jan 07		Jan 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
BT only	4,412	37.4%	4,074	24.1%	3,932	20.4%
2 or 3	831	36.0%	564	16.6%	485	11.3%
4 or more	344	26.6%	949	59.3%	1170	68.3%

Data forecasts and timing

- 4.217 What is clear from Table 4.2, Table 4.3 and Table 4.4 is that significant LLU roll-out is forecast between now and January 2007. After January 2007 further rollout is forecast but on a much reduced scale. While there is uncertainty as to whether the forecast roll-out will be achieved by January 2007, from the information Ofcom obtained from the LLU operators, it is Ofcom's view that significant roll out will nevertheless be achieved within the timeframe of the market review. It should also be noted that the data used in the analysis presented in this document pre-dated the

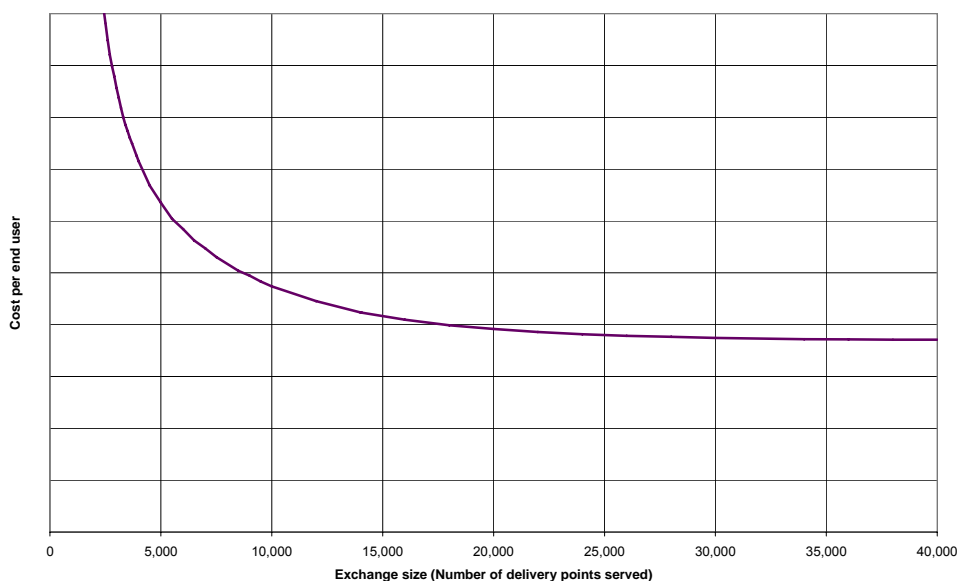
²⁶ Subject to the discussion of exchange size below.

announcements by Tiscali/VNL and Carphone Warehouse/AOL about their respective merger proposals.

- 4.218 Ofcom recognises that the data presented in this Section only goes up to January 2008 and that this does not cover the entire period relevant to this review. However, at the time of the second consultation document and of the final statement, Ofcom will have gathered further data which will cover the entire period of the review. Moreover, the data from LLU operators will allow Ofcom to further refine its analysis to take into account market developments that will occur between now and then, including using any revised forecast data that is available. It will also be possible for Ofcom to analyse how rollout has developed and compare this with the forecasts provided by LLU operators. Therefore, while the analysis presented in this consultation is able to identify precise geographic market boundaries based on the number of Principal Operators present or likely to be present in a given exchange, it is possible that between now and the final statement for this market review that the precise boundaries will change as the market develops.

Exchange size

- 4.219 Ofcom believes that to identify areas of sufficiently homogeneous competitive conditions exchange size is an important additional factor to inform the geographic boundary. The use of exchange size can help to inform those exchanges in which LLU can be expected to be sustainable. This is because there are significant economies of scale and density in the provision of wholesale broadband access services.
- 4.220 The question then arises as to what is the relevant size of exchange to be used in the definition of the geographic market. There are a number of factors which Ofcom has used to indicate the size of exchange at which competition could be expected to be sustainable, which include information collected from LLU operators on the factors that they take into account when planning their network rollout.
- 4.221 As many of the costs associated with the investment necessary to provide broadband internet access services based on LLU inputs are independent of the number of end users served by such investments, this means that as exchange size decreases, the cost of providing services, on an end-user basis, increases. This can be represented by cost curves which plot costs on an end-user basis by exchange size. A stylised example of such a cost curve is shown in Figure 4.2.

Figure 4.2 – Stylised cost curve²⁷

- 4.222 This cost curve shows that in those exchanges where there is a larger number of delivery points, the per end-user cost is lower (all other things remaining equal). An individual operator's per end-user cost in a particular exchange will be, in part, dependent on the market share of that operator. However, the pattern remains similar.
- 4.223 From the information obtained from LLU operators it is clear that there are a number of factors behind the decision by each individual LLU operator to roll-out to a particular exchange. One of the most common and most important is the size of exchange. This is understandable given how important it is to serve a certain number of end-users in order to benefit from the economies of scale that exist on an exchange-by-exchange basis. Obviously the precise size of exchange that is able to support LLU-based entry is dependent on the specific business cases of each operator. Nonetheless, it is possible to draw some generalisations from LLU operators' responses to Ofcom's information requests. For example, some LLU operators stated that the exchange should serve a minimum number of residential premises, while others responded in terms of how many end users it would require and made forecasts based on current end users to inform where they would roll out. Much of this information was provided to Ofcom on a confidential basis and it is not appropriate to divulge the responses in this consultation document. However, Ofcom, after considering the available cost information as described above together with the responses from LLU operators to the information requests, considers that an exchange size of at least 10,000 end users is a size from which sustainable entry is achievable.
- 4.224 However, Ofcom wishes to make clear that this in no way means that it considers that entry is not sustainable in smaller exchanges. Roll-out decisions are a matter for individual LLU operators and different exchanges will be profitable for different operators. This may well mean that entry is sustainable in exchanges significantly smaller than 10,000 end users. Moreover, it may also be the case that there could be a variety of reasons why LLU entry is not sustainable at some larger exchanges.

²⁷ The actual cost per end-user will depend on a number of factors such as scale and amortisation periods and as such these values are omitted from the Y-axis of Figure 4.2. However, it is the shape of the cost curve which is relevant for the issues being considered here.

What Ofcom is attempting to do with the inclusion of this factor into the geographic market definition is to recognise that competitive conditions will vary by geography in part because of differences in the barriers to entry that exist. One way of capturing these barriers to entry is through recognising the significant scale economies that are available to LLU operators in those exchanges where they are able to supply a larger number of end users.

Conclusion on wholesale geographic market definition

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

- exchanges where there are 4 or more operators where the exchange serves 10,000 or more homes and businesses ("Market 3").

4.229 Table 4.5 shows the relative size of these markets in the UK (excluding the Hull area) in terms of number of exchanges and population coverage based on LLU operators' roll-out forecasts for January 2007.

Table 4.5: Groupings based on number of operators and exchange size (excluding the Hull area)

Market	No. Exchs	Coverage
BT only exchanges	4,074	24.1%
Exchanges with 2 or 3 operators AND exchanges with 4 or more operators where the exchange serves less than 10,000 homes and businesses	729	21.5%
Exchanges with 4 or more operators where the exchange serves 10,000 or more homes and businesses	784	54.4%

4.230 A list of the exchanges that falls into each of the above markets is included in Annex 3.

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

Conclusion on wholesale market definition

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

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

- the Hull area - those geographic areas covered by exchanges where Kingston is the only operator
- Market 1 - those geographic areas covered by exchanges where BT is the only operator
- Market 2 - those geographic areas covered by exchanges where there are 2 or 3 operators irrespective of exchange size AND exchanges where there are 4 or more operators where the exchange serves less than 10,000 homes and businesses
- Market 3 - those geographic areas covered by exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves 10,000 or more homes and businesses

4.233 Table 4.6 shows the relative size of these markets in the UK in terms of number of exchanges and population coverage based on LLU operators' roll-out forecasts for January 2007.

Table 4.6: Summary of the wholesale broadband access market definitions in terms of number of exchanges and population coverage in the UK

Market	No. Exchs	Coverage
Kingston only exchanges	14	0.7%
BT only exchanges	4,074	24.0%
Exchanges with 2 or 3 operators AND exchanges with 4 or more operators where the exchange serves less than 10,000 homes and businesses	729	21.3%
Exchanges with 4 or more operators where the exchange serves 10,000 or more homes and businesses	784	54.0%

Section 5

Market Power Assessment

Introduction

- 5.1 As discussed in Section 4, 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

- 5.2 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

- 5.3 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."

- 5.4 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".

- 5.5 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.

- 5.6 In assessing SMP it is important to conduct the analysis under the assumption that no 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 regulation (or the threat of regulation) does not exist.

The criteria for assessing SMP

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

- 5.8 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.”²⁸

- 5.9 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.”²⁹

- 5.10 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

²⁸ Paragraph 19

²⁹ Paragraph 20

themselves, save in exceptional circumstances, evidence of the existence of a dominant position...”³⁰

5.11 However, the Commission notes further 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.”³¹

5.12 The European Regulators’ Group (“ERG”) has issued a working paper on SMP³² (the ERG SMP Position) that builds upon the SMP Guidelines. In this paper further criteria are explicitly considered:

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

³⁰ Paragraph 75

³¹ Paragraphs 78-79

³² “Revised ERG Working paper on the SMP concept for the new regulatory framework”, October 2004 (http://www.erg.eu.int/doc/publications/public_hearing_concept_smp/erg0309rev1_smp_working_doc.pdf)

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

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

Assessment of SMP against relevant criteria

5.14 In the context of this market review, when assessing SMP it is appropriate to take account of the existing regulation of a service upstream of the market that is being considered. This relates to the existence of cost-based unbundled local loops (as required under the LLU Regulation 2887/2000) 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.

5.15 The purpose of Ofcom's SMP analysis is to assess whether BT, ntl:Telewest, Kingston or any other operator possesses single dominance or are collectively dominant in the relevant wholesale asymmetric broadband access markets. If Ofcom considers no network provider has SMP individually or collectively, the markets will be found to be effectively competitive.

5.16 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.

5.17 As explained in Section 4, Ofcom's view is that the wholesale broadband access markets in the UK can be defined as follows:

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

5.18 This Section considers the assessment of SMP in the wholesale broadband access markets defined in Section 4. The SMP analysis is based on the evidence available to Ofcom. In Market 3 the competitive conditions are changing very rapidly, with a significant proportion of this change forecast to take place over the next 12 to 18 months. In this Section Ofcom has set-out the current situation in this market and has made projections about how this may change in the future. However, because these

are projections and given that Ofcom is planning a second consultation document, Ofcom does not believe that it is appropriate or necessary to reach a firm conclusion on whether or not BT would hold a position of SMP in this market. Ofcom will make this assessment in the second consultation document, planned for around May 2007.

Summary list of SMP designations

5.19 Ofcom has assessed whether any operator either individually or jointly possesses SMP in the relevant markets. This equates to concepts of single firm dominance and collective dominance in Competition Law. Ofcom concludes that:

- Kingston possesses SMP in the wholesale broadband access market in the Hull area;
- BT possesses SMP in the wholesale broadband access market in Market 1; and
- BT possesses SMP in the wholesale broadband access market in Market 2.

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

5.20 In Ofcom's view the most important criteria for the assessment of SMP in these markets are:

- market growth and market shares;
- future potential market shares;
- barriers to entry and expansion;
- economies of scale and scope; and
- countervailing buyer power.

Other criteria for assessing SMP

5.21 The following paragraphs (which include quotations taken from the ERG SMP Position) consider the remaining criteria listed earlier, explaining why Ofcom considers these less relevant to this assessment of SMP in all of the relevant markets.

5.22 Excessive pricing – “the ability to price at a level that keeps profits persistently and significantly above the competitive level is an important indicator for market power.” Evidence of excessive pricing can support a finding of SMP. It is not, however, a prerequisite to a finding of SMP. Ofcom has no evidence of excessive pricing in the relevant markets.

5.23 Overall size of the undertaking – “the potential advantages, and the sustainability of those advantages, that may arise from the large size of an undertaking relative to its competitors”. There are a number of scale players present in the markets considered where this is relevant. Ofcom has considered this issue in relation to economies of scope and has not addressed it separately.

5.24 Technological advantages or superiority – “Such advantages may represent a barrier to entry as well as an advantage over existing competitors due to lower production

costs or product differentiation". This criterion is considered within the context of barriers to entry and has not addressed it separately.

- 5.25 Product/services diversification (e.g. bundled products or services) – "Generally speaking there is a positive relation between product/services diversification and market power, which is due to the fact that increased differentiation in general will also hamper switching between suppliers if these are able to differentiate their products from their competitors and if others are not able to imitate the differentiation." This criterion is not considered relevant because competition in the market for wholesale broadband access is largely based on self-supply either based on BT provided inputs (LLU) or by construction of an access network (cable). Currently, bundling at the retail and wholesale levels is limited, as discussed in Section 4.
- 5.26 Vertical integration – "Vertical integration while normally efficient can strengthen dominance by making new market entry harder due to control of upstream or downstream markets. As such, vertical integration may give an advantage to the integrated firm (over its competitors), as access to sales and supply markets might be more easily attainable for the integrated firm. Vertical integration makes it also possible to lever market power into upstream or downstream markets." This criterion is relevant but the potential for leverage of upstream market power to damage competition has already been addressed by the imposition of remedies in the market for wholesale local access (LLU). The effectiveness of these remedies is reflected in the analysis of competitive conditions in the wholesale broadband access market.
- 5.27 A highly developed distribution and sales network – "Well-developed distribution systems are costly to replicate and maintain, and may even be incapable of duplication. They may represent a barrier to entry as well as an advantage over existing competitors". Ofcom does not consider this criterion relevant because the service in question is acquired only by purchasers at the wholesale level and does not therefore require a specialised or complex distribution network.
- 5.28 Evidence of previous anti-competitive behaviour – "Effectively competitive markets lack collusion among suppliers and anti-competitive behaviour." Evidence of previous anti-competitive behaviour such as predatory pricing and other market foreclosure behaviour can be an indication that a market is not effectively competitive. Ofcom is not aware of recent directly relevant evidence of anti competitive behaviour in these markets³³.
- 5.29 Active competition on other parameters – The ERG proposes that market power can be obtained through competing on parameters such as marketing and innovation. This criterion could be present in areas where there is competitive provision of wholesale broadband access and is considered under economies of scope.
- 5.30 Existence of standards/conventions – "Useful background information not only for market delineation but also for the assessment of product homogeneity/heterogeneity, the existence of market barriers for potential entrants and for the assessment of dominance can be obtained by considering the existence and consequences of standards and conventions. The extent of technical standardization may determine the potential for product differentiation as well as the ease of market entry (availability of a certain technology; compatibility with other firms' products/technologies)." While there are technical standards for equipment

³³ However, in 2002, Ofcom issued a direction to resolve a dispute which required BT to offer ATM Interconnection services

used in the provision of wholesale broadband access their impact on the development of competition is limited.

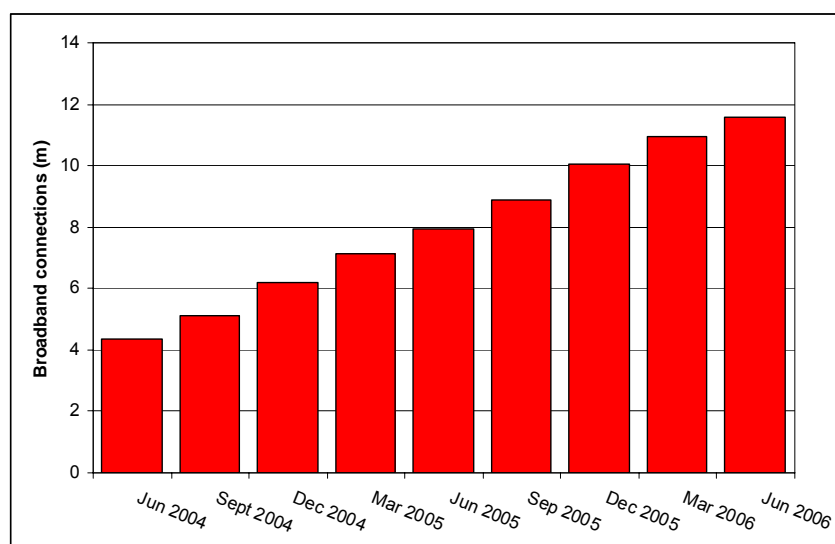
- 5.31 Customers' ability to access and use information – The ERG SMP Position proposes that limited access to information on terms and conditions (especially prices), or access to information that is difficult to use, may reduce the capacity of consumers to act upon differences between providers. As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

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

Substantive Assessment

- 5.35 As shown in Figure 5.1 the rate of increase in the take-up of broadband connections in the UK as a whole has remained high since the 2003/04 Review. In June 2006, the UK had close to 12 million broadband subscribers, with the DSL user base numbering 8.9 million and accounting for 74% of the total market, the cable base being nearly 3 million and 25% of the total market and all other technologies comprising less than 1% of the total market.

Figure 5.1: Growth in UK broadband subscribers between Q2 2004 and Q2 2006



- 5.36 This total distribution of broadband connections between the four geographic markets identified in Section 4 is as follows:

- c.2.5m connections (21% of the total) are found within Market 1;
- c.2.5m connections (21% of the total) are found within Market 2;
- c.6.7m connections (57% of the total) are found within Market 3; and
- the remaining c.0.06m connections (0.5% of the total) are found within the Hull area.

- 5.37 The DSL connections consist of both bundled loop services provided by BT (or Kingston) and unbundled lines provided by LLU operators. Of the total 8.9m DSL connections at July 2006, c.670,000 lines (8% of total DSL) are provided by LLU operators and the remaining c.8.2m lines (92% of total DSL) are provided by BT and Kingston.

- 5.38 As noted at paragraph 76 of the SMP Guidelines and in the ERG SMP Position, it can be informative in product markets possessing some degree of differentiation to analyse market shares both by revenue and volume. However, the criteria to be used to measure market shares of undertakings concerned will depend on the characteristics of the relevant market. In general it is likely that the most appropriate measures will be volume for bulk products (e.g. wholesale conveyance minutes), and value for differentiated (branded) products. Volume data should be used if there are

no large differences in prices since this minimises the differences between results based on volume and value data. If there are significant differences in prices, calculations based on volume data would not paint a realistic picture of the position and economic significance of market players. In practice, therefore, market shares are usually calculated using sales revenues instead of volumes although in most cases it might be appropriate to analyse both for a fuller assessment. Where – concerning a fairly homogenous product or service – a firm has a higher market share by value than by volume, this might be an indication that it can price above rivals and make super normal profits. Such pricing behaviour might be a sign of SMP. In general therefore, the comparison of volume/revenue based market shares can provide some indirect and useful information on market power.

- 5.39 As in the 2003/04 Review and in accordance with the approach taken in the ERG SMP Position in relation to bulk products, Ofcom has presented wholesale market shares on a volume basis (that is, the number of subscribers). Revenue market shares are not easily discernible for two main reasons. First there is limited third-party supply currently in the market and where there is, prices are not transparent. Second, the vast majority of non-BT supply is self-supply and there is no information available on internal transfer charges. Therefore it is not possible to calculate total market revenues. Furthermore, there are differences in the composition of wholesale broadband access products provided downstream, with differing revenue shares simply expressing a difference in the quality and therefore cost of the wholesale broadband access products being supplied. Using network retail market shares between BT-provided DSL, LLU-provided DSL and cable to indicate wholesale broadband market shares is a reasonable approximation.
- 5.40 In the 2003/04 Review, Ofcom defined two separate geographic markets: the UK (excluding the Hull area) and the Hull area. In the UK, cable was not present throughout the whole of the market. In light of this, Ofcom noted, when assessing market shares to inform its market power assessment that cable's market share may overestimate the constraint that it was able to exert on BT and as such, care had to be taken when interpreting the market share data. However, as explained in Section 4, this market review is defining four separate geographic markets. The effect of the way in which these markets have been defined (i.e. with reference to operators' presence within individual exchange areas) is that the market share data will be more reflective of the constraints present within the individual markets.
- 5.41 A market review seeks to identify what ex-ante requirements would be proportionate and therefore the SMP assessment should be undertaken assuming that no regulation is present in the market being considered. If no wholesale regulation were in force it seems likely that vertically-integrated operators (BT, LLU operators and cable operators) would compete at the retail level, and therefore the retail shares of these entities would equal the shares in the wholesale broadband access market as the offerings in the market would be pure bundles of retail broadband and self-provided wholesale broadband access.
- 5.42 Ofcom recognises that the data and projections presented in this Section only goes up to January 2008 and that this does not cover the entire period relevant to this review. However, at the time of the second consultation document and of the final statement, Ofcom will have gathered further data which will cover the entire period of the review and Ofcom will make its final market power assessments based on this data.

The Hull area

- 5.43 Ofcom concludes that Kingston has SMP in the provision of wholesale broadband access in the Hull area. The reasons for this are explained below.

Market growth and market shares

Current market shares

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

Future shares

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

Barriers to Entry and Expansion

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

Sunk costs

- 5.47 Kingston possesses comprehensive infrastructure in this market. It has a ubiquitous access network and the associated support network of DSLAMs and backhaul. The greater part of this sunk cost is contained in Kingston's access network to homes and businesses. The provision of concentrator units and a backhaul network would be a smaller, yet still significant cost.
- 5.48 There are two broad options available to a company wishing to compete in the provision of wholesale broadband access products. The first is to build a comprehensive access network, which could address end-users directly. The second is to take advantage of the LLU remedy.
- 5.49 Any company looking to build a competing comprehensive network in this market would incur both the costs of providing individual access and the costs of the support infrastructure. The same would be true of ntl:Telewest if it wished to expand into this area to provide comprehensive broadband access. At the time of this review, Ofcom understands that there are no firms considering such investment.
- 5.50 The LLU remedy imposed in the review of the wholesale local access market means that operators seeking to use LLU do not have to incur the costs of provisioning an access network since these operators are able to purchase LLU inputs from Kingston and provide services in this manner. However, this can still require significant sunk costs, including co-location at Kingston's exchanges and securing access to backhaul services. Also of particular significance in this market are the fixed costs associated with taking LLU from Kingston, including in terms of systems integration. Ofcom understands that to date no one has taken LLU from Kingston in this market

and Ofcom further understands that no operator plans to over the period considered by this review.

- 5.51 Whatever the pre-entry price set by incumbent broadband access operators, what matters for the profitability of new entry is the price that would arise from competition between firms post-entry. If the expected post-entry price would be such that entrants' post-entry profits would fail to recover the sunk costs of entry and the entrant foresaw this, then entry would not take place. Accordingly, the high sunk costs of entry and the potential for reduced prices post-entry are deterrents to new operators entering this wholesale broadband access market. This can be seen by the lack of planned entry into this market.

Economies of scale, scope and density

- 5.52 The fixed costs associated with broadband enabling an exchange is subject to significant economies of scale and density. As the number of lines served from each exchange increases, the average costs per line associated with broadband enabling will fall. There are also fixed costs which operate above the level of the individual exchange, for example the costs of building backhaul networks. These costs are also reduced on a per unit basis if these backhaul links serve a large number of end-users. Therefore it is in the interest of operators to secure as large a number of lines served as possible in each exchange area and to serve as many end-users as possible with backhaul infrastructure.
- 5.53 Kingston has obtained certain scale economies in this market as a result of first-mover advantage. These economies of scale, however, may prove very difficult for other operators to replicate. Kingston's economies of scale therefore look to be a significant barrier to entry in the Hull area.

Countervailing buyer power

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

“firms with very high market shares may not be in a position post-merger, to significantly impede effective competition, in particular by acting to an appreciable extent independently of their customers, if the latter possess countervailing buyer power. Countervailing buyer power in this context should be understood as the bargaining strength that the buyer has vis-à-vis the seller in commercial negotiations due to its size, its commercial significance to the seller and its ability to switch to alternative suppliers”.³⁴

- 5.55 The guidelines of the Office of Fair Trading on the assessment of market power (the OFT's Guidelines) note that:

“Size is not sufficient for buyer power. Buyer power requires the buyer to have choice.”³⁵

³⁴ Official Journal of the European Union, *Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings*, 5 Feb 2004, paragraph 64 http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf.

³⁵ OFT, *Assessment of market power, Understanding competition law*, December 2004, chapter 6.

- 5.56 The OFT Guidelines set out a number of factors in assessing whether there is countervailing buyer power:
- the buyer is well informed about alternative sources of supply and could readily, and at little cost to itself, switch substantial purchases from one supplier to another while continuing to meet its needs;
 - the buyer could commence production of the item itself or 'sponsor' new entry by another supplier (e.g. through a long term contract) relatively quickly and without incurring substantial sunk costs;
 - the buyer is an important outlet for the seller (i.e. the seller would be willing to cede better terms to the buyer in order to retain the opportunity to sell to that buyer); and
 - the buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender.
- 5.57 Kingston has a 100% share of wholesale broadband access products in this market and there are significant barriers present to any firm entering this market to compete with Kingston. However, if Kingston were faced with large downstream purchasers of these products who had the ability to withhold demand or switch demand to other current or potential suppliers of wholesale broadband access products then Kingston's prices absent regulation may be constrained by this buyer power.
- 5.58 However, these conditions do not hold in this market as Kingston's downstream arm is currently the only provider of retail broadband services, i.e. there are no purchasers of wholesale broadband access in the Hull area. This, together with the fact that customers are individual retail customers and the fact that these customers have no alternative supplier, means there is a complete absence of countervailing buyer power in this market. Based on confidential information provided by Kingston, this is not expected to materially change in the period covered by this market review.

SMP conclusions for the Hull area

Single firm dominance

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

- Kingston's current forecast suggests that by March 2009 the total number of wholesale broadband access products that it will be supplying to other providers will be extremely limited. Kingston believes that it will maintain a substantial market share at the retail level for the period of this review; and
- Kingston possesses significant economies of scope and scale in this market.

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

Market 1

- 5.60 Market 1 is composed of 4,074 exchange areas, within which BT (based on forecasts for January 2007) is the only wholesale broadband access operator³⁶. These exchange areas cover 24% of all UK delivery points. The competitive conditions within this group are sufficiently homogenous, in that BT is the only operator and as explained in Section 4, the competitive conditions within this group are appreciably different from other exchange areas, where there are competitors to BT. Ofcom concludes that BT has SMP in the provision of wholesale broadband access in Market 1. The reasons for this are explained below.

Market growth and market shares

- 5.61 Table 5.1 outlines the current wholesale broadband access market shares in this market, split between BT, ntl:Telewest and LLU operators.

Table 5.1: Market 1: WBA market shares, July 2006

	BT	ntl:Telewest	LLU operators
WBA volumes (000s)	2,503	40	0
Share of Market	98%	2%	0.0%

Future shares

- 5.62 The market shares outlined above are not expected to change appreciably in the period of this review. There is no planned entry between now and January 2007 from the Principal Operators, as the exchanges in this market are unlikely to be economically attractive to LLU operators due to either their small size, their remoteness or because of constraining technical factors. In addition, Ofcom has no evidence of there being plans to expand cable coverage in these areas.

Barriers to entry and expansion

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

³⁶ There are some exchange areas within this market which include provision of services from ntl:Telewest. As explained in Section 4, ntl:Telewest 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.

Sunk costs

- 5.64 BT possesses comprehensive infrastructure in this market. It has a ubiquitous access network and the associated support network of DSLAMs and backhaul to its core network. The greater part of this sunk cost is contained in BT's access network to homes and businesses. The provision of concentrator units and a backhaul network would be a smaller cost, yet still significant.
- 5.65 There are two broad options available to a company wishing to compete in the provision of wholesale broadband access products. The first is to build a comprehensive access network which can address end-users directly. The second is to take advantage of the LLU remedy.
- 5.66 Any company looking to build a competing comprehensive network in this market would incur both the costs of providing individual access and the costs of the support infrastructure. The same would be true of ntl:Telewest if it wished to expand into this area to provide comprehensive broadband access. At the time of this review, from the information available to Ofcom, there is no firm considering such investment.
- 5.67 The LLU remedy imposed in the review of the wholesale local access market means that LLU operators do not have to incur the costs of provisioning an access network since these operators are able to purchase LLU inputs from BT and provide services in this manner. However, this can still require significant sunk costs, including co-location at BT's exchanges and securing access to backhaul services. As discussed above, LLU operators are not planning significant entry into this market over the period of review. From January 2007 to January 2008 LLU operators have plans to expand only into a further 142 exchanges out of the 4,074 in this market³⁷.
- 5.68 Whatever the pre-entry price set by incumbent broadband operators, what matters for the profitability of new entry is the price that would arise from competition between firms post-entry. If the expected post-entry price is such that an entrant's post-entry profits fails to recover the sunk costs of entry and if this entrant foresees this, then entry will not take place. Accordingly, the high sunk costs of entry and the potential for reduced prices post-entry are deterrents to new operators entering this wholesale broadband access market. The effects of this deterrence can be seen by the lack of planned entry into this market.

Economies of scale, scope and density

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

³⁷ If this forecast expansion occurs by the completion of the market review, or is credibly expected to occur within the period of the market review, these exchanges would, consistent with the analytical framework set out in Section 4 for the definition of the geographic scope of the relevant market, be included in either Market 2 or Market 3. Which market would depend on the number of LLU operators present at the exchange and the size of the exchange.

- 5.70 The exchange areas which make up Market 1 have characteristics which limit the ability for operators to achieve significant scale efficiencies. These exchange areas serve a relatively low number of end-users and therefore the potential markets for wholesale broadband access products are small. On average, each exchange within Market 1 serves c.1,600 delivery points, whereas the national average is c.4,900 delivery points and the average for Market 2 is c. 8,000 delivery points and for Market 3 it is c.19,000 delivery points.
- 5.71 BT may have obtained certain scale economies in this market by being the first-mover and these may prove very difficult for other operators to achieve. The small size of each exchange limits the potential market for wholesale broadband access products and thus the maximum achievable size for any one operator. An operator would need to achieve a higher market share to gain a certain absolute number of lines than in a larger exchange. Similarly, in terms of backhaul, these areas do not offer the population density that might justify the building of significant additional backhaul capacity.
- 5.72 BT's economies of scale look to be a significant barrier to entry in Market 1. The small size and sparsely populated nature of the exchanges in this market lead to an efficient scale being more difficult to achieve thus cementing BT's first mover advantage.

Countervailing buying power

- 5.73 The European Commission states in its Horizontal Guidelines that even:

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

- 5.74 The OFT Guidelines note that:

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

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

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

- the buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender.
- 5.76 These factors from the OFT Guidelines have limited relevance to Market 1, as there are no real alternative sources of supply and the buyers of wholesale broadband access are unlikely to be able to commence production. This renders the effective application of buyer power to counteract BT's upstream market power unlikely in the foreseeable future in this market.

SMP conclusions for Market 1

Single firm dominance

- 5.77 Ofcom concludes that BT possesses single firm SMP in the market for wholesale broadband access in Market 1. This finding is based on:
- BT's current market share of 98%;
 - the further likelihood of this share to persist in the future given the absence of significant cable or LLU entry in this market;
 - the existence of significant entry barriers;
 - the existence of significant economies of scale and scope; and
 - the lack of countervailing buyer power.
- 5.78 While recognising the growing nature of this market, Ofcom considers that BT will retain SMP throughout the period of this review.

Collective dominance

- 5.79 Ofcom concludes that collective dominance is not evident in the market for wholesale broadband access in Market 1. By definition, BT is the only provider of wholesale broadband access products in this market, with the exception of limited self-provision by ntl:Telewest in those exchange areas where it is able to provide services to no more than 65% of delivery points. There is no evidence in this market that these companies are co-ordinating their activities either explicitly or tacitly. Moreover, BT and ntl:Telewest have not presented themselves as a collective entity within the market. Thus, Ofcom does not currently consider that there is joint dominance in this market.

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

SMP in Market 2

- 5.80 Market 2 is defined in Section 4 as those local exchange areas where (based on forecasts for January 2007) there are 2 or 3 Principal Operators, including BT and/or ntl:Telewest; and exchanges where there are 4 or more Principal Operators, including BT and/or ntl:Telewest, and where the exchange serves less than 10,000 homes and businesses. This market comprises 729 exchanges covering 21.3% of UK delivery points. Ofcom concludes that BT has SMP in the provision of wholesale broadband access in Market 2. The reasons for this are explained below.

Market growth and market shares

Current market shares

- 5.81 BT currently has a market share of 73%, with ntl:Telewest having a share of 26% in this geographic area. The remaining 1% is shared between the LLU operators present, with the largest single LLU operator having a 0.4% current market share.
- 5.82 Table 5.2 below outlines the current wholesale broadband access market shares in this market, split between BT, ntl:Telewest and LLU operators.

Table 5.2: Market 2: WBA market shares, July 2006

	BT	ntl:Telewest	LLU operators
WBA volumes (000s)	1,862	648	26
Share of Market	73%	26%	1%

- 5.83 Whilst BT has ubiquitous coverage in this market, cable coverage is currently 44% of all delivery points and this is not expected to change appreciably in the period of the review. Total LLU coverage is currently 21% of all delivery points with this coverage being fragmented between multiple operators.

Future shares

- 5.84 In terms of coverage, Ofcom's forecast based on information obtained from LLU operators is that by the end of January 2007 LLU operators will be able to provide services from exchanges covering 83% of delivery points in Market 2 with this expected to increase to 90% of delivery points in this market by January 2008. Although this appears to be a high addressable proportion of this market this coverage is likely to remain fragmented between multiple operators.
- 5.85 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 mainly be at the expense of BT and ntl:Telewest. It is difficult to accurately predict future market shares, mainly because of the expansion of the coverage area of LLU operators. Nonetheless, Ofcom has developed a methodology which attempts to forecast future market shares with reference to a number of market dynamics. These include the mass migration by LLU operators of their customers from BT's wholesale broadband access products to LLU access (in those exchanges where the LLU operator has rolled-out to); the signed-up customer base of operators being activated on LLU-based broadband and an allowance for market growth. However, it should be noted that there is considerable uncertainty inherent in any such forecasts. Nevertheless, Ofcom expects that many of these uncertainties should be resolved by the time of the publication of the next consultation document. Ofcom's projected market shares for January 2007 and January 2008 are shown in Table 5.3 below.

Table 5.3: Projected WBA shares for Market 2

	BT	ntl:Telewest	LLU operators
March 2006	73%	26%	1%
July 2006	73%	26%	1%
January 2007	69% - 72%	25% - 26%	3% - 5%
January 2008	60% 67%	23% - 26%	9% - 13%

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

- 5.86 Table 5.3 shows that BT's share of Market 2 is expected to fall slightly between March 2006 and January 2008. This decrease is primarily attributable to two dynamics. Firstly, LLU operators in Market 2 will migrate their end-users that are being supplied using BT's IPStream and DataStream products onto their LLU platform. Secondly, LLU operators could be expected to take a greater share of new subscribers than BT, in part due to their greater ability to differentiate their retail products from BT compared to using IPStream or DataStream. However, due to the limited number of LLU operators that will be competing at each exchange in Market 2, Ofcom only expects a modest growth in LLU market share. Ofcom will revisit this in the next consultation document when more up-to-date information is available.

Barriers to Entry and Expansion

- 5.87 Ofcom believes that there are significant barriers to entry present in Market 2, which, whilst not as severe as those found in Market 1, still serve to make entry and expansion in this market problematic.

Sunk costs

- 5.88 As outlined above in the discussion of Market 1, BT and ntl:Telewest have already incurred large sunk costs in being able to provide wholesale broadband access to the majority of customers within Market 2. The greater part of this sunk cost is in their possession of a local-access network. There has also been a smaller, but still significant sunk cost for BT in broadband-enabling its narrowband exchanges.
- 5.89 As noted in the discussion of Market 1, the LLU remedy imposed in the review of the wholesale local access market means that LLU operators do not have to incur the costs of provisioning an access network since these operators are able to purchase LLU inputs from BT and provide services in this manner. However, this can still require significant sunk costs, including co-location at BT's exchanges, investment in exchange equipment and securing access to backhaul services.
- 5.90 Ofcom understands that LLU operators are planning some entry into this market over the period of the review. However, even after this modest expansion, significant further sunk costs would need to be incurred by each LLU operator to provide comprehensive coverage throughout the market. Ofcom is consequently of the view that sunk costs will represent a significant barrier to entry in this market over the period of review.

Economies of scale/scope

- 5.91 As discussed above in relation to Market 1, the fixed costs associated with broadband enabling an exchange or entering an exchange using LLU are subject to significant economies of scale. The average size of exchanges included in Market 2

is c.8,000. This is significantly higher than the average size of exchanges in Market 1, with an average size of c.1,600 delivery points, but lower than the average exchange size in Market 3 of c.19,000 delivery points. Thus Market 2 may present a greater opportunity for LLU operators compared to Market 1 to recoup initial investments from serving this market. However, the lack of a consistent commitment by the LLU operators to enter this market appears to suggest that the operators do not believe that many of the exchanges in Market 2 present a viable investment opportunity, particularly when compared to those exchanges included in Market 3.

- 5.92 However, it must be noted there is some degree of variation present in this market. At some exchanges there is only a single Principal Operator competing with BT but at others there are 3 or more Principal Operators competing. Much of this variation may spring from uncertainty on the part of new LLU entrants, who are as yet unsure as to whether these exchanges will support the investment needed to enter them. Even though the LLU operators have access to significant capital, as evidenced by their substantial investments in LLU in certain geographic areas, they have not (in aggregation) chosen to adopt the same strategy in relation to the exchange areas included in Market 2. This may raise doubts about the level of competition that the exchange areas included in this market can be expected to sustain over the period of this review.

Countervailing buying power

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

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

- 5.94 The OFT Guidelines note that:

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

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

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

- the buyer can intensify competition among suppliers through establishing a procurement auction or purchasing through a competitive tender.

5.96 Ofcom considers these points with respect to Market 2.

A well-informed and price sensitive buyer

5.97 In Market 2, by definition, there are limited alternative source of supply for wholesale broadband access. Suppliers in this market are limited to BT and one or two other providers³⁸, be that ntl:Telewest or LLU operators. ntl:Telewest does not currently offer wholesale supply to third parties and it does not appear to have any intention to do so over the period of the market review. As for LLU operators, while there is currently limited third-party supply, it could be expected that a merchant market for wholesale broadband access could develop over the period of the review.

5.98 However, no single LLU operator is in a position to offer a from all exchanges included in Market 2. This means that in order for a purchaser of wholesale broadband access to offer a service throughout Market 2 it would need to contract with numerous providers (as well as contracting with BT in Market 1, where by definition BT is the sole provider of wholesale broadband access services). Alternatively, purchasers could invest in LLU in the exchanges included within Market 2, but as explained in Section 4, the definition of this market is based on LLU operators' roll-out plans. In general, as a result of the costs associated with providing LLU-based wholesale broadband access from these exchanges, LLU operators are unlikely to be able to support large numbers of entrants. These issues mean that there are few alternative sources of supply within Market 2 for wholesale broadband access services.

Ability to self supply

5.99 As explained in Section 4 and in the preceding paragraph, there is little scope for purchasers of wholesale broadband access in Market 2 to self-supply or to sponsor entry at the wholesale level.

The buyer as an important outlet for the seller

5.100 There are some ISPs which could be considered as important outlets for BT in this market. However, BT's own downstream arm is the largest purchaser of wholesale broadband access in this market.

Alternative sources of supply

5.101 By definition, purchasers of wholesale broadband access in Market 2 will have few, if any, effective alternatives to purchasing wholesale broadband access from BT.

5.102 Ofcom, in considering the four factors above, concludes that customers of BT's wholesale broadband access services will be unable to exercise significant countervailing buyer power in Market 2 during the period of the market review.

³⁸ With the exception of those exchanges that serve less than 10, 000 end-users, which if there are four or more Principal Operators these are included in Market 2.

SMP conclusions for Market 2

Single firm dominance

5.103 Ofcom concludes that BT possesses single firm SMP in the market for wholesale broadband access in Market 2 for the period of this market review. This finding is based on:

- BT's current market share of 73%;
- uncertainty regarding the sustainability and expansion of LLU;
- the existence of significant entry barriers;
- the existence of significant economies of scale and scope; and
- the lack of countervailing buyer power.

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

Collective dominance

5.105 Ofcom concludes that collective dominance is not evident in the market for wholesale broadband access in Market 2. Although the market is characterised by high concentration, with there currently being only two significantly-sized wholesale broadband access operators (BT and ntl:Telewest), there is no evidence in this market that these companies are co-ordinating their activities either explicitly or tacitly. Further factors that suggest there is not collective dominance in this market are that BT and ntl:Telewest have not presented themselves as a collective entity within the market. Ofcom considers that the market is best characterised by ntl:Telewest (and any LLU operators that may be present) seeking to compete with the SMP operator BT. Thus, Ofcom does not currently consider that there is joint dominance in this market.

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

SMP in Market 3

5.106 Market 3 is defined in Section 4 as those local exchange areas where there are 4 or more Principal Operators, including BT and ntl:Telewest and where the exchange serves at least 10,000 homes and businesses. This market comprises 784 exchanges covering 54% of UK delivery points. Ofcom's analysis of the relevant indicators of SMP, at this time of significant market developments suggest that it is not possible to conclude whether or not BT would hold a position of SMP in Market 3.

Market growth and market shares

Current market shares

5.107 BT currently has a market share of 56%, with ntl:Telewest having a market share of 34% and LLU operators having a combined share of 10% of the market at present. Table 5.4 below outlines the current wholesale broadband access market shares in this market, split between BT, cable and LLU operators.

Table 5.4: Market 3: WBA market shares, July 2006

	BT	ntl:Telewest	LLU operators
WBA volumes (000s)	3,765	2,292	642
Share of Market	56%	34%	10%

5.108 These shares are based on an analysis of current (July 2006) wholesale asymmetric broadband volumes, and include those sales that are self-provisioned to the downstream business of each operator as well as those sold to third-party customers.

5.109 Although in Market 3 there are at least four competing Principal Operators in each local exchange BT currently retains an overall market share of greater than 55%. This is higher than the threshold of 50% above which dominance may be presumed according to established case-law³⁹ although it is lower than the national average share for BT of 69%. ntl:Telewest's share and the combined LLU operators' shares of the market are higher than their national averages of 25% and 6%. In addition, an undertaking with a large market share, such as BT, may also be presumed to have SMP if its market share has remained stable over time. The fact that an undertaking with a significant position in the market is gradually losing market share may well indicate that the market is becoming more competitive, but it does not preclude a finding of SMP⁴⁰.

5.110 Market 3 has featured prominently in the roll-out plans of the LLU operators. The share held by LLU operators is growing. This is indicated in Table 5.5 below by the recent growth in the shares of LLU operators from 5% of this market in March 2006 to a current share (July 2006) of 10%.

Table 5.5: Recent changes in WBA shares in Market 3

	BT	ntl:Telewest	LLU operators
March 2006	60%	35%	5%
July 2006	56%	34%	10%

Future shares

5.111 In an assessment of competitive conditions, the developing nature of this wholesale market must be taken into account. It is appropriate to consider the likely evolution of operators' market shares. As noted under the discussion of future market shares for Market 2, Ofcom has developed a methodology which attempts to forecast future market shares with reference to a number of market dynamics. These include the mass migration by LLU operators of their customers from BT's wholesale broadband access products to LLU access (in those exchanges where the LLU operator has rolled-out to); the signed-up customer base of operators being activated on LLU-based broadband and an allowance for market growth. It should be noted that there is considerable uncertainty inherent in any such forecasts, even to January 2007.

³⁹ SMP Guidelines, paragraph 75 and footnote 78

⁴⁰ SMP Guidelines, paragraph 75

However, Ofcom expects that many of these uncertainties should be resolved by the time of the publication of the next consultation document.

- 5.112 Table 5.6 below shows Ofcom's projection of future shares between BT, ntl:Telewest and the LLU operators for January 2007 and January 2008 for Market 3 (together with the associated shares for March and July 2006).

Table 5.6: Projected WBA shares for Market 3

	BT	ntl:Telewest	LLU operators
March 2006	60%	35%	5%
July 2006	56%	34%	10%
January 2007	47% - 53%	32% - 34%	14% - 19%
January 2008	36% - 48%	29% - 32%	24% - 31%

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

- 5.113 The most striking development that can be observed from Table 5.6 is the significant expected increase in the volumes of LLU. Initially much of this growth is expected to be fuelled by the mass migration of customers away from BT's wholesale broadband access products to LLU and Ofcom expects, as LLU roll-out continues, that BT's share of this market will continue to reduce, although this may be at a slower rate. However, because of the market developments and the associated uncertainties, at this time it is not possible to be precise on where a more steady state market share outcome will reside.
- 5.114 It should be noted that Ofcom's projected market shares are largely dependent on the future success of LLU and that this, in the short term, could be affected by either BT or LLU operators. Ofcom used the following assumptions when making its projections:
- LLU operators' achieving their rollout plans (or a reasonable proportion);
 - the timely migration of end users on BT's IPStream and DataStream products onto LLU;
 - market growth; and
 - LLU operators gaining new customers.
- 5.115 Using LLU operators' rollout and end user growth predictions, an estimated volume of end users on IPStream and DataStream that could be migrated to LLU and reasonable market growth assumptions it is concluded that LLU volumes in this market could reach in excess of 2 million by January 2007, i.e. an increase of c.1.4 million between July 06 and January 07. However, Ofcom believes that this figure represents an extreme, and unlikely, position and as such has made some adjustments to reduce it for the purposes of the assessment. The adjusted LLU volume figure used by Ofcom in its market share projections for January 2007 ranged from c.1.1 million to c.1.5 million. Ofcom recognises that even these more modest volumes may not be achieved by this date, but nonetheless, Ofcom would expect these volumes to be achieved at some point in early 2007.

- 5.116 Ofcom also notes that it would not expect BT's wholesale market share to fall below BT's share of the associated retail market. In the geographic areas covered by market 3, BT's share at the retail level is currently about 22%.
- 5.117 If these market developments transpire, the competitive landscape of Market 3 will be different from that which is painted by the current market shares. With BT's market share reduced to potentially below 40%, a continued significant presence of ntl:Telewest and a rapidly growing LLU share of around 25%, the level of competition will be enhanced.
- 5.118 Although every exchange area in this market will be addressable by at least four firms able to offer wholesale broadband access, no single operator, apart from BT, is predicted to have complete coverage of all local exchanges included within this market. From coverage information provided by ntl:Telewest and the roll-out forecasts provided by the Principal LLU Operators, the predictions given in Table 5.7 can be made regarding the number of exchanges where each operator will be active (out of the 784 exchanges included within this market). Table 5.7 gives the range and average number of exchanges for the 8 Principal LLU operators.

Table 5.7: Coverage of Market 3

	BT	ntl: Telewest	LLU min	LLU max	LLU avg	LLU ops with >80% exch coverage	LLU ops with >90% exch coverage
Jan 07	784	<i>removed</i>	345	688	548	2	0
	100%	<i>removed</i>	44%	88%	70%		
Jan 08	784	<i>removed</i>	449	735	657	6	3
	100%	<i>removed</i>	57%	94%	84%		

- 5.119 On the basis of the figures set out in Table 5.7 by January 2008 three Principal LLU Operators will be able to address customers in more than 90% of the exchanges included in this market. A further three Principal LLU Operators will be able to address customers in over 80%. These figures are of course dependent on the LLU operators achieving their roll-out plans as provided in their forecasts to Ofcom.
- 5.120 No competitors to BT currently plan to enable all of the exchanges in Market 3 by January 2008. Therefore, based on current roll-out plans submitted to Ofcom, all of BT's competitors would have gaps in their coverage of this market. In the event of wholesale broadband access products not being provided to third-parties in Market 3, these operators would be faced with three options:
- i) continue with gaps in their coverage of this market;
 - ii) fill in the areas in which they have no coverage by negotiating third-party access from one of the other operators, including BT or ntl:Telewest (NB: there are always at least 4 operators in each exchange); and/or
 - iii) fill in these gaps by enabling additional exchanges
- 5.121 However, it must be noted that Ofcom's assessment of market power in this market is not the same as assessing the ability of an individual competitor to compete with BT. Instead Ofcom's assessment must consider whether competitive conditions are

such that BT would be constrained from behaving to an appreciable extent independently of its competitors, customers and ultimately of consumers, in particular whether consumer detriment may arise as a result of BT's behaviour. One potential area of concern relates to the ability of end-users to continue to access services from ISPs currently active in the market.

Third-party supply

- 5.122 In a fully competitive retail market, end-users, including those with niche needs, would be supplied with the products that they require (given that willingness to pay exceeds the cost of supply). If the retail market is less than fully competitive, this however, might not be the case. Thus, it is relevant when considering if BT has SMP to consider the extent to which a refusal by BT to supply wholesale broadband access products in Market 3 to third-parties i.e. competing ISPs, would lead to a detriment to consumers at the retail level. In this context it is important to bear in mind that, by definition, Market 3 is a market in which there are other operators providing wholesale broadband access products (although in certain circumstances this could be limited to self-provision) these being either LLU operators, or ntl:Telewest.
- 5.123 Currently there are a number of LLU operators which provide wholesale broadband access products to third-parties in the absence of regulatory obligations on them to do so. However, it appears that these LLU operators are currently only providing wholesale products to larger ISPs. In the absence of regulation it could be expected that if BT were to offer wholesale broadband access products, that it too may restrict such supply to larger ISPs. This could mean that some suppliers that are currently active in markets downstream of Market 3 would be unable to access wholesale broadband access products in the absence of regulation. From the information available to Ofcom, these are likely to be smaller ISPs. The end-users that these ISPs provide services to, Ofcom estimates, currently account for between 15% and 20% of the total retail broadband customers in Market 3 (by number of subscribers). This equates to between 7% and 10% of retail broadband customers in the UK as a whole. Among the smaller ISPs, BT is more likely to supply those ISPs providing value-added services to meet specialist demands that BT is unable to satisfy itself.
- 5.124 In the absence of the development of a merchant market for the supply of wholesale broadband access products to smaller ISPs, there would be no direct constraints on BT's provision of these products to these wholesale customers. However, BT's ability to increase prices or to refuse to supply ISPs which are attractive to end-users would still be subject to indirect constraints from switching at the retail level. Although in the event of a BT refusal to supply or a wholesale price increase the ISP may have to exit the market or raise its retail prices, the ISP's retail customers could switch to alternative ISPs that self-provide their wholesale inputs (and as such were not subject to a price rise), perhaps a cable or LLU operator. BT would then suffer a reduction in demand for the wholesale product. As such, the possibility of retail switching imposes some constraint on BT at the wholesale level. However, this constraint is likely to be weaker than a direct constraint arising from wholesale level competition because any given proportionate increase in wholesale prices, even if fully passed on, would lead to a proportionately smaller (diluted) increase in retail prices.
- 5.125 The extent of such a dilution effect depends on the proportion of the retail price that is constituted by the wholesale price. In turn, the extent of any reduction in demand arising from retail-level switching in response to a wholesale price rise would depend on the magnitude of the dilution effect. Whether such impacts on demand are

relevant to the assessment of SMP will depend on the extent of consumer detriment that results.

- 5.126 Consumer detriment could arise in the event that these smaller ISPs are unable to access wholesale broadband access products and are thus forced to exit the retail market. Where ISPs products are not sufficiently differentiated this consumer detriment could be realised through an interruption to service and/or through costs associated with the end-user switching ISP. However, such consumer detriment is likely to be short-term and may be mitigated to some extent through contractual terms in these ISPs' contracts with BT.
- 5.127 For ISPs supplying niche markets this detriment would again materialise through consumers having to switch to other ISPs in the event of their original ISP having to exit the market⁴¹ (due to the lack of a wholesale product). In addition, other ISPs may not provide sufficiently similar products/ services to fully meet these consumers' needs. However, it is again likely that any such detriment will be short-term as it would be expected that, if there is sufficient demand for niche services, these would be serviced through the emergence of a merchant market, which would allow ISPs with significant product differentiation to provide services to end-users.
- 5.128 In order to address the short-term consumer detriments identified above and to protect consumers in the retail market, it may be appropriate to require BT to continue to provide wholesale broadband access throughout Market 3.
- 5.129 Intrinsic to this discussion is the timeframe being considered. It would appear unnecessary to require the provision of a wholesale broadband access product throughout Market 3 over the long-term. What such an obligation would be seeking to achieve is continuity of supply for all third-parties in the period in which a merchant market could be expected to develop. This timeframe is probably somewhere between 1 and 2 years i.e. broadly in line with the period of the market review.
- 5.130 A further consideration in assessing operators' shares of Market 3 is that the LLU shares, as set out in Table 5.6, are the combined shares of the eight Principal Operators. When the future market shares of each of the Principal Operators are looked at in isolation, this shows that the largest of these operators is predicted to have a market share of less than 6% in Market 3 in January 2007. This, taken together with the predicted coverage of LLU operators may suggest that the constraint on BT from behaving to an appreciable extent independently of its competitors, customers and ultimately of consumers is weaker than it would be if the aggregate LLU market share was less fragmented and if the LLU operators were able to provide services throughout the whole of Market 3.

Barriers to Entry and Expansion

Sunk costs

- 5.131 As discussed above, BT and ntl:Telwest have already incurred large sunk costs in being able to provide wholesale broadband access to the majority of customers within Market 3. The greater part of this sunk cost is due to their ownership of a local-access network. There has also been a smaller sunk cost for BT in broadband-enabling its narrowband exchanges.

⁴¹ Although noting that any consumer detriment may be mitigated to some extent through contractual terms in these ISPs' contracts with BT.

- 5.132 LLU provides a means for operators to construct an end-to-end network bypassing the sunk cost involved in building out an access network to individual premises. However there is still a smaller but significant sunk cost involved in co-locating at a BT exchange, and acquiring the equipment needed to provide DSL services over the unbundled local loop. There may also be further sunk costs in network build-out costs if the LLU operator decides to provide backhaul services over its own network.
- 5.133 Market 3 has been defined as a market where there are at least 4 Principal Operators providing wholesale broadband access in larger exchanges. Therefore the two possible market configurations will be composed of BT (due to its ubiquity), ntl:Telewest and at least two Principal Operators using LLU, or BT and at least three other Principal LLU Operators.
- 5.134 The LLU operators offering services in this market have already invested in the ability to provide DSL services and the relevant costs have already been 'sunk'. Therefore, these operators can expand their services to new customers without incurring further significant sunk costs in the exchanges in which they are present. However, the sunk costs associated with entry will still be relevant for those LLU operators that have not, at the time of completion of the market review, rolled-out to the exchanges included in Market 3. Thus sunk costs remain a barrier to further entry and expansion.

Economies of scale/scope/density

- 5.135 In the discussion of Market 1 and Market 2 above it was noted that BT is able to benefit from considerable economies of scale that will not be available to many new operators. In particular, large economies of scale are present in both the exchange and backhaul elements of asymmetric broadband access services. For example, this means that the greater number of end-users at the exchange level the lower the costs per end-user.
- 5.136 Since the exchanges that constitute Market 3 are large exchanges with (by definition) upwards of 10,000 delivery points there is greater scope for LLU entrants to achieve a lower unit cost per end-user in comparison to smaller exchanges. This is reflected in the significant LLU presence in this market and the recent marketing drives by many of these entrants to gain market share. As noted above, it is likely that the LLU operators will increase their share in this market once BT's procedures for mass migration of customers onto LLU are in place.
- 5.137 In the intervening period before this scale is achieved, the costs for the LLU operators are likely to be much higher than those faced by BT or ntl:Telewest. A number of operators new to the LLU market have informed Ofcom that they expect to be operating at a loss in this market until such time. However, it should also be noted that entry into any market generally requires upfront costs to be incurred, which the undertaking in question would seek to recover through future revenues.
- 5.138 BT and ntl:Telewest also benefit from significant economies of scope in the wholesale broadband access market, as they do in other wholesale fixed access markets. The economies of scope relate mainly to duct infrastructure that supports a range of other telecommunications access services. These economies of scope can act as a further barrier to entry to this market, as a new entrant would initially not have existing duct infrastructure in place. However, BT's economies of scope relating to access networks are reflected in its LLU charges.
- 5.139 Further, BT is able to benefit from economies of scope between each of the three markets in the UK (excluding the Hull area) in a way that ntl:Telwest and the LLU

operators cannot as BT is the only operator that is present throughout each of those markets. A particular example of how BT could benefit from these economies of scope is that some of the infrastructure and much of the development required to deliver a bitstream service, for instance, product and system development cost, is common across the three markets. Further, BT will be able to offer a service with national coverage without needing to establish relationships with other providers.

5.140 However, a number of the LLU entrants into this market have their own scope advantages. Some of these operators specialise in the provision of voice calls and can be expected to use the unbundled access offered by LLU to further develop these services in addition to offering broadband internet access. Other LLU operators are specialist providers of television services and can be expected to aggressively compete in the delivery of video-on-demand and other value-added offerings. Further economies of scope are available to LLU operators in their ability to utilise already existing customer service and marketing functions into the wholesale broadband access market.

Countervailing buyer power

5.141 The Commission states in its Horizontal Guidelines that even:

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

5.142 The OFT Guidelines note that:

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

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

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

5.144 Ofcom considers these points with respect to Market 3.

A well-informed and price sensitive buyer

- 5.145 In Market 3, there are potential alternative sources of supply for wholesale broadband access. In this market there are up to ten Principal Operators from which ISPs can seek supply. However, currently there is only a limited third-party supply market, although this may be expected to develop during the period of the market review.

Ability to self supply

- 5.146 In Market 3 those ISPs that are investing in LLU are able to self-supply from those exchanges at which they have made such investments and there may be further scope for those ISPs to extend their investments to further exchanges included within Market 3. However, for ISPs not active in LLU, to self-supply would involve incurring significant sunk costs, either through building their own access network or investing in LLU.

The buyer as an important outlet for the seller

- 5.147 There are some ISPs which could be considered as important outlets for BT in this market and could have opportunities to purchase services from alternative suppliers, if a third-party supply market develops.

Alternative sources of supply

- 5.148 As explained above, LLU operators will not have to rely on BT for the provision of wholesale broadband access services in Market 3 as these operators will self-supply from those exchanges at which they have invested in LLU. Moreover, a third-party supply market could develop which would give other ISPs alternative sources of supply.

SMP conclusions for Market 3

Single firm dominance

- 5.149 As shown above, BT can be expected to maintain a significant share of Market 3 in the period to January 2007 with BT's share of this market predicted to be between 47% and 53%, ntl:Telewest having a share of about 33% and the remaining 14% to 19% being divided between the LLU operators, with no single LLU operator having more than approximately 6% market share. However, between the period January 2007 to January 2008, BT's market share is expected to decline to between 36% and 48% and ntl:Telewest market share is expected to decline slightly to about 30% with the remaining 24% to 31% being divided between the LLU operators.
- 5.150 Due to the expected market developments, as summarised above and the associated inherent uncertainties in producing market share forecasts, Ofcom has not sought to predict market shares beyond January 2008. Given the uncertainty of these projections set-out above and given that fact that Ofcom is planning a second consultation document, Ofcom does not believe that it is appropriate or necessary to reach a firm conclusion on whether, or not, BT would hold a position of SMP in this market. Instead, Ofcom will revisit this question in its next consultation document, due in May 2007, using more up to date information, available at a time when many of the expected market developments should have taken place. Ofcom also expects that at that time it will be able to incorporate a forward-looking analysis which looks further forward, into the period of the market review.

Collective dominance

- 5.151 As set out above in relation to single firm dominance, Ofcom is unable to conclude on SMP in Market 3 at the present time. However, it does not believe that a collective dominance finding is likely in the light of the absence of collective dominance finding in Market 2, the number of operators likely to be present in Market 3, which will reduce the likelihood of successful coordination, and the incentives on operators to maximise their subscriber numbers in order to recover fixed costs. Ofcom will, however, revisit this question in its next consultation document, due in May 2007, at which time it many of the expected market developments may have taken place.

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

Section 6

Regulatory Remedies

Introduction

- 6.1 This Section considers the options for regulation in light of the market analyses set out in Sections 4 and 5. As explained in Section 4, Ofcom has identified four separate relevant economic markets for wholesale broadband access. These are those geographic areas covered by:
- i) exchanges where Kingston is the only operator (the Hull area);
 - ii) exchanges where BT is the only operator (Market 1);
 - iii) exchanges where there are 2 or 3 operators (including BT and ntl:Telewest) AND exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves less than 10,000 homes and businesses (Market 2); and
 - iv) exchanges where there are 4 or more operators (including BT and ntl:Telewest) where the exchange serves 10,000 or more homes and businesses (Market 3).
- 6.2 Ofcom's provisional conclusions on market power assessment, as set out in Section 5, are that Kingston has SMP in the Hull area and BT has SMP in each of Market 1 and Market 2. For these markets, Ofcom has set out in this Section the regulatory remedies that it considers would best prevent the abuse of SMP in each case.
- 6.3 As regards Market 3, as explained in Section 5, Ofcom understands that there is likely to be significant market entry in the near future and to the extent that it materialises this may change the competitive nature of the market. Given this, Ofcom has elected not to make a proposal in relation to market power assessment in Market 3. Ofcom therefore considers that it is inappropriate to consider remedies for Market 3 at this point in time and it has not, therefore, considered remedies for this market in this Section.
- 6.4 This Section considers the remedies which may be imposed on Kingston (paragraphs 6.35 to 6.100) in the Hull area and on BT (paragraphs 6.101 to 6.175) in Market 1 and Market 2.

Revocation of existing remedies

- 6.5 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. Kingston was found to have SMP in the market for asymmetric broadband origination in the Hull area. Ofcom therefore imposed SMP conditions upon BT and Kingston in those markets.
- 6.6 As set out in Section 4 above, Ofcom considers that the definition of the relevant markets will have changed from those in the 2003/04 Review, both in respect of the definition of the relevant product market and the relevant geographic market. As a result, the findings of SMP with respect to BT and Kingston set out in the 2003/04 Review will no longer be valid upon conclusion of this market review.

- 6.7 Section 84(4) of the Act provides that where Ofcom determine on a further analysis that a person to whom any SMP services conditions apply is no longer a person with SMP in that market, Ofcom must revoke every SMP services condition applied to that person on the basis of the earlier analysis. As Ofcom's assessment of the definition of the relevant market compared to the 2003/04 Review will likely change upon conclusion of this market review, BT and Kingston will no longer be considered to hold SMP in the markets identified in the 2003/04 Review as those markets will no longer be relevant markets for the purposes of the imposition of SMP conditions.
- 6.8 Ofcom will therefore be required to revoke the SMP conditions imposed upon BT and Kingston in the markets identified in the 2003/04 Review. In assessing the appropriate remedies to be applied as a consequence of the present review therefore, Ofcom has proceeded on the basis that the SMP conditions imposed in the 2003/04 Review will be revoked.
- 6.9 Ofcom notes that the Direction Setting the Margin between IPStream and ATM Interconnection Prices, which was imposed under the requirement to provide Network Access on reasonable request, will also be revoked on completion of this review. Ofcom, within this review, is not considering setting an equivalent margin in relation to the markets defined in Section 4.

The need for *ex-ante* regulation

- 6.10 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person is dominant in a particular market, it must set such SMP services conditions as it considers appropriate and as are authorised under the Act. Section 87(1) implements Article 8 of the Access Directive.
- 6.11 Paragraphs 21 and 114 of the SMP Guidelines state that NRAs must impose one or more SMP services conditions on a dominant provider, and that it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.
- 6.12 The Act (Section s 45-50 and 87-92) sets out the obligations that Ofcom can impose if it finds that any undertaking has SMP. Sections 87 to 92 implement Articles 9 to 13 of the Access Directive and Articles 17 to 19 of the Universal Service Directive.
- 6.13 Recital 27 of the Framework Directive provides that *ex-ante* regulation should be imposed only where there is not effective competition and where competition law remedies are not sufficient to address the perceived problem. In order to provide a full analysis, Ofcom has considered whether it could rely on competition law alone, while noting the obligations referred to in paragraphs 6.10 and 6.11.
- 6.14 Section 3 of the Act sets out Ofcom's general duties. Section 3(1) states that Ofcom's principal duty is to further the interests of citizens in relation to communications matters and consumers in relevant markets, where appropriate, by promoting competition. Specifically, Section 3(2)(b) states that Ofcom is required to secure the availability of a wide range of electronic communications services throughout the UK. Section 3(4)(b) explains that, in meeting these requirements, Ofcom must have regard to the desirability of promoting competition in relevant markets. Section 3(4)(e) states that Ofcom must have regard, in performing its duties, to the desirability of encouraging the availability and use of high speed data transfer services throughout the UK. Also, in furthering the interests of consumers, Ofcom must have regard to choice, price, quality of service and value for money.

Additionally, Section 4 of the Act sets out the Community duties on Ofcom which flow from Article 8 of the Framework Directive.

- 6.15 Ofcom, in considering whether to propose any SMP services conditions, has considered all of these requirements. In particular, it has considered the requirement to promote competition in relation to the provision of electronic communications networks and electronic communications services.
- 6.16 Also, as well as the SMP services conditions imposed being appropriate (Section 87(1) of the Act), each must also satisfy the tests set out in Section 47(2) of the Act. These are that each condition must be:
- objectively justifiable in relation to the networks, services or facilities to which it relates;
 - not such as to discriminate unduly against particular persons or a particular description of persons;
 - proportionate to what the condition is intended to achieve; and
 - in relation to what it is intended to achieve, transparent.
- 6.17 It is Ofcom's view that the SMP service conditions proposed for Kingston and BT in this Section satisfy the relevant requirements specified in the Act and relevant Directives. This is explained in greater detail in this Section and in Annex 1.

General considerations

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

Characteristics of communications markets

- 6.19 In general, the case for *ex-ante* regulation in communications markets is based on the existence of market failures which, individually or in combination, might mean that competition would not become established if the regulator relied solely on its *ex-post* competition law powers which were designed to deal with more conventional sectors of the economy. Therefore, it is appropriate for *ex-ante* regulation to be used to address these market failures and any entry barriers that might otherwise prevent effective competition. The use of *ex-ante* regulation, which would be used to promote competition, might reduce the need for such regulation as markets become more competitive and in the longer-term, therefore, it might be possible to place greater reliance on *ex-post* competition law.
- 6.20 The Commission has also stated that *ex-ante* regulation is justified

“[...] where the compliance requirements of an intervention to redress a market failure are extensive (e.g. the need for detailed accounting for regulatory purposes, assessments of costs, monitoring of terms and conditions [...])”⁴²

⁴² See page 11 of the Recommendation.

- 6.21 This is the case for many markets where persistent SMP leads to a risk of a firm abusing its position.

Aims of regulating wholesale broadband access

- 6.22 In Section 5, Ofcom explained why it currently considers that Kingston and BT hold positions of SMP in the markets for wholesale broadband access in which they operate⁴³. Article 16 of the Framework Directive provides that

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

- 6.23 The Commission considers that in most cases it is preferable to apply regulation at the wholesale level. Ofcom agrees with the Commission's view. Regulation at the wholesale level would serve a twofold purpose. First, it could be used to address SMP concerns in the relevant wholesale market. Second, this might, in turn, increase competition in the downstream markets that rely on these wholesale inputs.
- 6.24 The application of regulation at the wholesale level rather than at the retail level also fits with the Community requirement that NRAs take measures which meet the objective of encouraging efficient investment in infrastructure and promoting innovation. The introduction of regulation in wholesale markets is likely to encourage providers to purchase wholesale products and combine them with their own capabilities so as to provide competition with Kingston and BT in downstream markets.
- 6.25 Regulation at the wholesale level would also help to ensure that the objectives of Sections 4(7) and 4(8) of the Act are met. These are that Ofcom take measures which encourage the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and for the purpose of securing the maximum benefit for the persons who are customers of Communications Providers and of persons who make such facilities available. Regulation at the wholesale level would be likely to, as noted above, help to increase the level of competition in the downstream markets and this would in turn help to ensure that the benefits in terms of price, choice and quality would be optimised for retail consumers of broadband internet services.
- 6.26 In assessing the level of regulation to be applied in this market, Ofcom has also taken into account the SMP Guidelines which state at paragraph 15 that regulation should aim to promote an open and competitive market, and at paragraph 16 that *ex-ante* regulations should be imposed to ensure that an SMP provider cannot use its market power to restrict or distort competition on the relevant market or leverage market power on to adjacent markets.
- 6.27 Ofcom has also taken full account of Oftel's guidelines, which were published on 13 September 2002 (“the Access Guidelines”), on the imposition of access obligations under the new Directives⁴⁴. These describe the circumstances in which Ofcom would consider the imposition of wholesale access obligations to be appropriate, give guidance on the nature of the wholesale products Ofcom would expect to be supplied

⁴³ Market 3 excepted in which Ofcom has not concluded definitively one way or the other

⁴⁴ These guidelines can be found at http://www.ofcom.org.uk/static/archive/oftel/publications/ind_guidelines/acce0902.htm.

as a result of an obligation to provide access, and describe the conditions under which products should be made available.

- 6.28 In addition, Ofcom has considered the Revised ERG Common Position on the approach to Appropriate remedies in the electronic communication networks and services (ECNS) regulatory framework⁴⁵ (the ERG Remedies Position) and, in particular, the statement that

“...there is a presumption that *ex ante* regulation is appropriate on the 18 markets in the Recommendation if a position of SMP is found.”⁴⁶

- 6.29 The ERG Remedies Position sets out that in the case of markets where there is a single firm having SMP, remedies should be considered to address the following concerns:

- entry-deterrence;
- exploitative behaviour; and
- productive inefficiencies.

- 6.30 The Revised ERG Remedies Position sets out that, in the case of a single firm having SMP in a wholesale market such as that for wholesale broadband access, the following remedies should be considered to address the concerns set out above:

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

- 6.31 Ofcom has considered each of the suggested remedies in the Revised ERG Remedies Position and its conclusions are set out below.

- 6.32 As set out in Section 5, Ofcom considers that Kingston has SMP in the Hull area and BT has SMP in each of Market 1 and Market 2 in the provision of wholesale broadband access. Ofcom therefore needs to consider whether it should impose *ex-ante* regulation to counterbalance the SMP held by Kingston and BT in these markets or whether it should rely on competition law to generate the best outcomes for citizens and consumers. In this Section, Ofcom has considered three options for levels of regulation in each of these markets.

⁴⁵ See http://erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

⁴⁶ See page 9.

- 6.33 The first option considered in each market is the option not to impose regulation. It is necessary to consider the option of not applying any regulation as citizens and consumers might achieve a better outcome as a result of non-intervention. The second option considered is one in which the principal regulation applicable would take the form of access and non-discrimination obligations. The third option considered is one in which price controls would be applied to the prices charged by Kingston and BT in the relevant markets in addition to the requirements set out in respect of the second option.
- 6.34 The aim of regulation in each market would be to further the interests of citizens and consumers in the relevant markets by promoting the development of competition in the provision of downstream (retail) broadband services.

Remedies considered - the Hull area

Option 1 (no regulation)

- 6.35 As set out in Section 5, Ofcom considers that Kingston has SMP in the market for wholesale broadband access in the Hull area and that there is little potential for competition in this market. Ofcom considers that, given the demographics of the market, it is unlikely to be economically viable to build the networks necessary for the provision of downstream broadband access services in this market and therefore considers that SMP is entrenched.
- 6.36 An absence of regulation, therefore, would be unlikely to result in the development of effective competition in downstream services (in terms of price, rollout, service quality and product differentiation). Other providers would be less likely to enter to provide downstream services as they would require access to be provided by Kingston and, in the absence of regulation, Kingston would have little incentive to provide services to them. The consequence of this would be a restriction of competition in the Hull area and in the provision of downstream broadband services.
- 6.37 For these reasons, Ofcom considers that *ex-ante* regulation is required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality are optimised for citizens and consumers in the Hull area. Ofcom considers, therefore, that it should impose *ex-ante* regulation in this market.

Option 2 (access and non-discrimination obligations)

- 6.38 As set out in Section 5, Ofcom considers that Kingston has SMP in the market for wholesale broadband access in the Hull area and as set out above considers that it needs to impose regulatory remedies to promote competition in the provision of downstream broadband services. Option 2 therefore sets out a range of remedies that Ofcom might impose on Kingston. Ofcom explains in the following paragraphs why it considers that these remedies may be required given that Ofcom's initial view is that Kingston has SMP.

Requirement to provide Network Access on reasonable request

- 6.39 Ofcom believes that it is appropriate to impose a requirement on Kingston as a result of its SMP to meet reasonable requests for Network Access. Ofcom considers that, in the absence of such a requirement, the dominant provider would have an incentive not to provide such access.

- 6.40 Section 87(3) of the Act authorises the setting of an SMP services conditions requiring the dominant provider to provide Network Access as Ofcom may, from time to time, direct. These conditions may, pursuant to Section 87(5), include provision for securing fairness and reasonableness in the way in which requests for Network Access are made and responded to and for securing that the obligations in the conditions are complied with within periods and at times required by or under the conditions. When considering the imposition of such conditions in a particular case, Ofcom must have regard to the six factors set out in Section 87(4) of the Act, including *inter alia*, the technical and economic viability of installing other competing facilities and the feasibility of the proposed Network Access.
- 6.41 The definition of access and the way in which Ofcom might assess reasonable demands for access is set out in the Access Guidelines. Ofcom considers that it is appropriate in cases where a Communications Provider has SMP to impose an access obligation on that provider requiring it to meet all reasonable requests for Network Access within the relevant wholesale market, irrespective of the technology required, on fair and reasonable terms, conditions and charges.
- 6.42 As the market analysis in Section 5 has shown, there are considerable sunk costs associated with building networks to provide broadband services. Ofcom considers that it is unlikely to be economically viable for other Communications Providers to build direct access networks in the Hull area on a sufficient scale to provide a viable alternative to Kingston. Therefore, Ofcom is currently of the view that a requirement on Kingston to provide access to its network in the market for wholesale broadband access in the Hull area is appropriate as it would be likely to facilitate competition in downstream markets by enabling Communications Providers to compete without the need to invest in a localised network which might not be economically viable in all cases.
- 6.43 Ofcom has considered the Community requirements detailed in Section 4 of the Act. In particular, Ofcom considers that the proposed obligation satisfies the Community requirements, set out in Sections 4(3), 4(7) and 4(8) of the Act. That is, the proposed obligation would promote competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 6.44 With regard to the tests in Section 44 of the Act, an obligation to provide Network Access is objectively justifiable in that it will encourage greater access to Kingston's network and will therefore foster competition. The obligation does not discriminate unduly between providers, as the proposed obligation is imposed on Kingston and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 and Kingston is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is also proportionate in what it is trying to achieve since it is directly targeted at addressing the market power which Ofcom believes that Kingston holds in this market and it does not require Kingston to provide access where it is not technically feasible or reasonable. The proposed obligation also passes the requirement of transparency since it is clear that the condition is designed to achieve access to Kingston's network in order to facilitate competition.
- 6.45 Finally, Ofcom considers that the proposed obligation condition meets the requirements of Section 84(4) of the Act. In particular, the proposed obligation would require Kingston to meet requests that are reasonable only, by which it is meant,

inter alia, that they must be technically and economically viable, and feasible. As set out in paragraph 4.25 of the Access Guidelines, Ofcom has taken account of the technical and economic viability of installing and using facilities; and the need to ensure effective competition in the long term.

Requirement not to discriminate unduly

- 6.46 Ofcom believes that it is appropriate to impose a requirement on Kingston as a result of its SMP not to discriminate unduly in the provision of Network Access. Ofcom considers that, in the absence of such a requirement, Kingston would have an incentive to give preferential treatment to its downstream business.
- 6.47 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of Network Access.
- 6.48 The requirement not to unduly discriminate is intended, principally, to prevent dominant providers from discriminating in favour of their own retail activities and to ensure that competing providers purchasing wholesale products from the dominant provider are placed in an equivalent position to the dominant provider's retail arm.
- 6.49 Where dominant providers are vertically integrated, like Kingston, they may have an incentive to provide wholesale services on terms and conditions that favour their own retail activities, in a way that would have a material adverse effect on competition. In particular, they may charge competing providers more than the amount charged (through transfer charging) to their own retail activities for wholesale services, thereby increasing the costs of competing providers and giving themselves an unfair competitive advantage. They might also provide services on different terms and conditions, for example with different delivery timescales, which would disadvantage their retail competitors and in turn consumers.
- 6.50 In the absence of an obligation designed to prevent undue discrimination, Ofcom could be called upon to investigate alleged breaches of the Competition Act/EC Competition Law prohibitions on anti-competitive agreements and abuses of a dominant position, and might be required to resolve successive complaints. Imposing an *ex-ante* condition might reduce the potential regulatory costs that emanate from multiple or successive complaints related to discrimination.
- 6.51 It could be argued that the Competition Act/EC Competition Law might provide adequate provision to address allegations or evidence of discriminatory behaviour. However, Ofcom considers that at the wholesale level sectoral regulation provides a faster and more secure means of giving effect to decisions and determinations. In addition, it allows Ofcom to place a greater emphasis on promoting competition (for example by restricting the ability of an SMP operator to target segments of the retail market). A no undue discrimination obligation would therefore ensure that parties were treated on an equitable basis.
- 6.52 Recital 17 of the Access Directive states that no undue discrimination obligations ensure that undertakings with market power do not distort competition, in particular where they are vertically integrated undertakings that supply services to competitors in downstream markets. This is clearly the case with respect to wholesale broadband access.

- 6.53 A prohibition of discrimination might have disadvantages if it prevented discrimination that was economically efficient or justified. However, the proposed obligation would prevent discrimination that was undue only.
- 6.54 Ofcom has considered how it will treat undue discrimination in its guidelines of 15 November 2005 on undue discrimination by SMP providers ("the Discrimination Guidelines"). Ofcom considers that undue discrimination occurs when an SMP provider does not reflect relevant differences between (or does not reflect relevant similarities in) the circumstances of customers in the transaction conditions it offer, and where such behaviour would harm competition. Ofcom further considers that, in the case of non-price differences in transaction conditions (and similar prices) offered by a vertically integrated SMP provider between an internal and external wholesale customer, Ofcom may presume discrimination. Such a presumption may be rebutted if an SMP provider can demonstrate objective justification for the differences.
- 6.55 Ofcom has considered its duties under Section 3 of the Act and all the Community requirements set out in Section 4. In particular, as Ofcom considers that Kingston should be required to provide Network Access, the proposed obligation would encourage the provision of Network Access and service interoperability for the purpose of efficiency and sustainable competition in downstream markets by ensuring that Kingston does not unduly discriminate. This is necessary to ensure that there is a competitive level playing field. As Ofcom considers that Kingston has SMP in the provision of wholesale broadband access in the Hull area, it controls a key input into a range of downstream services, principally asymmetric broadband internet access. Ofcom considers that an obligation designed to prevent undue discrimination would promote competition and the interests of consumers and maximise choice in downstream markets.
- 6.56 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. Ofcom considers that the proposed obligation is objectively justifiable, in that it provides safeguards to ensure that competitors, and hence consumers, are not disadvantaged by Kingston discriminating unduly in favour of its own retail activities or between its own different activities. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on Kingston and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 and Kingston is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate since it only prevents behaviour which is unduly discriminatory. Finally, the proposed obligation is transparent in that it is clear in its intention to ensure that Kingston does not discriminate unduly. In addition, Ofcom has given guidance as to how it might treat undue discrimination in the Discrimination Guidelines.
- 6.57 Furthermore, Ofcom considers that the proposed obligation would satisfy the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose an obligation in the interests of effective competition, as it would ensure that other operators could make effective use of wholesale inputs and offer products based on these wholesale inputs to compete with Kingston in downstream markets.

Transparency

- 6.58 Ofcom considers that it is appropriate to ensure that there is transparency of charges, terms and conditions in a market in which one operator is dominant. In the absence of requirements requiring an SMP operator to publish charges, terms and

conditions, the dominant provider might offer differential charges, terms and conditions to both its downstream division and also between providers and they would not be able to check that they were being charged an equitable rate or that the terms and conditions that they were offered were also equitable.

- 6.59 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information, and in such manner as Ofcom may direct, for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the reference offer. Finally, Section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.

Requirement to publish a Reference Offer

- 6.60 Ofcom believes that it is appropriate to impose a requirement on Kingston as a result of its SMP to publish a Reference Offer (RO). The main reasons for the publication of an RO are to assist transparency for the monitoring of potential anti-competitive behaviour and to give visibility to the terms and conditions on which other providers would be able to purchase wholesale access services. The publication of a RO would therefore help to ensure stability in markets and ensure that incentives to invest would not be undermined.
- 6.61 Ofcom considers that it may be appropriate for the published RO to include:
- a clear description of the services on offer;
 - terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The RO should provide sufficient information to enable providers to make technical and commercial judgements such that there is no material adverse effect on competition;
 - information relating to technical interfaces and points of interconnection. Such information should ensure that providers are able to make full and effective use of all the services provided;
 - conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the RO, that provides for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion; and
 - terms and conditions that are fair and reasonable. This will ensure that products are offered on terms and conditions as they would in a competitive market and that they are sensible, practical, and do not impose a margin squeeze on competitors.
- 6.62 The publication of a RO would allow for speedier negotiations and might avoid possible disputes. Together with the non-discrimination requirement, the publication of a RO would give confidence to those purchasing wholesale services that they were being provided on non-discriminatory terms.

- 6.63 Ofcom has considered all the European Community requirements set out in Sections 3 and 4 of the Act. In particular, a requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability and secure freedom of choice for the customers of Communications Providers. The proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with Kingston, in response to changes in Kingston's terms and conditions. Finally, the proposed obligation would make it easier for Ofcom and Kingston's competitors to monitor any instances of discrimination.
- 6.64 Ofcom considers that the requirement to publish a RO meets the Community requirements set out in Section 4 of the Act. In particular, the proposed obligation meets the requirements of Section 4(3) of the Act in that it promotes competition and Sections 4(7) and 4(8) of the Act in that it would encourage the provision of Network Access and service interoperability for the purpose of securing efficiency and sustainable competition and the maximum benefit for customers of Communications Providers. The publication of a RO would mean that other Communications Providers would have the necessary information readily available to allow them to make informed decisions about entry into the market.
- 6.65 Ofcom considers that the proposed obligation satisfies the tests set out in Section 47(2) of the Act. The proposed obligation is objectively justifiable, in that it relates to the need to ensure that competition develops to the benefit of consumers. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on Kingston and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 and Kingston is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate in that only information that is necessary to ensure that there is no material adverse effect on competition is required to be provided. The proposed obligation meets the test of transparency set out in the Act since it is clear that the obligation would be designed to ensure that potential competitors have sufficient information to make investment decisions about entry into this market.

Requirement to notify terms and conditions

- 6.66 Ofcom believes that it is appropriate to impose a requirement on Kingston as a result of its SMP to publish changes to charges, terms and conditions in advance of those changes taking place. The main benefit of this in wholesale markets is that other Communications Providers would be able to consider changing their retail prices as a result of decreases or increases in wholesale charges. This would then create a 'ripple effect' that passes price reductions down to end users and they may take the opportunity to consider changing suppliers.
- 6.67 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency. Section 87 (6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract (e.g by the publication of a reference offer).
- 6.68 Ofcom proposes that, as this is a market in which Kingston has SMP and it is entrenched, it should give 90 days notice before any proposed changes would be permitted to come into effect and this would represent a sufficient notification period. Ofcom considers that this will help to ensure that any emerging downstream

competitors have sufficient time to change their charges in response to a change in their costs.

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

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

6.70 The notification of charges at the wholesale level has two main purposes: to assist transparency for the monitoring of potential anti-competitive behaviour and to give advanced warning of charge changes to competing providers purchasing wholesale access services. The latter is important to ensure that competing providers have sufficient time to plan for such changes, as they may want to restructure their own tariffs in response to charge changes at the wholesale level. Publication of charges therefore helps to ensure stability in markets and without it incentives to invest might be undermined and market entry less likely.

6.71 Ofcom considers that the proposed obligation meets the tests set out in Section 47(2) of the Act. The objective justification for imposing such an obligation is that general and reliable visibility of a dominant operator's prices is needed to enable Ofcom and competitors to monitor Kingston's prices for possible anti-competitive behaviour. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is to be imposed on Kingston and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2. In addition, Kingston is the only operator which has been provisionally found to hold SMP in the Hull area and therefore other providers' behaviour would not be capable of having a materially adverse effect on competition. The proposed obligation is proportionate, as SMP is entrenched and therefore 90 days notification is considered a reasonable period in such circumstances and gives other providers a suitably sufficient period to plan for changes to terms, conditions and charges and adjust their own offerings accordingly.

6.72 Ofcom has considered its duties under Section 3 of the Act and all the Community requirements set out in Section 4. In particular, the proposed obligation would encourage compliance with transparency, for the purpose of facilitating service interoperability and securing freedom of choice for the customers of Communications Providers. The proposed obligation would promote the interests of purchasers of wholesale broadband access by enabling them to adjust their downstream offerings in competition with Kingston, in response to changes in Kingston's terms and conditions. The proposed obligation would also promote competition in downstream markets by allowing Kingston's competitors to make appropriate changes to their products. Finally, the proposed obligation would make it easier for Ofcom and Kingston's competitors to monitor any instances of discrimination.

6.73 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. Ofcom considers that it is fair and reasonable to require Kingston to notify competitors of changes to charges, terms or conditions in the interests of effective competition in the long term, by ensuring Communications Providers have access to transparent information that would enable them to make

effective use of wholesale inputs and offer products based on these wholesale inputs in competition with Kingston.

Requirement to publish technical information

- 6.74 Ofcom believes that it is to impose a requirement on Kingston as a result of its SMP to publish technical information. The main benefit of this in wholesale markets is that other Communications Providers could ensure that their systems are interoperable with any changes to technical specifications that would be likely to affect their business.
- 6.75 Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency.
- 6.76 The proposed obligation would require Kingston to publish a RO for Network Access and this would, amongst other things, contain a description of that Network Access. This would need to include:
- technical characteristics;
 - the location of the points of Network Access; and
 - technical standards for Network Access.
- 6.77 The proposed obligation in relation to the reference offer would set out the number of days within which a reference offer, or amendments to that reference offer, must be published. For example, Kingston would be required to give 90 days' notice before it would be permitted to change the RO. The proposed technical information obligation would include additional obligations to publish new technical information at least 90 days in advance of entering into a contract to provide the new Network Access, or amendments to existing technical terms and conditions at least 90 days before those amended terms and conditions would be permitted to come into effect.
- 6.78 The information that Kingston would be required to publish under the proposed obligation would include the need to publish new or amended technical characteristics (including information on network configuration where necessary to make effective use of the Network Access), locations of the points of Network Access and technical standards (including any usage restrictions and other security issues). Relevant information about network configuration may include information about the function and connectivity of points of access, for example the connectivity of exchanges to end users and other exchanges.
- 6.79 The proposed obligation would be important in that it would ensure that communication providers' systems could interoperate with Kingston's systems and therefore make effective use of the Network Access that Kingston would be required to provide. For example, a competing provider may have to introduce new equipment or modify existing equipment to support a new or changed technical interface. Similarly, a competing provider may need to make changes to their network in order to support changes in the points of Network Access or configuration.

- 6.80 Ofcom's current view is that 90 days' notification is the minimum time that competing providers would need to modify their network to support a new or changed technical interface or support a new point of access or network configuration. Therefore, Ofcom's current view is that in the market for wholesale broadband access in the Hull area, Kingston should be required to publish any new or modified technical characteristics, points of Network Access and technical standards at least 90 days in advance of Kingston either entering into a contract to provide new Network Access or making technical changes to existing Network Access unless Ofcom consents otherwise.
- 6.81 Ofcom considers that the proposed obligation meets the tests set out in the Act. Ofcom has considered all the Community requirements in Section 4. In particular, Ofcom has considered the requirement to promote competition and to encourage service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefits for consumers by ensuring that providers have sufficient notification of technical changes to Kingston's network to enable them to compete.
- 6.82 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on Kingston and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 and Kingston is the only operator which has been provisionally found to hold SMP in the Hull area. The proposed obligation is proportionate in that in most circumstances 90 days is the minimum necessary to allow competing providers to modify their networks and any extension would be required only where it was reasonable to do so. The proposed obligation is also transparent in that it is clear in its intention that Kingston should notify technical information as set out above.
- 6.83 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose the obligation in the interests of effective competition in the long term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with Kingston.

Requirement to account separately

- 6.84 Ofcom believes that it is appropriate to impose a requirement on Communications Providers with SMP to account separately for internal and external inputs to wholesale broadband access services. The main benefit of this in wholesale markets is that other Communications Providers and the regulator can monitor the SMP operator to ensure that it does not discriminate in favour of its own downstream business and to see whether it is earning excessive profits.
- 6.85 Sections 87(7) and 87(8) of the Act authorises Ofcom to impose appropriate accounting separation obligations in respect of the provision of Network Access, the use of the relevant network and the availability of relevant facilities. That is to say, an operator with SMP may be required to maintain a separation for accounting purposes between such different matters relating to Network Access or the availability of relevant facilities. Accounting separation would prevent a vertically integrated operator with SMP from providing wholesale services on terms and conditions that discriminate in favour of its own retail activities in such a way that may have a

material effect on competition because internal transfer prices and external charges would be visible.

Implementation of regulatory financial reporting conditions

6.86 On 22 July 2004, Ofcom published a statement on the regulatory financial reporting obligations on BT and Kingston Communications: accounting separation and cost accounting systems. In that statement, Ofcom imposed SMP services conditions for regulatory financial reporting on BT (Conditions OA1 to OA34) and Kingston Communications (Conditions OB1 to OB33) covering all forms of regulatory reporting and directions under those conditions, setting out:

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

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

6.88 Sections 3 and 4 of the Act sets out the Community requirements for regulation. Ofcom has considered all of the criteria in Section 4 of the Act. In particular, the imposition of an accounting separation obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of Communications Providers. This is because the imposition of an accounting separation obligation will ensure that obligations designed to prevent potentially damaging leverage of market power can be effectively monitored and enforced. In addition the imposition of an accounting separation obligation would allow Ofcom to monitor the profitability of the SMP provider in the market in which it has SMP.

6.89 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. Ofcom believes that given the importance of non-discrimination in these markets the imposition of an accounting separation obligation is objectively justifiable. That is, in order to ensure that the obligation to not unduly discriminate is met and the benefits are realised, it is essential that Ofcom is able to monitor the obligations via an accounting separation obligation. The proposed obligation does not discriminate unduly between providers, as it is imposed on Kingston and Ofcom is considering similar measures to counteract the SMP of BT in Market 1 and Market 2 and Kingston is the only operator which has been provisionally found to hold SMP in the Hull area.

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

Option 3 (price controls)

- 6.91 As set out in Section 5, Ofcom considers that Kingston has SMP in the market for wholesale broadband access in the Hull area and considers that it needs to impose regulatory remedies to promote competition in the provision of downstream broadband services. Option 3 therefore includes a range of remedies that Ofcom might impose on Kingston. These remedies include all those set out under Option 2 (access and non-discrimination obligations) and also include the imposition of a requirement for charges for wholesale broadband access services to be cost-orientated. Ofcom has not repeated, however, the arguments for imposing access and non-discrimination obligations (Option 2) as they are exactly the same as those set out in paragraphs 6.38 to 6.90.

Requirement for prices to be cost-orientated

- 6.92 Section 87(9) authorises the setting of SMP services conditions imposing rules regarding the recovery of costs and cost orientation on dominant providers.
- 6.93 In a competitive market, the pricing of services on the basis of the commercial judgements of individual companies could be expected to deliver cost reflective pricing. However, where competition cannot be expected to provide effective constraints, *ex-ante* regulation may be desirable to prevent excessive pricing. Such intervention could also have as its objectives the aim of promoting efficiency and of allowing the development of effective competition in downstream markets.
- 6.94 A cost orientation requirement could include: prices for individual products being reflective of the cost of provision, which would provide for the recovery of common costs and a return on investment. The intention of such a requirement would be to deliver an outcome (in terms of price levels) equivalent to that expected in a competitive market. However, there is a risk, particularly in a developing market characterised by growth and innovation that such a requirement would lead to regulation determining an inappropriate market outcome.
- 6.95 Price controls are an alternative method of ensuring that a firm with SMP does not abuse its market position by setting prices above the competitive level. Further, setting a price control, which is fixed for a period of time, based on an assessment of the forward-looking costs of an efficient firm could introduce incentives on the SMP firm to become more efficient because if it is able to outperform the control it will earn higher profits.
- 6.96 However, there is a risk, particularly in a developing market characterised by growth and innovation that a control could be set at an inappropriate level. If a price control is set at too weak a level then the SMP operator could easily outperform it, which in turn would mean that it could earn excessive profits. The regulation would therefore be ineffective as the outcome is likely to be similar to that expected if no price controls were introduced.

- 6.97 If a price control is set at too strict a level then the SMP operator will not be able to achieve a reasonable return and as a consequence it may reduce the level of investment. This in turn could result in a deterioration in service quality levels and/or a reduction in innovation which would be detrimental to citizen's and consumer's interests in the longer term.
- 6.98 Even if a price control is 'well judged' there is always the possibility of unintended consequences. For instance, the SMP operator may seek to outperform the price control by reducing investment instead of increasing efficiency. In such an event the price control could result in a deterioration in service quality levels and/or a reduction in innovation. Regulatory mechanisms could be introduced to counter this occurrence (e.g. by requiring certain standards to be achieved), however this would require the regulator to determine what the right level of quality and innovation should be.
- 6.99 The broadband market is still developing and therefore when deciding whether price controls should be introduced, or not, Ofcom needs to consider the conflicting risks of regulation determining an inappropriate market outcome and excessive pricing by the SMP operator.

Conclusion

- 6.100 Ofcom's preliminary conclusion is that Option 2 (access and non-discrimination obligations) is likely to deliver the best longer term outcome for citizens and consumers. Option 2 would promote competition in the provision of downstream broadband access services whilst allowing the market to be more responsive to consumer demands for product innovation. Option 2 also contains a requirement for accounting separation and this will allow Ofcom to monitor Kingston's profitability for its wholesale broadband access services and this could be used to inform any future decisions that Ofcom makes in relation to the need for price controls in this market.

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

Remedies considered – Market 1

Option 1 (no regulation)

- 6.101 As set out in Section 5, Ofcom considers that BT has SMP in Market 1 and that there is little potential for competition in this market. Ofcom considers that it is unlikely to be economically viable to build the networks necessary for the provision of downstream broadband access services in this market and therefore considers that SMP is entrenched.
- 6.102 An absence of regulation, therefore, would be unlikely to result in the development of effective competition in downstream services (in terms of price, rollout, service quality and product differentiation). Other providers would be less likely to enter to provide downstream services as they would require access to be provided by BT and, in the absence of regulation, BT would have little incentive to provide services to them. The consequence of this would be a restriction of competition in Market 1 and in the provision of downstream broadband services.
- 6.103 For these reasons, Ofcom considers that *ex-ante* regulation is required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality are optimised for citizens and consumers in Market 1. Ofcom considers, therefore, that it should impose *ex-ante* regulation in this market.

Option 2 (access and non-discrimination obligations)

- 6.104 As set out in Section 5, Ofcom considers that BT has SMP in Market 1 and as set out above considers that it needs to impose regulatory remedies to promote competition in the provision of downstream broadband services. Option 2 therefore sets out a range of remedies that Ofcom might impose on BT. Ofcom explains in the following paragraphs why it considers that these remedies may be required given that Ofcom's initial view is that BT has SMP.

Requirement to provide Network Access on reasonable request

- 6.105 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP to meet reasonable requests for Network Access. Ofcom considers that, in the absence of such a requirement, BT would have an incentive not to provide such access.
- 6.106 Section 87(3) of the Act authorises the setting of an SMP services condition requiring the dominant provider to provide such Network Access as Ofcom may, from time to time, direct. These conditions may, pursuant to Section 87(5), include provision for securing fairness and reasonableness in the way in which requests for Network Access are made and responded to and for securing that the obligations in the conditions are complied with within periods and at times required by or under the conditions. When considering the imposition of such conditions in a particular case, Ofcom must have regard to the six factors set out in Section 87(4) of the Act, including *inter alia*, the technical and economic viability of installing other competing facilities and the feasibility of the proposed Network Access.
- 6.107 The definition of access and the way in which Ofcom might assess reasonable demands for access are set out in the Access Guidelines. Ofcom considers that it is appropriate in cases where a Communications Provider has SMP to impose an access obligation on that provider requiring it to meet all reasonable requests for Network Access within the relevant wholesale market, irrespective of the technology required, on fair and reasonable terms, conditions and charges.
- 6.108 As the market analysis in Section 5 has shown, there are considerable sunk costs associated with building networks to provide broadband services. It is unlikely to be economically viable to build direct access networks in Market 1 or backbone networks on a sufficient scale to provide a viable geographically spread service. Therefore, Ofcom is currently of the view that a requirement on BT to provide access to its network in Market 1 is appropriate as it would be likely to facilitate competition in downstream markets by enabling Communications Providers to compete without the need to invest in a network which might not be economically viable in all cases.
- 6.109 Ofcom has considered all of the Community requirements detailed in Section 4 of the Act. In particular, Ofcom considers that the proposed obligation satisfies the Community requirements set out in Sections 4(3), 4(7) and 4(8) of the Act. That is, it would promote competition in relation to the provision of electronic communications networks and encourage the provision of Network Access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers of broadband internet access services.
- 6.110 With regard to the tests in Section 44 of the Act, an obligation to provide Network Access is objectively justifiable in that it would be likely to encourage greater access to BT's network and therefore would be likely to foster competition. The proposed

obligation does not discriminate unduly between providers because it is to be imposed on BT as the dominant provider in Market 1 and Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and Kingston in the Hull area and BT is the only operator which has provisionally been found to have SMP in Market 1. The proposed obligation is proportionate in what it is trying to achieve since it is directly targeted at addressing the market power which Ofcom believes BT holds in this market and it does not require BT to provide access where it is not technically feasible or reasonable. The proposed obligation also passes the requirement of transparency since it is clear that the condition is designed to achieve access to BT's network in order to facilitate competition.

- 6.111 Finally, Ofcom considers that the proposed obligation meets the requirements of Section 84(4) of the Act. In particular, the proposed obligation would require BT to meet requests that are reasonable only, by which it is meant, *inter alia*, that they must be technically and economically viable, and feasible. As set out in paragraph 4.25 of the Access Guidelines, Ofcom has taken account of the technical and economic viability of installing and using facilities; and the need to ensure effective competition in the long-term.

Requirement not to discriminate unduly

- 6.112 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP in Market 1 not to discriminate unduly in the provision of Network Access. Ofcom considers that, in the absence of such a requirement, the dominant provider would have an incentive to give preferential treatment to its downstream business.
- 6.113 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of Network Access.
- 6.114 The requirement not to discriminate unduly is intended, principally, to prevent dominant providers from discriminating unduly in favour of their own retail activities and to ensure that competing providers purchasing wholesale products from the dominant provider are placed in an equivalent position to the dominant provider's retail arm.
- 6.115 Where dominant providers are vertically integrated, like BT, they may have an incentive to provide wholesale services on terms and conditions that favour their own retail activities in a way that would have a material adverse effect on competition. In particular, they may charge competing providers more than the amount charged (through transfer charging) to their own retail activities for wholesale services, thereby increasing the costs of competing providers and giving themselves an unfair competitive advantage. They might also provide services on different terms and conditions, for example with different delivery timescales and this would disadvantage their retail competitors and in turn consumers.
- 6.116 In the absence of a no undue discrimination condition, Ofcom could be called upon to investigate alleged breaches of the Competition Act/EC Competition Law prohibitions on anti-competitive agreements and abuses of a dominant position, and might be required to resolve successive complaints. Imposing an *ex-ante* condition might reduce the potential regulatory costs that might emanate from multiple or successive complaints related to discrimination.

- 6.117 It could be argued that the Competition Act/EC Competition Law might provide adequate provision to address allegations or evidence of discriminatory behaviour. However, Ofcom considers that at the wholesale level sectoral regulation provides a faster and more secure means of giving effect to decisions and determinations. In addition, it allows Ofcom to place a greater emphasis on promoting competition (for example by restricting the ability of an SMP operator to target segments of the retail market). A no undue discrimination condition would therefore ensure that parties were treated on an equitable basis.
- 6.118 Recital 17 of the Access Directive states that non-discrimination obligations ensure that undertakings with market power do not distort competition, in particular where they are vertically integrated undertakings that supply services to competitors in downstream markets. This is clearly the case with respect to wholesale broadband access.
- 6.119 A prohibition of discrimination might have disadvantages if it prevented discrimination that was economically efficient or justified. However, the proposed obligation would prevent discrimination that was undue only.
- 6.120 Ofcom has considered how it will treat undue discrimination in its guidelines of 15 November 2005 on Undue discrimination by SMP providers ("the Discrimination Guidelines"). Ofcom considers that undue discrimination occurs when an SMP provider does not reflect relevant differences between (or does not reflect relevant similarities in) the circumstances of customers in the transaction conditions it offers, and where such behaviour would harm competition. Ofcom further considers that, in the case of non-price differences in transaction conditions (and similar prices) offered by a vertically integrated SMP provider between an internal and external wholesale customer, Ofcom may presume discrimination. Such a presumption may be rebutted if an SMP provider can demonstrate objective justification for the differences.
- 6.121 Ofcom has considered its duties under Section 3 of the Act and the Community requirements set out in Section 4. In particular, as Ofcom considers that BT should be required to provide Network Access, the draft SMP services condition encourages the provision of Network Access and service interoperability for the purpose of efficiency and sustainable competition in downstream markets by ensuring that BT does not unduly discriminate. This is necessary to ensure that there is a competitive level playing field. As Ofcom considers that BT has market power in Market 1, the company controls a key input into a range of downstream services, principally asymmetric broadband internet access. Ofcom considers that an obligation designed to prevent undue discrimination would promote competition and the interests of consumers and maximise choice in downstream markets.
- 6.122 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. Ofcom considers that the proposed obligation is objectively justifiable, in that it provides safeguards to ensure that competitors, and hence consumers, are not disadvantaged by BT discriminating in favour of its own retail activities or between its own different activities. The proposed obligation does not discriminate unduly between providers, because the obligation is imposed on BT as the dominant provider in Market 1 and Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and Kingston in the Hull area and BT is the only operator which has been provisionally found to hold SMP in Market 1. The proposed obligation is proportionate since it only prevents behaviour which is unduly discriminatory. Finally, the proposed obligation is transparent in that it is clear in its intention to ensure that BT does not unduly discriminate. In addition,

Ofcom has given guidance as to how it might treat undue discrimination in the Discrimination Guidelines.

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

Transparency

- 6.124 Ofcom considers that it is appropriate to ensure that there is transparency of charges, terms and conditions in a market in which one operator is dominant. In the absence of requirements requiring an SMP operator to publish charges, terms and conditions, the dominant provider might offer differential charges, terms and conditions to both its downstream division and also between providers and they would not be able to check that they were being charged an equitable rate or that the terms and conditions that they were offered were also equitable.
- 6.125 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information, and in such manner as Ofcom may direct, for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the reference offer. Finally, Section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.

Requirement to publish a Reference Offer

- 6.126 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP to publish a reference offer (RO). The main reasons for the publication of a RO are to assist transparency for the monitoring of potential anti-competitive behaviour and to give visibility to the terms and conditions on which other providers would be able to purchase wholesale access services. The publication of a RO would therefore help to ensure stability in markets and ensure that incentives to invest would not be undermined.
- 6.127 Ofcom considers that it may be appropriate for the published RO to include:
- a clear description of the services on offer;
 - terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The RO should provide sufficient information to enable providers to make technical and commercial judgements such that there is no material adverse effect on competition;
 - information relating to technical interfaces and points of interconnection. Such information should ensure that providers are able to make full and effective use of all the services provided;

- conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the RO, that provides for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion; and
 - terms and conditions that are fair and reasonable. This will ensure that products are offered on terms and conditions as they would in a competitive market and that they are sensible, practical, and do not impose a margin squeeze on competitors.
- 6.128 The publication of a RO would allow for speedier negotiations and might avoid possible disputes. Together with the no undue discrimination requirement, the publication of a RO would give confidence to those purchasing wholesale services that they were being provided on non-discriminatory terms.
- 6.129 Ofcom has considered the European Community requirements set out in Sections 3 and 4 of the Act. In particular, a requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability and secure freedom of choice for the customers of Communications Providers. The publication of a RO would promote the interests of purchasers of wholesale broadband access services by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the publication of a RO would make it easier for Ofcom and BT's competitors to monitor any instances of discrimination.
- 6.130 The requirement to publish a RO meets the Community requirements set out in Section 4 of the Act. In particular, the publication of a RO meets the requirements of Section 4(3) of the Act in that it promotes competition and Sections 4(7) and 4(8) of the Act in that it would encourage the provision of Network Access and service interoperability for the purpose of securing efficiency and sustainable competition and the maximum benefit for customers of Communications Providers. The publication of a RO would mean that other Communications Providers would have the necessary information readily available to allow them to make informed decisions about entry into the market.
- 6.131 Ofcom considers that the proposed obligation satisfies the tests set out in Section 47(2) of the Act. The proposed obligation is objectively justifiable, in that it relates to the need to ensure that competition develops to the benefit of consumers. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and Kingston in the Hull area and BT is the only operator which has been provisionally found to hold SMP in Market 1. The proposed obligation is proportionate in that only information that is necessary to ensure that there is no material adverse effect on competition is required to be provided. The proposed obligation meets the test of transparency set out in the Act since it is clear that the obligation would be designed to ensure that potential competitors have sufficient information to make investment decisions about entry into this market.

Requirement to notify terms and conditions

- 6.132 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP to publish changes to charges, terms and conditions in advance of those changes taking place. The main benefit of this in wholesale markets is that other

Communications Providers would be able to consider changing their retail prices as a result of decreases or increases in wholesale charges. This would then create a 'ripple effect' that passes price reductions down to end users and they may then take the opportunity to consider changing suppliers.

- 6.133 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract (e.g. by the publication of a reference offer).
- 6.134 Ofcom proposes that, as BT has SMP in Market 1 and this is entrenched, BT should give 90 days notice before any proposed changes would be permitted to come into effect and this would represent a sufficient notification period. Ofcom considers that this will help to ensure that downstream competitors have sufficient time to change their charges in response to a change in their costs.
- 6.135 Ofcom considers that the notice should include the following information:
- current charge or other relevant term and condition;
 - proposed charge and effective date or period;
 - location of terms and conditions within the published RO; and
 - information pertaining to other service charges that would be directly affected by the proposed change.
- 6.136 The notification of charges at the wholesale level has two main purposes: to assist transparency for the monitoring of potential anti-competitive behaviour and to give advanced warning of charge changes to competing providers purchasing wholesale access services. Publication of charges therefore helps to ensure stability in markets and without it incentives to invest might be undermined and market entry less likely.
- 6.137 Ofcom considers that the proposed obligation meets the tests set out in Section 47(2) of the Act. The objective justification for imposing the proposed obligation is that general and reliable visibility of a dominant operator's prices is needed to enable Ofcom and competitors to monitor BT's prices for possible anti-competitive behaviour. The proposed obligation does not discriminate unduly between providers because it is to be imposed on BT as the dominant provider in Market 1 and Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and Kingston in the Hull area. In addition, BT is the only operator which has been provisionally found to hold SMP in Market 1 and therefore other providers' behaviour would not be capable of having a materially adverse effect on competition. The proposed obligation is proportionate, as SMP is entrenched and therefore 90 days' notification is considered a reasonable period in such circumstances and gives other providers a suitably sufficient period to plan for changes to terms, conditions and charges and adjust their prices accordingly.
- 6.138 Ofcom has considered its duties under Section 3 of the Act and all the Community requirements set out in Section 4. In particular, the proposed obligation would encourage compliance with transparency, for the purpose of facilitating service interoperability and securing freedom of choice for the customers of Communications Providers. The proposed obligation would promote the interests of purchasers of

wholesale broadband access services by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. The proposed obligation would also promote competition in the provision of downstream broadband access services in Market 1 as it would allow BT's competitors in the market to make appropriate changes to their equivalent products. Finally, the proposed obligation would make it easier for Ofcom and BT's competitors to monitor any instances of discrimination.

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

Requirement to publish technical information

- 6.140 Ofcom believes that it is appropriate to impose a requirement on BT as a result of its SMP to publish technical information. The main benefit of this in wholesale markets is that other Communications Providers could ensure that their systems are interoperable with any changes to technical specifications that would be likely to affect their business.
- 6.141 Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information for the purpose of securing transparency.
- 6.142 The proposed obligation would require BT to publish a RO for Network Access and this would contain, amongst other things, a description of that Network Access and this would need to include:
- technical characteristics;
 - the location of the points of Network Access; and
 - technical standards for Network Access.
- 6.143 The proposed obligation in relation to the reference offer would set out the number of days within which a reference offer, or amendments to that reference offer, must be published. For example, BT would be required to give 90 days' notice before it would be permitted to change the RO. The proposed technical information obligation would include additional obligations to publish new technical information at least 90 days in advance of entering into a contract to provide the new Network Access, or amendments to existing technical terms and conditions at least 90 days before those amended terms and conditions would be permitted to come into effect.
- 6.144 The information that BT would be required to publish under the proposed obligation would include the need to publish new or amended technical characteristics (including information on network configuration where necessary to make effective use of the Network Access), locations of the points of Network Access and technical standards (including any usage restrictions and other security issues). Relevant information about network configuration may include information about the function

and connectivity of points of access, for example the connectivity of exchanges to end users and other exchanges.

- 6.145 The proposed obligation would be important in that it would ensure that communication providers' systems could interoperate with BT's systems and therefore make effective use of the Network Access that BT would be required to provide. For example, a competing provider may have to introduce new equipment or modify existing equipment to support a new or changed technical interface. Similarly, a competing provider may need to make changes to their network in order to support changes in the points of Network Access or configuration.
- 6.146 Ofcom's current view is that 90 days' notification is the minimum time that competing providers would need to modify their network to support a new or changed technical interface or support a new point of access or network configuration. Therefore, Ofcom's current view is that in Market 1, BT must publish any new or modified technical characteristics, points of Network Access and technical standards at least 90 days in advance of BT either entering into a contract to provide new Network Access or making technical changes to existing Network Access unless Ofcom consents otherwise.
- 6.147 Ofcom considers that the proposed obligation meets the tests set out in the Act. Ofcom has considered all the Community requirements in Section 4. In particular, the requirement to promote competition and to encourage service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefits for consumers by ensuring that providers have sufficient notification of technical changes to BT's network to enable them to compete.
- 6.148 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The proposed obligation is objectively justifiable in that it enables competing operators to make full and effective use of Network Access. The proposed obligation does not discriminate unduly between providers, as the proposed obligation is imposed on BT and Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and Kingston in the Hull area and BT is the only operator which has been provisionally found to hold SMP in Market 1. The proposed obligation is proportionate in that in most circumstances 90 days is the minimum necessary to allow competing providers to modify their networks and any extension would be required only where it was reasonable to do so. The proposed obligation is also transparent in that it is clear in its intention that BT should notify technical information as set out above.
- 6.149 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose the obligation in the interests of effective competition in the long term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with BT.

Requirement to account separately

- 6.150 Ofcom believes that it is appropriate to impose a requirement on Communications Providers with SMP to account separately for internal and external inputs to wholesale broadband access services. The main benefit of this in wholesale markets is that other Communications Providers and the regulator can monitor the SMP operator to ensure that it does not discriminate in favour of its own downstream business and to see whether it is earning excessive profits.

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

Implementation of regulatory financial reporting conditions

- 6.152 On 22 July 2004, Ofcom published a statement on the regulatory financial reporting obligations on BT and Kingston Communications: accounting separation and cost accounting systems. In that statement, Ofcom imposed SMP services conditions for regulatory financial reporting on BT (Conditions OA1 to OA34) and Kingston Communications (Conditions OB1 to OB33) covering all forms of regulatory reporting and directions under those conditions, setting out:
- the network components to be reported on (draft direction 1);
 - the transparency of the systems (draft direction 2);
 - the financial statements to be prepared and published and the appropriate audit levels (draft direction 3);
 - the form and content of these financial statements (draft direction 4);
 - the fairly presents in accordance with (FPIA) audit opinion (draft direction 5); and
 - the properly prepared in accordance with (PPIA) audit opinion (draft direction 6).
- 6.153 Ofcom considers that, in the event that it is appropriate to impose an SMP services condition on BT requiring accounting separation in relation to Market 1, the SMP services conditions set out above would apply in respect of the details of such accounting. However, this would be the first time that the regulatory accounting regime had been applied to geographic markets and the basis of preparation of the regulatory financial statements along with the underlying cost attribution methodologies would require significant enhancement to meet these accounting separation obligations. This would also apply to the demonstration of non-discriminatory treatment of downstream retail markets where purchases of similar services would be made from three different wholesale markets.
- 6.154 Sections 3 and 4 of the Act set out the Community requirements for regulation. Ofcom has considered the criteria in Section 4 of the Act. In particular, the imposition of an accounting separation obligation would specifically be justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of Communications Providers. This is because the imposition of an accounting separation obligation will ensure that obligations designed to curb potentially damaging leverage of market power can be effectively monitored and enforced. This is particularly important where there are adjacent geographic markets with different

competitive conditions, as in this case. This is because the SMP operator could try to recover some of the cost incurred in these adjacent markets in the market where it holds SMP, thus undermining the prospects of competition in the adjacent markets. In addition the imposition of an accounting separation obligation would allow Ofcom to monitor the profitability of the SMP provider in the market in which it has SMP. This means that BT will be required to provide separate accounting information for each of the relevant markets where it provides wholesale broadband access services.

- 6.155 Section 47(2) of the Act requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. Ofcom believes that given the importance of non-discrimination in these markets the imposition of an accounting separation obligation is objectively justifiable. That is, in order to ensure that the obligation to not unduly discriminate is met and the benefits are realised, it is essential that Ofcom is able to monitor the obligations via an accounting separation obligation. Furthermore, the accounting separation obligation proposed does not discriminate unduly between providers, as the obligation proposed would be imposed on BT and Ofcom is considering similar measures to counteract the SMP of BT in Market 2 and Kingston in the Hull area and BT is the only operator which has been provisionally found to hold SMP in Market 1.
- 6.156 Ofcom considers that the proposed obligation satisfies the conditions set out in Section 87 of the Act. In particular, Ofcom considers that it is fair and reasonable to impose an obligation in the interests of effective competition in the long-term, by ensuring Communications Providers can make effective use of wholesale inputs and offer products based on these wholesale inputs in competition with BT and in the knowledge that they are charged on an equitable basis.

Option 3 (price controls)

- 6.157 As explained in Section 5, Ofcom considers that BT has SMP in Market 1 and considers that it needs to impose regulatory remedies to promote competition in the provision of downstream broadband services. Option 3 therefore includes a range of remedies that Ofcom might impose on BT. These remedies include all those set out under Option 2 (access and non-discrimination obligations) and also include the imposition of a requirement for charges for wholesale broadband access services to be cost-orientated. Ofcom has not repeated, however, the arguments for imposing access and non-discrimination obligations (Option 2) as they are exactly the same as those set out in paragraphs 6.104 to 6.156.

Requirement for prices to be cost orientated

- 6.158 Section 87(9) authorises the setting of SMP services conditions imposing rules regarding the recovery of costs and cost orientation on dominant providers.
- 6.159 In a competitive market, the pricing of services on the basis of the commercial judgements of individual companies could be expected to deliver cost reflective pricing. However, where competition cannot be expected to provide effective constraints, *ex-ante* regulation may be desirable to prevent excessive pricing. Such intervention could also have as its objectives the aim of promoting efficiency and of allowing the development of effective competition in downstream markets.
- 6.160 A cost orientation requirement could include: prices for individual products being reflective of the cost of provision, which would provide for the recovery of common costs and a return on investment. The intention of such a requirement would be to

deliver an outcome (in terms of price levels) equivalent to that expected in a competitive market. However, because the broadband market is still developing it is possible that competing Communications Providers could enter parts of this market, possibly using LLU. This in turn could alter the geographic boundary in any subsequent review. The imposition of a cost orientation requirement could therefore act as a disincentive to any future entry and thus the current geographic market definition could become fixed through regulation, as such regulation could determine an inappropriate market outcome.

- 6.161 Price controls are a method of ensuring that a firm with SMP does not abuse its market position by setting prices above the competitive level. Further, setting a price control, which is fixed for a period of time, based on an assessment of the forward-looking costs of an efficient firm could introduce incentives on the SMP firm to become more efficient because if it is able to outperform the control it will earn higher profits.
- 6.162 However, there is a risk, particularly in a developing market characterised by growth and innovation that a control could be set at an inappropriate level. If a price control is set at too weak a level then the SMP operator could easily outperform it, which in turn would mean that it could earn excessive profits. The regulation would therefore be ineffective as the outcome is likely to be similar to that expected if no price controls were introduced.
- 6.163 If a price control is set at too strict a level then the SMP operator will not be able to achieve a reasonable return and as a consequence it may reduce the level of investment. This in turn could result in a deterioration in service quality levels and/or a reduction in innovation which would be detrimental to citizen's and consumer's interests in the longer term.
- 6.164 Even if a price control is 'well judged' there is always the possibility of unintended consequences. For instance, the SMP operator may seek to outperform the price control by reducing investment instead of increasing efficiency. In such an event the price control could result in a deterioration in service quality levels and/or a reduction in innovation. Regulatory mechanisms could be introduced to counter this occurrence (e.g. by requiring certain standards to be achieved), however this would require the regulator to determine what the right level of quality and innovation should be.
- 6.165 The broadband market is still developing and therefore when deciding whether price controls should be introduced, or not, Ofcom needs to consider the conflicting risks of regulation determining an inappropriate market outcome and excessive pricing by the SMP firm.

Conclusion

- 6.166 Ofcom's preliminary conclusion is that Option 2 (access and non-discrimination obligations) is likely to deliver the best longer term outcome for citizens and consumers. Option 2 would promote competition in the provision of downstream broadband access services whilst allowing the market to be more responsive to consumer demands for product innovation. Option 2 also contains a requirement for accounting separation and this will allow Ofcom to monitor BT's profitability for its wholesale broadband access services and this could be used to inform any future decisions that Ofcom makes in relation to the need for price controls in this market.

Question 13: Do respondents agree with Ofcom's proposed regulatory remedies on BT in relation to the market for wholesale broadband access in Market 1 and if so are

there any particular implementation or compliance issues that you believe needs to be considered?

Remedies considered - Market 2

Option 1 (no regulation)

- 6.167 As set out in Section 5, Ofcom considers that BT has SMP in Market 2 but there is the potential for competition to develop in this market and at the present time there is at least one competitor to BT in every exchange within the area covered by this market. However, for the period covered by this review Ofcom expects any competition in this market to be fragmented and thus a weak constraint on BT's SMP.
- 6.168 An absence of regulation, therefore, would be unlikely to result in the development of effective competition in downstream services (in terms of price, rollout, service quality and product differentiation). Other providers would be less likely to enter to provide downstream services as they would require access to be provided by BT and, in the absence of regulation, BT would have little incentive to provide services to them. The consequence of this would be a restriction of competition in the provision of downstream broadband services.
- 6.169 For these reasons, Ofcom considers that *ex-ante* regulation is required to ensure that the benefits of competition in terms of price, product differentiation, choice of supplier and quality are optimised for citizens and consumers in Market 2. Ofcom considers, therefore, that it should impose *ex-ante* regulation in this market.

Option 2 (access and non-discrimination obligations)

- 6.170 As set out in Section 5, Ofcom considers that BT has SMP in Market 2 and as set out above considers that it needs to impose regulatory remedies to promote competition in the provision of downstream broadband services. Option 2 therefore includes a range of remedies that Ofcom might impose on BT. The range of remedies is the same as those set out under Option 2 for Market 1. Ofcom has not repeated, however, the arguments for imposing access and non-discrimination obligations (Option 2) in Market 2 as they are broadly similar to those set out in paragraphs 6.104 to 6.156. However, Ofcom considers that, as this is a market where competition is starting to develop (as opposed to one in which there is no indication of competition developing), BT should be required to give 28 days' notice under the draft SMP services condition requiring BT to notify about changes to terms and conditions⁴⁷.
- 6.171 This option therefore includes the following remedies:
- requirement to provide Network Access on reasonable request;
 - requirement not to discriminate unduly;
 - requirement to publish a reference offer;
 - requirement to notify terms and conditions;

⁴⁷ As there is some competition in the provision of wholesale broadband access in Market 2, there is the potential for a requirement to notify changes to terms and conditions to have a "chilling" effect whereby other providers follow BT's prices, rather than act independently.

- requirement to publish technical information; and
- requirement to account separately.

6.172 The remedies set out under this option would allow other operators wishing to offer broadband services in downstream markets to know that they could do so because BT would be required to provide wholesale broadband access services. Crucially, in addition, they would know that such products would be offered on the same terms, conditions and price that BT would offer to its own downstream division.

Option 3 (price controls)

6.173 As explained in Section 5, Ofcom considers that BT has SMP in Market 2 and considers that it needs to impose regulatory remedies to promote competition in the provision of downstream broadband services. Option 3 therefore includes a range of remedies that Ofcom might impose on BT. These remedies include all those set out under Option 2 (access and non discrimination obligations) and also include the imposition of a requirement for charges for wholesale broadband access services to be cost-orientated. Ofcom has not repeated, however, the arguments for imposing access and non discrimination obligations (Option 2) as they are exactly the same as those set out in paragraphs 6.170 to 6.172.

Requirement for prices to be cost orientated

6.174 The arguments for and against price controls in Market 2 are the same as those set out in paragraphs 6.157 to 6.165 in relation to Market 1. However, there are more prospects for competition to develop in Market 2 than there are in Market 1 and therefore the arguments about the imposition of cost orientation acting as a disincentive to any future entry and the possibility of the current geographic market definition becoming fixed through regulation are stronger in this market.

Conclusion

6.175 Ofcom's preliminary conclusion is that Option 2 (access and non-discrimination obligations) is likely to deliver the best longer term outcome for citizens and consumers. Option 2 would promote competition in the provision of downstream broadband access services whilst allowing the market to be more responsive to consumer demands for product innovation. Option 2 also contains a requirement for accounting separation and this will allow Ofcom to monitor BT's profitability for its wholesale broadband access services and this could be used to inform any future decisions that Ofcom makes in relation to the need for price controls in this market.

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

Market 3

6.176 As set out in Section 5 above, Ofcom has not reached a conclusion as to whether or not BT has SMP in Market 3. Instead Ofcom intends to conclude on the SMP assessment in this market in its second consultation. If BT is found to have SMP in this market, then Ofcom will propose appropriate regulatory remedies. Conversely, if no-SMP is found then Ofcom will not be able to impose any remedies.

6.177 If Ofcom were to conclude that BT did have SMP in Market 3, it would need to proposed appropriate regulatory remedies. Whilst Ofcom has not conducted a full assessment it is likely that, in this event, it would consider similar remedies to those proposed in Market 1 and Market 2.

6.178 If Ofcom were to conclude that BT did not have SMP in Market 3, it would have to revoke the SMP Conditions presently applied to BT in that market. In this regard, Article 16(3) of the Framework Directive provides that:

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

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

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

6.180 The 2003/04 Review concluded that BT has SMP in the market for (i) asymmetric broadband origination in the United Kingdom (excluding Hull), and (ii) broadband conveyance in the United Kingdom. As a result, Ofcom imposed SMP services conditions on BT in those markets, which included Market 3. As set out in paragraphs 6.5 to 6.9 Ofcom is under an obligation to revoke the SMP conditions imposed on BT under the 2003/04 Review, including those applicable to Market 3, on the basis that the markets identified at that time are no longer relevant markets for the purposes of this review.

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

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

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

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

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

Where the effects of removal or replacement are not fully predictable, a period of monitoring of such effects would be appropriate to ensure the validity of the assumptions made by the NRA which led to the removal or replacement.”

- 6.182 In consequence, if Ofcom were to conclude that BT did not have SMP in Market 3 and were therefore not to apply SMP services conditions to BT in Market 3, Ofcom would need to consider the disruptive effects on the market of a removal of regulation and whether a maintenance of existing regulation is necessary for a transitional period prior to the formal revocation of those conditions. It would also be appropriate for Ofcom to monitor the effects of a revocation of existing SMP conditions on the competitive conditions within Market 3 in order to ensure the validity of Ofcom’s conclusion that BT did not have SMP in Market 3.
- 6.183 Ofcom considers that the market participants most likely to be affected by a revocation of SMP services conditions in Market 3 would be the purchasers of wholesale broadband access products and, in particular, small ISPs. In the event that Ofcom were to conclude that BT did not have SMP in Market 3 and were required to revoke the SMP conditions applied to BT in that market, Ofcom would consider carefully its effects on such parties. In particular, Ofcom would consider carefully the notice period which those persons would require in order to enable them to maintain supply if a Network Access requirement on BT were revoked.
- 6.184 Ofcom will address the question of remedies in Market 3 in the second consultation document, including revocation of existing regulation if appropriate.

Summary

- 6.185 This Section has set out the remedies that Ofcom proposes to place on Kingston in the Hull area and on BT in Market 1 and Market 2. Although Ofcom has considered remedies for three separate geographic markets in this Section, it has concluded that similar regulatory remedies should apply to Kingston in the Hull area and to BT in Market 1 and Market 2. Ofcom has not proposed regulatory remedies in Market 3, as it has not made a proposal in relation to market power assessment in this market.
- 6.186 The reason for the proposal to implement similar regulatory remedies in the Hull area, Market 1 and Market 2 is that these markets are still growing and evolving. This means that the future market size and the types of services that will ultimately be provided are uncertain. Further, there is still the potential for further upstream market entry, particularly in the case of Market 1, Market 2 and Market 3 and in a future review of this market this may result in changes to the geographic boundaries between these markets and competitive pressures may change. Ofcom’s proposed regulatory remedies which will allow an opportunity for wholesale broadband access markets to find their own equilibrium, rather than imposing it through regulation, whilst at the same time ensuring that operators with SMP are prevented from leveraging that SMP into downstream markets.

6.187 For these reasons, Ofcom proposes the following regulatory remedies on Kingston in the Hull area and on BT in 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 terms and conditions;
- requirement to notify technical information; and
- requirement to have accounting separation.

Section 7

Responding to this Consultation

How to respond

- 7.1 Ofcom invites written views and comments on the issues raised in this document, to be made by 5pm on 13 February 2007.
- 7.2 Ofcom strongly prefers to receive responses as e-mail attachments, in Microsoft Word format, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 6), among other things to indicate whether or not there are confidentiality issues. The cover sheet can be downloaded from the 'Consultations' section of our website.
- 7.3 Please can you send your response to: david.clarkson@ofcom.org.uk
- 7.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- David Clarkson
Competition Group
4th Floor
Riverside House
2A Southwark Bridge Road
London SE1 9HA
Fax: 020 7783 4109
- 7.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- 7.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 7. It would also help if you can explain why you hold your views.

Further information

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

Confidentiality

- 7.8 Ofcom thinks it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential and specify why. Please also place such parts in a separate annex.
- 7.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish

all responses, including those which are marked as confidential, in order to meet legal obligations.

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

Next steps

- 7.11 Following the end of the consultation period, Ofcom intends to publish a second consultation around May 2007, which will be followed by a final statement and notification.
- 7.12 Please note that you can register to get automatic notifications of when Ofcom documents are published, at http://www.ofcom.org.uk/static/subscribe/select_list.htm.

Ofcom's consultation processes

- 7.13 Ofcom is keen to make responding to consultations easy, and has published some consultation principles which it seeks to follow, including on the length of consultations.
- 7.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- 7.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW
Tel: 0141 229 7401
Fax: 0141 229 7433
Email vicki.nash@ofcom.org.uk

Annex 1

Impact Assessment

- A1.1 This Annex sets out the impact of the proposed regulatory remedies given the market definitions and SMP assessments conducted in this consultation document. The analyses presented in this Annex represent Impact Assessments, as defined in Section 7 of the Act.
- A1.2 Impact Assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. Ofcom is required by Section 7 of the Act to carry out Impact Assessments where proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy, Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information on Ofcom's approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which available at: http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf

The citizen and/or consumer interest and the policy objectives

- A1.3 Ofcom's statutory duties are set out in the Act and its principal duties are:
- Section 3(1)(a) to further the interests of citizens in relation to communications matters; and
 - Section 3(1)(b) to further the interests of consumers in relevant markets, where appropriate by promoting competition.
- A1.4 In this case, Ofcom is reviewing the markets for wholesale broadband access. Wholesale broadband access services are used by Communications Providers as a key input to downstream broadband services, such as retail broadband internet access services. Wholesale broadband access services can either be purchased from another provider or can be self provided, but either way will promote competition at the retail level.
- A1.5 Ofcom's overarching aim in this market is to ensure that its proposals will benefit citizens and consumers whilst also ensuring that regulation is not unnecessarily interventionist. Ofcom will always seek the least intrusive regulatory measures to achieve the policy objective. In this case, the principal policy objective is to increase competition in downstream markets – that is, retail markets reliant on broadband access services – to ensure that they function in consumers' best interests in terms of quality, price and in terms of the range of services available. Ofcom considers that the regulatory remedies that it has set out in Section 6 will help to achieve competition in provision of retail broadband services and are commensurate with the problems identified in Section 5.
- A1.6 The wholesale broadband access market supports the provision of retail services to about 12 million consumers (as at September 2006) which has grown from about 4 million since the time of the conclusion of the 2003/4 Review. This growth is continuing and is predicted to continue throughout much of the period of this review. The remedies proposed in this market review consultation are intended to benefit all consumers of retail broadband services through facilitating the development of

effective competition in markets downstream of the wholesale broadband access markets.

Ofcom's policy objective

- A1.7 Ofcom aims to secure the best deal for citizens and consumers and believes that this will be best served by a fully functioning competitive retail broadband market. Competition in downstream markets, however, relies on competition in upstream markets and, specifically, from competing infrastructure. However, as explained in Section 5, Ofcom considers that in three of the four geographic markets identified in Section 4, competition in the provision of wholesale broadband access services is not effective and, as a result, it believes that it is necessary to impose appropriate regulatory remedies at the wholesale level. The regulatory remedies that Ofcom considers are appropriate are set out in Section 6. In terms of the other market (Market 3) as explained in Section 5, Ofcom has not reached a firm conclusion on whether or not BT has SMP in this market. As a consequence, Ofcom has not conducted an Impact Assessment in relation to Market 3 in this Annex.
- A1.8 Ofcom considers that the form that regulation takes should be tailored to the level of competition that is present in a market and should take account of the prospects for competition. Ofcom believes that competition in downstream retail markets will be best achieved through competing infrastructure. However, based on the evidence available to Ofcom it is apparent that infrastructure competition is unlikely to be achievable everywhere in the UK within the period covered by this review. Therefore, where there are insufficient prospects for infrastructure competition, Ofcom may need to regulate more strictly at the wholesale level to ensure that citizens and consumers get the best deal at the retail level. Though, even where it is the case that regulation is necessary, Ofcom still needs to ensure that the intensity of regulation best serves the citizens' and consumers' long-term interests.
- A1.9 Citizen's and/or consumer's interests and the policy objectives used to further those interests are therefore the core aspects of this impact assessment. In summary, although the direct users of wholesale broadband access services are communication providers, these services are used as inputs to deliver services to citizens and consumers. This impact assessment therefore ultimately focuses on the impact of proposed regulatory mechanisms on citizens and consumers of the broadband services.

Analysis of the different options

- A1.10 As set out in Section 4, Ofcom has identified four separate geographic wholesale broadband access markets. These are:
- the Hull area - exchanges where Kingston Communications is the only operator;
 - Market 1 - exchanges where BT is the only operator;
 - Market 2 - exchanges where there are 2 or 3 operators AND exchanges where there are 4 or more operators where the exchange serves less than 10,000 homes and businesses; and
 - Market 3 - exchanges where there are 4 or more operators where the exchange serves 10,000 or more homes and businesses.

- A1.11 For three of these markets (the Hull area, Market 1 and Market 2), Ofcom sets out in Section 6 the proposed remedies which it believes should be applied in each case. For each market, however, Ofcom considered three regulatory approaches before setting out its preferred option. Ofcom has carried out an Impact Assessment in relation to each of those options in this Annex.
- A1.12 The first option considered in each market is the option not to impose regulation (Option 1). Ofcom considers that an Impact Assessment would not be complete unless the option of not imposing regulation had been fully considered and the potential outcomes that would result assessed against alternative options, as non-intervention might achieve a better outcome for citizens and consumers compared to regulation. The second option considered is one in which the principal regulation applicable would take the form of access and no undue discrimination obligations (Option 2). The third option considered is one in which price controls would be applied to the prices charged by the SMP operators, BT in Market 1 and Market 2 and Kingston in the Hull area, in addition to the requirements set out in respect of the second option (Option 3).
- A1.13 The aim of regulation in each market would be to further the interests of citizens and consumers in the relevant markets by promoting the development of competition in the provision of downstream (retail) broadband services. However, as explained, Ofcom considers that competition in downstream markets would be best achieved through the provision of competing infrastructure. This Section assesses, therefore, the three options in terms of the way in which they might be expected to have an affect in each market and on each principal group of stakeholders. In this case, Ofcom considers that the principal stakeholders groups are: BT/Kingston; Communications Providers with their own infrastructure; Communications Providers who, in general, rely on other Communications Providers' infrastructure (that is, those without their own infrastructure or with very little); and citizens and consumers.

Hull Area – Options considered

Option 1 (no regulation)

- A1.14 As explained in Section 5, Ofcom's analysis has shown that Kingston has SMP in the Hull area. In general, Ofcom believes that to prevent abuse of SMP in any market it is necessary to set appropriate ex-ante regulatory rules. However, as explained in paragraph A1.12, Ofcom considers that an Impact Assessment would be incomplete unless the option of not imposing regulation had been considered. Ofcom has therefore considered what this option would be likely to mean for each of the principal stakeholders separately.

Kingston

- A1.15 At present, Kingston is required to meet reasonable requests for Network Access, publish prices, terms and conditions, and not to discriminate in the provision of Network Access. In the absence of these regulatory obligations, Kingston would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. Kingston would, therefore, be able to and consider when and where to invest without the threat of regulatory intervention. It would also be able to decide how best to recover its costs. The management of the company would thus be free to decide what it needed to do to maximise its profitability and benefit its shareholders.

- A1.16 On the other hand, as Kingston would not be required to provide Network Access in the Hull area and would not therefore be faced with any competitive threat, it might be less efficient in the provision of Network Access which might mean that provision and ongoing costs might be higher than they otherwise would.

Communications Providers with their own infrastructure

- A1.17 As discussed in Section 4, it is likely that competition at the wholesale level will be successful in certain areas of the UK only and, therefore, Communications Providers with their own infrastructure would need to purchase wholesale products outside of these areas in order to be able to offer broadband products elsewhere. There are currently no other Communications Providers with their own infrastructure in the Hull areas and Ofcom believes that Communications Providers are unlikely to extend their networks to the Hull area, as it is unlikely that it would be economic to do so, and it is therefore likely that they would be reliant on wholesale products to provide competing retail broadband services in the Hull area.
- A1.18 Communications Providers outside of the Hull area with their own infrastructure may be able to compete in the Hull area by accessing wholesale broadband access services. The impact of regulation on these providers is considered in the following paragraph.

Communications Providers without their own infrastructure

- A1.19 In the absence of an obligation on Kingston to provide Network Access on no undue discrimination terms, it would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. Either way, it is unlikely that other Communications Providers would be able to compete in downstream markets and this would limit retail competition in the Hull area.

Citizens and consumers

- A1.20 Ofcom considers that citizens and consumers are most likely to get the best deal in terms of price, quality and innovation if there is effective competition in the provision of retail broadband products. There are a number of ways in which Communications Providers could compete in the provision of retail broadband services in the Hull area. They could:
- build their own access networks and compete directly with Kingston;
 - invest in infrastructure to the local exchange level and purchase LLU from Kingston; or
 - purchase other wholesale products from Kingston.
- A1.21 Of these options, Ofcom considers that the only viable option in the Hull area, within the period of this review, is the third option. The reason for this is that Ofcom considers that it is unlikely to be economic for communication providers to build out their own network in the Hull area.
- A1.22 In the absence of a requirement on Kingston to provide wholesale broadband access services in the Hull area, Ofcom considers that competition would be limited and citizens and consumers would have little, if any, choice. Kingston would be able to set excessive prices for retail broadband services and it would also be able to

invest in a manner that it considered appropriate without the threat of competitors innovating and investing earlier. This might mean that citizens and consumers in the Hull area might be required to pay more for retail broadband services than their counterparts elsewhere in the UK which would be a concern if it reflected Kingston's ability to exercise market power in the Hull area.

Option 2 (access and no undue discrimination requirements)

Kingston

- A1.23 A requirement to meet reasonable requests for Network Access, publish prices, terms and conditions, and not to discriminate in the provision of Network Access would impose regulatory costs on Kingston which it would not otherwise incur. Any pricing strategy or alterations of wholesale services would need to take into account that other Communications Providers would benefit from any price reductions and also that its downstream business would be affected by any price increases or variations in service quality.
- A1.24 On the other hand, Kingston would not be subject to detailed regulatory intervention in the setting of prices and therefore charges for wholesale broadband access products would be set on the basis of a commercial decision rather than set by regulation. Kingston would be able to compete in the provision of downstream products and maintain a level of profitability upstream which its management considered appropriate. In addition, as Kingston would only be subject to a requirement not to unduly discriminate, it would be able to discriminate if it could appropriately justify the reasons for the discrimination.

Communications Providers with their own infrastructure

- A1.25 There are currently no other Communications Providers with their own infrastructure in the Hull area. As set in paragraph A1.17, Ofcom believes that Communications Providers are unlikely to extend their networks to the Hull area, as it is unlikely that it would be economic to do so, and it is therefore likely that they would be reliant on wholesale broadband access products in the Hull area.
- A1.26 Communication providers outside of the Hull area with their own infrastructure may be able to compete in the Hull area by accessing wholesale broadband access services. The impact of regulation on these providers is considered in the following paragraphs.

Communications Providers without their own infrastructure

- A1.27 As stated above there may be Communications Providers with infrastructure outside of the Hull area that may be able to compete in the Hull area by accessing wholesale broadband access services. Other Communications Providers may also rely solely on wholesale broadband access services (i.e. those that do not own any infrastructure at all) and may wish to provide retail broadband services in the Hull area.
- A1.28 Obligations on Kingston requiring it to provide Network Access on no undue discrimination terms would therefore allow other Communications Providers without their own infrastructure to compete on an equivalent basis in the Hull area and this would mean that they would be able to offer retail broadband services to citizens and consumers in the Hull area. In addition, as Kingston would be required to give advance notification before it would be permitted to change wholesale broadband

access prices Communications Providers without their own infrastructure in the Hull area would be able to change the prices of their retail products whenever Kingston changed its prices for wholesale broadband access.

- A1.29 On the other hand, Kingston would be able to vary the levels of its wholesale broadband access prices and therefore other Communications Providers would have less certainty in relation to price movements (compared to if there were price controls in place). It is possible that this would discourage entry into the provision of retail services in the Hull area if this created instability or unpredictable pricing.
- A1.30 Obligations on Kingston requiring it to provide Network Access on not unduly discriminatory terms would allow Communications Providers without their own infrastructure in the Hull area to compete on an equivalent basis in this market.

Citizens and consumers

- A1.31 As explained in paragraph A1.5, Ofcom considers that citizens and consumers are more likely to get a better deal in terms of price, quality and innovation if there is effective competition in the provision of retail broadband products. An obligation on Kingston to provide wholesale broadband access services in the Hull area would benefit citizens and consumers because it would mean that other providers could compete directly with Kingston's downstream (retail) operation in the provision of retail broadband services. Citizens and consumers would therefore benefit from the impact that competitive pressure would have in the Hull area and this would be likely to benefit them in terms of price, quality and in the provision of innovative services.
- A1.32 On the other hand, because the level of wholesale charges would not be constrained by ex-ante regulation, this may mean that retail prices may be higher than they otherwise might. Option 3 - price controls (discussed in the following paragraphs) potentially has a number of drawbacks relative to option 2, in that it may create disincentive effects on wholesale broadband access providers. Ofcom considers that in the longer term option 2 would be more likely to encourage investment and innovation to the benefit of consumers.

Option 3 (price controls)

Kingston

- A1.33 Price controls and cost orientation are intended to ensure that an operator with SMP in a particular market does not abuse its market position by setting prices above the competitive level (that is, the level that would be set in a competitive market). Prices would be set on the basis of Kingston's costs. Price controls would include a forward-look of how these costs may be expected to change over the period of the price control. This would be with the intention of preventing Kingston from setting prices which allowed it to make monopoly profits and, at the same time, aimed to introduce incentives on Kingston to become more efficient by reducing costs and outperforming the control.
- A1.34 If the price control is set at too weak a level (i.e. the price cap is set at a level too high), it would be relatively easy for Kingston to outperform the control which in turn would allow it to earn profits in excess of its cost of capital. This outcome could be equivalent in effect to having no price controls.

- A1.35 Alternatively, a 'well judged' price control may not deliver the intended efficiency benefits, as Kingston might seek to outperform the price control by reducing the quality of the services, and hence costs, rather than increasing its efficiency. Thus, a potential unintended consequence of price controls is deterioration in the quality of service, although regulatory mechanisms could be introduced to counter this occurrence (e.g. by requiring certain quality standards to be achieved).
- A1.36 Lastly, if the price control is set at too strict a level (i.e. the price cap is set at a level too low) then it will limit the ability of Kingston to achieve a reasonable return and this in turn could result in a deterioration in quality levels and/or a discouragement of investment and innovation.
- A1.37 The broadband market is characterised by significant growth and ongoing innovation and this is expected to remain the case for the period covered by this review. A price control would therefore require Ofcom to anticipate the expected growth and level of innovation and this leads to a much higher risk that we end up with one of the undesirable regulatory determined outcomes described above.
- A1.38 Requiring Kingston to provide Network Access and not to unduly discriminate, but without price controls (i.e. Option 2) would prevent Kingston from leveraging its SMP at the wholesale level into downstream (retail) markets and accordingly would encourage retail competition. However, it would also give Kingston the freedom to respond to consumer demands for new and innovative products and to make any corresponding changes to the level of investment, and hence prices, necessary to achieve this.
- A1.39 The trade-off in this situation is therefore between allowing the market to be more responsive to consumer demands, as opposed to a regulated outcome, and avoiding consumer detriment through excessive pricing. However, it needs to be recognised that one of the proposed requirements under Option 2 is accounting separation. Absent a price control Ofcom would therefore still be able to monitor Kingston's profitability for its wholesale broadband access products and this could be used to inform any future decisions that Ofcom makes in relation to the need for price controls.

Communications Providers with their own infrastructure

- A1.40 There are currently no other Communications Providers with their own infrastructure in the Hull area. As set in paragraph A1.17, Ofcom believes that Communications Providers are unlikely to extend their networks to the Hull area, as it is unlikely that it would be economic to do so, and it is therefore likely that they would be reliant on wholesale broadband access products in the Hull area.
- A1.41 Communication providers outside of the Hull area with their own infrastructure may be able to compete in the Hull area by accessing wholesale broadband access services. The impact of regulation on these providers is considered in the following paragraphs.

Communications Providers without their own infrastructure

- A1.42 Generally, a price control on Kingston is likely to act as a disincentive for Communications Providers to invest in their own infrastructure, as the market prices would be set based on Kingston's cost with a normal return (Kingston's cost of capital). However, as previously discussed it seems unlikely that Communications Providers will build competing networks in the Hull area and thus the more relevant

question is: what affect are price controls likely to have on the entry opportunities for providers at the retail level.

- A1.43 Providers who compete with Kingston at the retail level are primarily likely to be concerned about whether Kingston's retail business is getting preferential treatment. The no undue discrimination requirement in Option 2 is intended to address this concern and provide a level playing field. However, a price control is likely to provide more comfort to these providers as, if set correctly, it should remove any excess profits from the wholesale level and thus limit the possibility of leverage into downstream markets. However, as discussed above in paragraphs A1.33 to A1.39, there are issues around setting the 'correct' level in a price control, particularly in a developing market, and further under Option 2 Ofcom is able to monitor Kingston's profitability for its wholesale broadband access products.

Citizens and consumers

- A1.44 Price controls on Kingston's wholesale broadband access services would prevent Kingston from making excessive profits and could thus lead to lower retail prices, which would benefit citizens and consumers.
- A1.45 However, as discussed above in paragraphs A1.33 to A1.39, there are potential downsides to price controls, particularly in a developing market, such as; deterioration in quality levels and/or a discouragement of investment and innovation. Such outcomes would be against citizen's and consumer's interests.

The Hull area – Conclusion

- A1.46 Ofcom's Impact Assessment has considered three options in relation to the Hull area and set out some of the advantages and disadvantages in relation to each of these. Ofcom considers that on balance Option 2 (the access and no undue discrimination obligation) is the most appropriate option and the one that it is likely to benefit citizens and consumers most for the period covered by this market review and therefore this is the regulatory approach on which the regulatory remedies set out in Section 6 have been based.

Market 1 – Options considered

Option 1 (no regulation)

- A1.47 As explained in Section 5, Ofcom's analysis has shown that BT has SMP in Market 1. In general, Ofcom believes that to prevent abuse of SMP in any market it is necessary to set appropriate ex-ante regulatory rules. However, as explained in paragraph A1.12, Ofcom considers that an Impact Assessment would be incomplete unless the option of not imposing regulation had been considered. Ofcom has therefore considered what this option would be likely to mean for each of the principal stakeholders separately.

BT

- A1.48 At present, BT is required to meet reasonable requests for Network Access, publish prices, terms and conditions, and not to discriminate in the provision of Network Access. In the absence of these regulatory obligations, BT would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. BT would, therefore, be able to and consider when and where to invest without the threat of regulatory intervention. It

would also be able to decide how best to recover its costs. The management of the company would thus be free to decide what it needed to do to maximise its profitability and benefit its shareholders.

- A1.49 On the other hand, as BT would not be required to provide Network Access in Market 1 and would not therefore be faced with any competitive threat, it might be less efficient in the provision of Network Access which might mean that provision and ongoing costs might be higher than they otherwise would.

Communications Providers with their own infrastructure

- A1.50 As discussed in Section 4, it is likely that competition at the wholesale level will be successful in certain areas of the UK only and, therefore, Communications Providers with their own infrastructure would need to purchase wholesale products outside of these areas in order to be able to offer broadband products elsewhere. There is currently a very limited presence of other Communications Providers with their own infrastructure in Market 1 and whilst Ofcom does not expect to see any significant deployment of competing infrastructure within the period covered by this review, network rollout, particularly based on LLU, is still occurring. However, absent this deployment Communications Providers are likely to be reliant on wholesale products to provide competing retail broadband services in Market 1.
- A1.51 Communications Providers outside of the Hull area with their own infrastructure may be able to compete in Market 1 by accessing wholesale broadband access services. The impact of regulation on these providers is considered in the following paragraphs.

Communications Providers without their own infrastructure

- A1.52 In the absence of an obligation on BT to provide Network Access on no undue discrimination terms, it would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. Either way, it is unlikely that other Communications Providers would be able to compete in downstream markets and this would limit retail competition in Market 1.
- A1.53 In addition, if Communications Providers were not able to purchase wholesale broadband access services in this market, it is possible that their retail businesses would suffer in areas outside of Market 1 (i.e. Market 2 and Market 3), if their intention was to provide a national service. There are a number of potential reasons for this, for example; overheads would need to be recovered over a smaller potential customer base and marketing costs would be higher due to the need to target any campaign or target end-users who they would be unable to serve.

Citizens and consumers

- A1.54 Ofcom considers that citizens and consumers are most likely to get the best deal in terms of price, quality and innovation if there is effective competition in the provision of retail broadband products. There are a number of ways in which Communications Providers could compete in the provision of retail broadband services in Market 1. They could:
- build their own access networks and compete directly with BT;
 - invest in infrastructure to the local exchange level and purchase LLU from BT; or

- purchase other wholesale products from BT.

A1.55 Of these options, Ofcom considers that the only viable option in Market 1, within the period of this review, is the third option. The reason for this is that Ofcom considers that it is unlikely to be economic for communication providers to build out their networks to the areas covered by Market 1.

A1.56 In the absence of a requirement on BT to provide wholesale broadband access services in Market 1, Ofcom considers that competition would be limited and citizens and consumers would have little, if any, choice. BT would be able to set excessive prices for retail broadband services and it would also be able to invest in a manner that it considered appropriate without the threat of competitors innovating and investing earlier. This might mean that citizens and consumers in Market 1 might be required to pay more for retail broadband services than their counterparts elsewhere in the UK reflecting BT's ability to exercise market power in Market 1.

Option 2 (access and no undue discrimination requirements)

BT

A1.57 A requirement to meet reasonable requests for Network Access, publish prices, terms and conditions, and not to discriminate in the provision of Network Access would impose regulatory costs on BT which it would not otherwise incur. Any pricing strategy or alterations of wholesale services would need to take into account that other Communications Providers would benefit from any price reductions and also that its downstream business would be affected by any price increases or variations in service quality.

A1.58 On the other hand, BT would not be subject to detailed regulatory intervention in the setting of prices and therefore charges for wholesale broadband access products would be set on the basis of a commercial decision rather than set by regulation. BT would be able to compete in the provision downstream products and maintain a level of profitability upstream which its management considered appropriate. In addition, as BT would only be subject to a requirement not to unduly discriminate, it would be able to discriminate if it could appropriately justify the reasons for the discrimination.

Communications Providers with their own infrastructure

A1.59 There are currently no other Communications Providers with their own infrastructure in Market 1. As set out in paragraph A1.50, Ofcom does not expect to see any significant deployment of competing infrastructure within the period covered by this review. Communications Providers are therefore likely to be reliant on wholesale broadband access products in Market 1.

A1.60 Communication providers outside of Market 1 with their own infrastructure may be able to compete in Market 1 by accessing wholesale broadband access services. The impact of regulation on these providers is considered in the following paragraphs.

Communications Providers without their own infrastructure

A1.61 As stated in the preceding paragraph there may be Communications Providers with infrastructure outside of Market 1 that may be able to compete in Market 1 by accessing wholesale broadband access services. Other Communications Providers

may also rely solely on wholesale broadband access services (i.e. those that do not own any infrastructure at all) and may wish to provide retail broadband services in Market 1.

- A1.62 Obligations on BT requiring it to provide Network Access on no undue discrimination terms would therefore allow other Communications Providers without their own infrastructure to compete on an equivalent basis in Market 1 and this would mean that they would be able to offer retail broadband services to citizens and consumers in Market 1. In addition, as BT would be required to give advance notification before it would be permitted to change wholesale broadband access prices Communications Providers without their own infrastructure in Market 1 would be able to change the prices of their retail products whenever BT changed its prices for wholesale broadband access.
- A1.63 On the other hand, BT would be able to vary the levels of its wholesale broadband access prices and therefore other Communications Providers would have less certainty in relation to price movements (compared to if there were price controls in place). It is possible that this would discourage entry into the provision of retail services in Market 1 if this created instability or unpredictable pricing.
- A1.64 Obligations on BT requiring it to provide Network Access on not unduly discriminatory terms would allow Communications Providers without their own infrastructure in Market 1 to compete on an equivalent basis in this market.

Citizens and consumers

- A1.65 As explained in paragraph A1.5, Ofcom considers that citizens and consumers are most likely to get a better deal in terms of price, quality and innovation if there is effective competition in the provision of retail broadband products. An obligation on BT to provide wholesale broadband access services in Market 1 would benefit citizens and consumers because it would mean that other providers could compete directly with BT's downstream (retail) operation in the provision of retail broadband services. Citizens and consumers would therefore benefit from the impact that competitive pressure would have in Market 1 and this would be likely to benefit them in terms of price, quality and in the provision of innovative services.
- A1.66 On the other hand, because the level of wholesale charges would not be constrained by ex-ante regulation, this may mean that retail prices may be higher than they otherwise might. Option 3 - price controls (discussed in the following paragraphs) potentially has a number of drawbacks relative to Option 2, in that it may create disincentive effects on wholesale broadband access providers. Ofcom considers that in the longer term Option 2 would be more likely to encourage investment and innovation to the benefit of consumers.

Option (price controls)

BT

- A1.67 Price controls and cost orientation are intended to ensure that a Communications Provider with SMP in a particular market does not abuse its market position by setting prices above the competitive level (that is, the level that would be set in a competitive market). Prices would be set on the basis of BT's costs. Price controls would include a forward-look of how those costs may be expected to change over the period of the price control. This would be with the intention of preventing BT from setting prices which allowed it to make monopoly profits and, at the same time,

aimed to introduce incentives on BT to become more efficient by reducing costs and outperforming the control.

- A1.68 If the price control is set at too weak a level (i.e. the price cap is set at a level too high), it would be relatively easy for BT to outperform the control which in turn would allow it to earn profits in excess of its cost of capital. This outcome could be equivalent in effect to having no price controls.
- A1.69 Alternatively, a 'well judged' price control may not deliver the intended efficiency benefits, as BT might seek to outperform the price control by reducing the quality of the services, and hence costs, rather than increasing its efficiency. Thus, a potential unintended consequence of price controls is deterioration in the quality of service, although regulatory mechanisms could be introduced to counter this occurrence (e.g. by requiring certain quality standards to be achieved).
- A1.70 Lastly, if the price control is set at too strict a level (i.e. the price cap is set at a level too low) then it will limit the ability of BT to achieve a reasonable return and this in turn could result in; a deterioration in quality levels and/or a discouragement of investment and innovation.
- A1.71 The broadband market is characterised by significant growth and ongoing innovation and this is expected to remain the case for the period covered by this review. A price control would therefore require Ofcom to anticipate the expected growth and level of innovation and this leads to a much higher risk that we end up with one of the undesirable regulatory determined outcomes described above.
- A1.72 Requiring BT to provide Network Access and not to unduly discriminate, but without price controls (i.e. Option 2) would prevent BT from leveraging its SMP at the wholesale level into downstream (retail) markets and accordingly would encourage retail competition. However, it would also give BT the freedom to respond to consumer demands for new and innovative products and to make any corresponding changes to the level of investment, and hence prices, necessary to achieve this.
- A1.73 The trade-off in this situation is therefore between allowing the market to be more responsive to consumer demands, as opposed to a regulated outcome, and avoiding consumer detriment through excessive pricing. However, it needs to be recognised that one of the proposed requirements under Option 2 is accounting separation. Absent a price control Ofcom would therefore still be able to monitor BT's profitability for its wholesale broadband access products and this could be used to inform any future decisions that Ofcom makes in relation to the need for price controls.

Communications Providers with their own infrastructure

- A1.74 There are currently no other Communications Providers with their own infrastructure, to any significant extent, in Market 1⁴⁸. As set out in paragraph A1.50, Ofcom does not expect to see any significant deployment of competing infrastructure within the period covered by this review. Communications Providers are therefore likely to be reliant on wholesale broadband access products in Market 1.

⁴⁸ There are some exchange areas within this market which include provision of services from ntl:Telewest. As explained in Section 4, ntl:Telewest 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.

- A1.75 Communication providers outside of Market 1 with their own infrastructure may be able to compete in Market 1 by accessing wholesale broadband access services. The impact of regulation on these providers is considered in the following paragraphs.

Communications Providers without their own infrastructure

- A1.76 Generally, a price control on BT is likely to act as a disincentive for Communications Providers to invest in their own infrastructure, as the market prices would be set based on BT's cost with a normal return (BT's cost of capital). Whilst Ofcom does not expect to see any significant deployment of competing infrastructure in this market within the period covered by this review, network rollout, particularly based on LLU, is still occurring. Introducing a price control at this time could therefore act as a disincentive to any future network rollout and thus the current geographic market definition could become fixed through the regulation.
- A1.77 Providers who compete with BT at the retail level are likely to be primarily concerned about whether BT's retail business is getting preferential treatment. The no undue discrimination requirement in Option 2 is intended to address this concern and provide a level playing field. However, a price control is likely to provide more comfort to these providers as, if set correctly, it should remove any excess profits from the wholesale level and thus limit the possibility of leverage into downstream markets. However, as discussed above in paragraphs A1.67 to A1.73, there are issues around setting the 'correct' level in a price control, particularly in a developing market, and further under Option 2 Ofcom is able to monitor BT's profitability for its wholesale broadband access products.

Citizens and consumers

- A1.78 Price controls on BT's wholesale broadband access services would prevent BT from making excessive profits and could thus lead to lower retail prices, which would benefit citizens and consumers.
- A1.79 However, as discussed above in paragraphs A1.67 to A1.73, there are potential downsides to price controls, particularly in a developing market, such as; deterioration in quality levels and/or a discouragement of investment and innovation. Such outcomes would be against citizen's and consumer's interests.

Market 1 – Conclusion

- A1.80 Ofcom's Impact Assessment has considered three options in relation to Market 1 and set out some of the advantages and disadvantages in relation to each of these. Ofcom considers that on balance Option 2 (the access and no undue discrimination obligation) is the most appropriate option and the one that it is likely to benefit citizens and consumers most for the period covered by this market review and therefore this is the regulatory approach on which the regulatory remedies set out in Section 6 have been based.

Market 2 – Options considered

Option 1 (no regulation)

- A1.81 As explained in Section 5, Ofcom's analysis has shown that BT has SMP in Market 2. In general, Ofcom believes that to prevent abuse of SMP in any market it is necessary to set appropriate ex-ante regulatory rules. However, as explained in

paragraph A1.12, Ofcom considers that an Impact Assessment would be incomplete unless the option of not imposing regulation had been considered. Ofcom has therefore considered what this option would be likely to mean for each of the principal stakeholders separately.

BT

- A1.82 At present, BT is required to meet reasonable requests for Network Access, publish prices, terms and conditions, and not to discriminate in the provision of Network Access. In the absence of these regulatory obligations, BT would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. BT would, therefore, be able to and consider when and where to invest without the threat of regulatory intervention. It would also be able to decide how best to recover its costs. The management of the company would thus be free to decide what it needed to do to maximise its profitability and benefit its shareholders.
- A1.83 On the other hand, as BT would not be required to provide Network Access in Market 2 and would not therefore be faced with a sufficient competitive threat, it might be less efficient in the provision of downstream services which might mean that provision and ongoing costs might be higher than they otherwise would. It needs to be recognised that although there may be two or more operators present in this market, BT's SMP would suggest that this would not create a sufficient competitive threat constraint.

Communications Providers with their own infrastructure

- A1.84 As discussed in Section 4, it is likely that competition at the wholesale level will be successful in certain areas of the UK only and, therefore, Communications Providers with their own infrastructure would need to purchase wholesale products outside of these areas in order to be able to offer broadband products elsewhere. In Market 2, there is at least one other Communications Provider present at each exchange. Whilst Ofcom expects additional infrastructure rollout to occur in this market within the period covered by the review, it believes that competing infrastructure will remain fragmented. Any Communications Providers with their own infrastructure are therefore unlikely to be in a position to provide service across the whole of this market and further the ability to piece together a complete coverage of this market, based on using multiple Communications Providers with their own infrastructure, is limited. This means that these Communications Providers would be reliant on wholesale products, at least in some parts of the market, in order to have a retail presence which extends across the whole of this market.
- A1.85 Nevertheless the impact of regulation needs to take into account the prospect for infrastructure-based competition (at least to some extent) within Market 2. The imposition of regulation on BT might create disincentives for operators present or intending to enter Market 2. For example, regulations that allow providers to enter the market without needing to make any substantial investment or the imposition of overly restrictive price controls would weaken the incentives for Communications Providers to invest in infrastructure.
- A1.86 However, in the absence of an obligation on BT to provide Network Access on not unduly discriminatory terms, BT would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. Either way, it is unlikely that those Communications Providers requiring

Wholesale Broadband Access, in part of the market, would be able to compete in downstream markets and this would limit retail competition in these areas.

- A1.87 In addition, if Communications Providers were not able to purchase wholesale broadband access services in this market, it is possible that their retail businesses would suffer in areas outside of Market 2 (i.e. Market 1 and Market 3), if their intention was to provide a national service. There are a number of potential reasons for this, for example; overheads would need to be recovered over a smaller potential customer base and marketing costs would be higher due to the need to target any campaign or target end-users who they would be unable to serve.

Communications Providers without their own infrastructure

- A1.88 In the absence of an obligation on BT to provide Network Access on no undue discrimination terms, it would be able to refuse to provide Network Access or to provide it on terms that would discriminate in favour of its own downstream businesses. Either way, it is unlikely that other Communications Providers would be able to compete in downstream markets and this would limit retail competition in Market 2.
- A1.89 In addition, if Communications Providers were not able to purchase wholesale broadband access services in this market, it is possible that their retail businesses would suffer in areas outside of Market 2 (i.e. Market 1 and Market 3), if their intention was to provide a national service. There are a number of potential reasons for this, for example; overheads would need to be recovered over a smaller potential customer base and marketing costs would be higher due to the need to target any campaign or target end-users who they would be unable to serve.

Citizens and consumers

- A1.90 Ofcom considers that citizens and consumers are most likely to get the best deal in terms of price, quality and innovation if there is effective competition in the provision of retail broadband products. There are a number of ways in which Communications Providers could compete in the provision of retail broadband services in Market 2. They could:
- build their own access networks and compete directly with BT;
 - invest in infrastructure to the local exchange level and purchase LLU from BT; or
 - purchase other wholesale products from BT.
- A1.91 Of these options, Ofcom considers that each is viable to a greater or lesser extent.
- A1.92 A number of exchanges in these areas already overlap with cable infrastructure which also competes in the provision of retail broadband access services. In terms of Communications Providers choosing to invest in infrastructure to the local exchange level, Ofcom considers that this is likely to be viable only to a limited extent in the period covered by this review. Other Communications Providers would, to some extent, therefore, be reliant on wholesale broadband access services provided by BT.
- A1.93 In the absence of a requirement on BT to provide wholesale broadband services in Market 2, Ofcom considers that competition would be limited to the extent of the cable networks and the extent to which other Communications Providers would be able

to invest in infrastructure to the local exchange level. Citizens and consumers might therefore have little choice in reality. BT might be able to set excessive prices for retail broadband services and it might also be able to reduce investment. This might mean that citizens and consumers in Market 2 might be required to pay more for retail broadband services than their counterparts elsewhere in the UK reflecting BT's ability to exercise market power in Market 2.

Option 2 (access and non-discrimination obligations)

BT

- A1.94 A requirement to meet reasonable requests for Network Access, publish prices, terms and conditions, and not to discriminate in the provision of Network Access would impose regulatory costs on BT which it would not otherwise incur. Any pricing strategy or alterations of wholesale services would need to take into account that other Communications Providers would benefit from any price reductions and also that its downstream business would be affected by any price increases or variations in service quality.
- A1.95 On the other hand, BT would not be subject to detailed regulatory intervention in the setting of prices and therefore charges for wholesale broadband access products would be set on the basis of a commercial decision rather than set by regulation. BT would be able to compete in the provision downstream products and maintain a level of profitability upstream which its management considered appropriate. In addition, as BT would only be subject to a requirement not to unduly discriminate, it would be able to discriminate if it could appropriately justify the reasons for the discrimination.

Communications Providers with their own infrastructure

- A1.96 As discussed in paragraph A1.84, even Communications Providers with their own infrastructure are unlikely to be in a position to provide service across the whole of this market and further the ability to piece together a complete coverage of this market, based on using multiple Communications Providers with their own infrastructure, is limited. This means that these Communications Providers would be reliant on wholesale products, at least in some parts of the market, in order to have a retail presence which extends across the whole of this market.
- A1.97 Obligations on BT requiring it to provide Network Access on not unduly discriminatory terms would therefore allow Communications Providers to offer retail products throughout Market 2. In addition, as BT would be required to give advance notification before it would be permitted to changes wholesale broadband access prices, these Communications Providers would be able to change the prices of their retail products whenever BT changed its prices for wholesale broadband access.
- A1.98 On the other hand, BT would be able to vary the levels of its wholesale broadband access prices and therefore other Communications Providers would have less certainty in relation to price movements (compared to if there were price controls). It is possible that this would discourage entry into the provision of retail services in the areas covered by Market 2.
- A1.99 However, the imposition of regulation on BT might create disincentives for operators present or intending to enter Market 2. For example, regulations that allow providers to enter the market without needing to make any substantial investment or the imposition of overly restrictive price controls would weaken the incentives for

Communications Providers to invest in infrastructure and may undermine the ability for those providers who have invested to recover that investment.

Communications Providers without their own infrastructure

- A1.100 Communications Providers without their own infrastructure would need to rely solely on wholesale broadband access services if they wanted to provide retail broadband services in Market 2.
- A1.101 Obligations on BT requiring it to provide Network Access on no undue discrimination terms would therefore allow other Communications Providers without their own infrastructure to compete on an equivalent basis in Market 2 and this would mean that they would be able to offer retail broadband services to citizens and consumers in Market 2. In addition, as BT would be required to give advance notification before it would be permitted to change wholesale broadband access prices Communications Providers without their own infrastructure in Market 2 would be able to change the prices of their retail products whenever BT changed its prices for wholesale broadband access.
- A1.102 On the other hand, BT would be able to vary the levels of its wholesale broadband access prices and therefore other Communications Providers would have less certainty in relation to price movements (compared to if there were price controls in place). It is possible that this would discourage entry into the provision of retail services in Market 2 if this created instability or unpredictable pricing.
- A1.103 Obligations on BT requiring it to provide Network Access on not unduly discriminatory terms would allow Communications Providers without their own infrastructure in Market 2 to compete on an equivalent basis in this market.

Citizens and consumers

- A1.104 As explained in paragraph A1.5, Ofcom considers that citizens and consumers are most likely to get a better deal in terms of price, quality and innovation if there is effective competition in the provision of retail broadband products. An obligation on BT to provide wholesale broadband access services in Market 2 would benefit citizens and consumers because it would mean that other providers could compete directly with BT's downstream (retail) operation in the provision of retail broadband services. Citizens and consumers would therefore benefit from the impact that competitive pressure would have in Market 2 and this would be likely to benefit them in terms of price, quality and in the provision of innovative services.
- A1.105 On the other hand, because the level of wholesale charges would not be constrained by ex-ante regulation, this may mean that retail prices may be higher than they otherwise might. Option 3 - price controls (discussed in the following paragraphs) potentially has a number of drawbacks relative to option 2, in that it may create disincentive effects on wholesale broadband access providers. Ofcom considers that in the longer term option 2 would be more likely to encourage investment and innovation to the benefit of consumers.

Option 3 (price controls)

BT

- A1.106 Price controls and cost orientation are intended to ensure that a Communications Provider with SMP in a particular market does not abuse its market position by

setting prices above the competitive level (that is, the level that would be set in a competitive market). Prices would be set on the basis of BT's costs. Price controls would include a forward-look of how those costs may be expected to change over the period of the price control. This would be with the intention of preventing BT from setting prices which allowed it to make monopoly profits and, at the same time, aimed to introduce incentives on BT to become more efficient by reducing costs and outperforming the control.

- A1.107 If the price control is set at too weak a level (i.e. the price cap is set at a level too high), it would be relatively easy for BT to outperform the control which in turn would allow it to earn profits in excess of its cost of capital. This outcome could be equivalent in effect to having no price controls.
- A1.108 Alternatively, a 'well judged' price control may not deliver the intended efficiency benefits, as BT might seek to outperform the price control by reducing the quality of the services, and hence costs, rather than increasing its efficiency. Thus, a potential unintended consequence of price controls is deterioration in the quality of service, although regulatory mechanisms could be introduced to counter this occurrence (e.g. by requiring certain quality standards to be achieved).
- A1.109 Lastly, if the price control is set at too strict a level (i.e. the price cap is set at a level too low) then it will limit the ability of BT to achieve a reasonable return and this in turn could result in; a deterioration in quality levels and/or a discouragement of investment and innovation.
- A1.110 The broadband market is characterised by significant growth and ongoing innovation and this is expected to remain the case for the period covered by this review. A price control would therefore require Ofcom to anticipate the expected growth and level of innovation and this leads to a much higher risk that we end up with one of the undesirable regulatory determined outcomes described above.
- A1.111 Requiring BT to provide Network Access and not to unduly discriminate, but without price controls (i.e. Option 2) would prevent BT from leveraging its SMP at the wholesale level into downstream (retail) markets and accordingly would encourage retail competition. However, it would also give BT the freedom to respond to consumer demands for new and innovative products and to make any corresponding changes to the level of investment, and hence prices, necessary to achieve this.
- A1.112 The trade-off in this situation is therefore between allowing the market to be more responsive to consumer demands, as opposed to a regulated outcome, and avoiding consumer detriment through excessive pricing. However, it needs to be recognised that one of the proposed requirements under Option 2 is accounting separation. Absent a price control Ofcom would therefore still be able to monitor BT's profitability for its wholesale broadband access products and this could be used to inform any future decisions that Ofcom makes in relation to the need for price controls.

Communications Providers with their own infrastructure

- A1.113 Generally, a price control on BT is likely to act as a disincentive for Communications Providers to invest in their own infrastructure, as the market prices would be set based on BT's cost with a normal return (BT's cost of capital). As discussed in paragraph A1.84, Ofcom expects additional infrastructure rollout to occur in this market within the period covered by the review. Introducing a price control at this

time could therefore act as a disincentive to any future network rollout and thus the current geographic market definition could become fixed through the regulation. Further, the imposition of price controls at this time may undermine the ability for those providers who have invested to recover that investment.

- A1.114 However, as discussed in paragraph A1.84, even Communications Providers with their own infrastructure are unlikely to be in a position to provide service across the whole of this market and further the ability to piece together a complete coverage of this market, based on using multiple Communications Providers with their own infrastructure, is limited. This means that these Communications Providers would be reliant on wholesale products, at least in some parts of the market, in order to have a retail presence which extends across the whole of this market.
- A1.115 Providers who compete with BT at the retail level are likely to be primarily concerned about whether BT's retail business is getting preferential treatment. The no undue discrimination requirement in Option 2 is intended to address this concern and provide a level playing field. However, a price control is likely to provide more comfort to these providers as, if set correctly, it should remove any excess profits from the wholesale level and thus limit the possibility of leverage into downstream markets. However, as discussed above in paragraphs A1.106 to A1.112, there are issues around setting the 'correct' level in a price control, particularly in a developing market, and further under Option 2 Ofcom is able to monitor BT's profitability for its wholesale broadband access products.

Communications Providers without their own infrastructure

- A1.116 Providers who compete with BT at the retail level are likely to be primarily concerned about whether BT's retail business is getting preferential treatment. The no undue discrimination requirement in Option 2 is intended to address this concern and provide a level playing field. However, a price control is likely to provide more comfort to these providers as, if set correctly, it should remove any excess profits from the wholesale level and thus limit the possibility of leverage into downstream markets. However, as discussed above in paragraphs A1.106 to A1.112, there are issues around setting the 'correct' level in a price control, particularly in a developing market, and further under Option 2 Ofcom is able to monitor BT's profitability for its wholesale broadband access products.

Citizens and consumers

- A1.117 Price controls on BT's wholesale broadband access services would prevent BT from making excessive profits and could thus lead to lower retail prices, which would benefit citizens and consumers.
- A1.118 However, as discussed above in paragraphs A1.106 to A1.112, there are potential downsides to price controls, particularly in a developing market, such as; deterioration in quality levels and/or a discouragement of investment and innovation. Such outcomes would be against citizen's and consumer's interests.
- A1.119 Furthermore, in Market 2 price controls could potentially undermine emerging competition. Although in the short term citizens and consumers might benefit from the potentially lower prices achieved by price controls, there would be limited prospects for competition to emerge, which in the long term would provide a more effective driver for efficiency, innovations and lower costs.

Market 2 – Conclusion

A1.120 Ofcom's Impact Assessment has considered three options in relation to Market 2 and set out some of the advantages and disadvantages in relation to each of these. Ofcom considers that on balance Option 2 (the access and no undue discrimination obligation) is the most appropriate option and the one that it is likely to benefit citizens and consumers most for the period covered by this market review and therefore this is the regulatory approach on which the regulatory remedies set out in Section 6 have been based.

Annex 2

Alternative Broadband Technologies

Broadband provision via means other than cable modem and xDSL

A2.1 At the present time cable modem and xDSL (in particular ADSL, ADSL2 and ADSL2+) are the dominant technologies used in the provision of broadband access in the UK. Together these two technologies currently account for the vast majority of all broadband connections. However, alternative technologies are constantly under review and development. This annex considers some of the main alternative technologies and concludes whether any of them are likely to provide a sufficient competitive constraint in the wholesale broadband access market within the period of this review. The alternative technologies considered in this annex are:

- Wireless Fidelity (WiFi);
- Broadband Fixed Wireless Access (BFWA);
- Worldwide Interoperability for Microwave Access (WiMax);
- Mesh networks;
- Satellite;
- Powerline Technology; and
- Free space optics.

Wireless Fidelity (WiFi)

A2.2 WiFi is not considered an access technology, it is instead a standard that supports the inter-working of personal computers that are not physically connected – it is a wireless local area network (WLAN) standard. The WiFi standard can also be used to provide so-called ‘hotspots’ which are local access points in which anyone within close proximity (approximately <300m) to the WiFi antenna could use their laptop to access email or the internet. Such hotspots are becoming common in places such as; coffee shops, hotel lobbies and airport lounges.

A2.3 WiFi thus allows wireless local area networking and provides some limited local mobility at the end of an access connection. WiFi technology is therefore more likely to be used on the end of a broadband access connection rather than being a replacement for it.

Broadband Fixed Wireless Access (BFWA)

A2.4 BFWA is a line-of-sight radio technology with a typical range of up to 20 km that can be used to provide a high-speed data connection between the operators’ base station and the end users’ premises. It is thus capable of offering an alternative broadband access connection to cable and xDSL.

A2.5 BFWA technology has been available now for several years and whilst it has continued to be developed it has not yet become a mainstream alternative to cable or xDSL. Instead it is more generally considered to be an ‘in-fill’ technology that

could be used to provide service to areas where cable and xDSL technologies cannot address due to technical and/or economic reasons.

- A2.6 It is still possible that BFWA technology could offer a competitive constraint to cable and xDSL technologies in the longer term, however at the present time its availability and take-up is low. For this reason Ofcom does not believe that it is likely to provide a sufficient competitive constraint in the wholesale broadband access market within the period of this review.

Worldwide Interoperability for Microwave Access (WiMax)

- A2.7 WiMax technology allows for the provision of wireless wide area networks (WWAN) and can cover distances up to 50 km from the access point and therefore could be used to provide broadband access. WiMax is a complementary technology to WiFi as the latter could still be used in the home to provide a LAN with the former providing the access connection.

Mesh Networks

- A2.8 Most wireless based broadband networks provide “point to multi-point” capabilities. Mesh networks, however, have the potential to provide community networks in rural areas. Mesh networks require each participating household or business to have a radio antenna installed at their premises and these then provide the capability for each participant to transmit to each other. Mesh technology does away with the need for large antennae or masts used to transmit to each individual customer in traditional point to multi-point wireless solutions.

Broadband Satellite

- A2.9 Broadband satellite technology has an ability to provide broadband capabilities to end-users based nearly anywhere in the UK. End-users need a satellite dish and a modem and can be provided with a one-way connection (download only) or a two-way connection (the former would mean that the end-user would need to obtain a dial-up service as well). Satellite broadband services are widely available and there are many providers in the market who can offer variously one-way, two-way or both one-way and two-way and at many bandwidths. Prices for these services also vary considerably.
- A2.10 Satellite broadband services have features common to wireless broadband services in that there needs to be ‘line of sight’ and that they could be used to provide broadband services in areas in which it would be prohibitive to install fixed broadband services. They are, however, likely to be expensive as well and, in many instances, therefore, are likely to be suitable for the most remote areas or for offshore services.

Powerline Technology

- A2.11 Powerline technology uses the electricity supply network to provide two-way broadband connections by using filters that can separate the power supply flowing along the cable from communications signals. Each substation is connected to a broadband network and the substation sends the signal to the end-user of the electricity network where a filtering and conditioning unit separates the electricity supply from the communications signal.

- A2.12 Ofcom is not aware, however, of anyone running a commercial service in the UK which utilises power line technology. The technology has, however, advanced in some other countries where it is seen as a potentially viable alternative to DSL or cable services.

Fibre To The Home (FTTH)

- A2.13 FTTH provides broadband services over an optical fibre link to the consumers' home (replacing the conventional copper pair or coaxial cable). This potentially allows services with higher bandwidth than those offered over ADSL and cable modems. However, this technology is not currently being offered to broadband end users in the UK.

Free space optics

- A2.14 Free space optics ('FSO') are wireless laser point-to-point or point-to-multipoint line-of-sight broadband services which can provide capacity far in excess of traditional methods of broadband delivery. FSO, however, provides for a last mile presence only and therefore is likely to be used as an add-on to a local or wide area network giving greater capacity between points or to multi-points at the edge of the network. Quite often, FSO systems are used as a back-up to existing fixed links rather than as a direct replacement for them.
- A2.15 Again, the potential for these alternative technologies to provide an additional competitive constraint in the wholesale broadband access market is a longer term possibility in the UK and beyond the time frame for the current market review. Services using these technologies are either not yet available or have not yet attained a mass-market presence.

Conclusion

- A2.16 Whilst these alternative technologies are capable of providing broadband access to date they have made little impact in the wholesale broadband access market. Although, these technologies have developed over the past few years and are likely to develop further in the future the same is likely to be true of cable and xDSL technologies.
- A2.17 Further the broadband market has experienced significant growth over the past few years and whilst it is expected to continue to grow over the next few years the rate of growth is likely to slow down as the market approaches saturation. Therefore, the opportunity for these alternative technologies to establish a foothold in this market and to generate sufficient volumes, which is necessary to bring the unit cost down, is closing.
- A2.18 Although it is possible that alternative technologies could play a role in the future for the reasons discussed above Ofcom considers that they are not sufficiently widespread or utilised to have any real impact in the wholesale broadband access market within the period of this review. Ofcom's provisional conclusion is, therefore, that it need not carry out a more detailed investigation into the emergence of these technologies.

Question 15: Do respondents agree that the alternative broadband technologies referred to in this annex are unlikely to be sufficiently widespread or utilised within the period of this review to constrain prices in the market for wholesale broadband access services?

Annex 3

Geographic Data Analysis

Introduction

- A3.1 Ofcom analysed data provided by Communications Providers (CPs) as a key part of the process to define the geographic scope of the wholesale broadband access market(s).
- A3.2 In the 2003/04 Review Ofcom concluded that there were two geographic markets for asymmetric broadband origination: the UK (excluding the Hull area) and the Hull area. The principal purpose of the geographic data analysis described in this Section is to re-assess the above conclusion given the significant developments since the 2003/04 Review.
- A3.3 Kingston 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.
- A3.4 Geographic data analysis to inform the geographic scope of the wholesale broadband access product market defined in Section 4 has been conducted on two levels: an analysis of coverage and market shares based on the current wholesale broadband access network presence of CPs; and an analysis of coverage and market shares based on a forward-looking assessment of LLU roll-out and market growth.

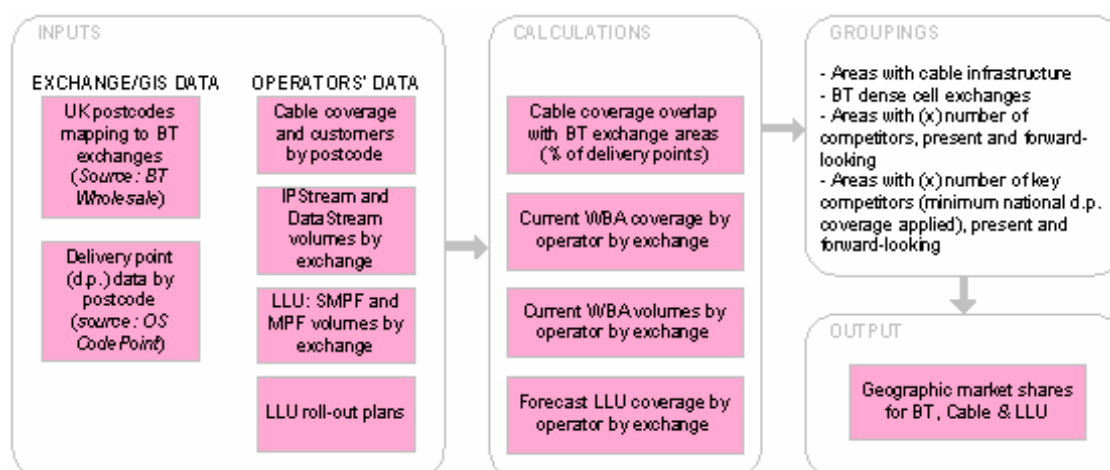
Geographic unit

- A3.5 As concluded in Section 4, Ofcom is proposing to use individual local exchange footprints as the base geographic unit when identifying the geographic extent of the market. There are 5,587 local exchanges in BT's network and 14 in Kingston's network⁴⁹.

Overview of the model structure

- A3.6 The model structure used for the UK (excluding the Hull area) geographic analysis is illustrated in Figure A3.1. Ofcom also collected data from operators in relation to the Hull area.

⁴⁹ This figure includes Main Distribution Frames (MDF) but does not include Active Street Cabinets (ASC).

Figure A3.1: Model structure for the Geographic Data Analysis in the UK (excl. the Hull area)

Data provided by wholesale Communications Providers

Data provided by BT and ntl:Telewest

A3.7 The data provided by BT and ntl:Telewest is summarised in Table A3.1.

Table A3.1: Data provided by BT and ntl:Telewest

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
ntl:Telewest	Broadband cable	<ul style="list-style-type: none"> Broadband customers by postcode

Data provided by LLU operators

A3.8 LLU operators were asked to confirm which exchanges they had enabled and provide their most recent roll-out plans, identifying exchanges which they intended to enable and the date by which they planned to be in a position to offer services from these exchanges. This forecast data was obtained from LLU operators through formal information requests.

A3.9 Operators also identified the types of services based on LLU that they intended to offer and the type of LLU – shared or full – that will support the services.

Other input data

- A3.10 Other source data for the geographic analysis included information from BT and Kingston on their mapping of UK postcodes to exchanges and Ordnance Survey data for the number of delivery points within each UK postcode.

Exchange size calculations

- A3.11 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.
- A3.12 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%.
- A3.13 The distribution of exchanges by their size is illustrated in Figure A3.2 and the results summarised in Table A3.2.
- A3.14 As would be expected, the large exchanges are situated around major urban centres. Note that each point represents the location of the exchange itself and not the precise area served by the exchange.

Figure A3.2: Local exchanges by size (delivery points)

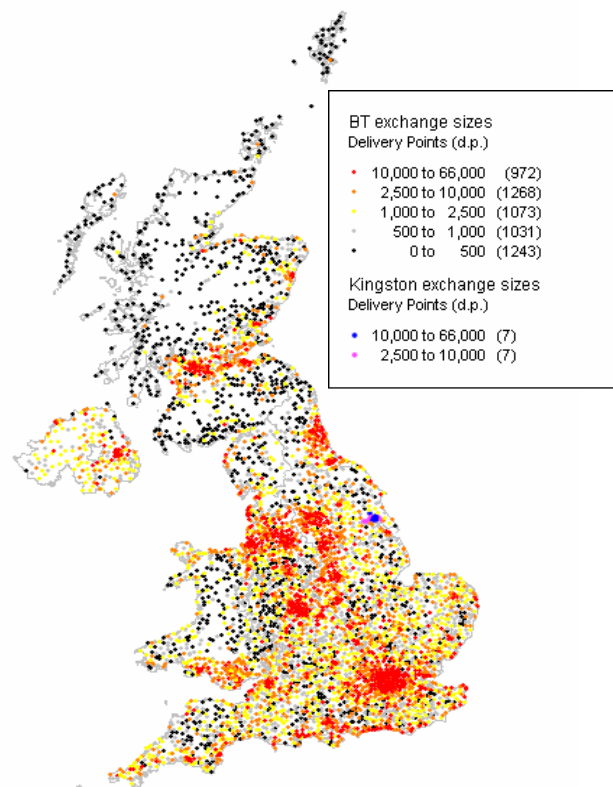
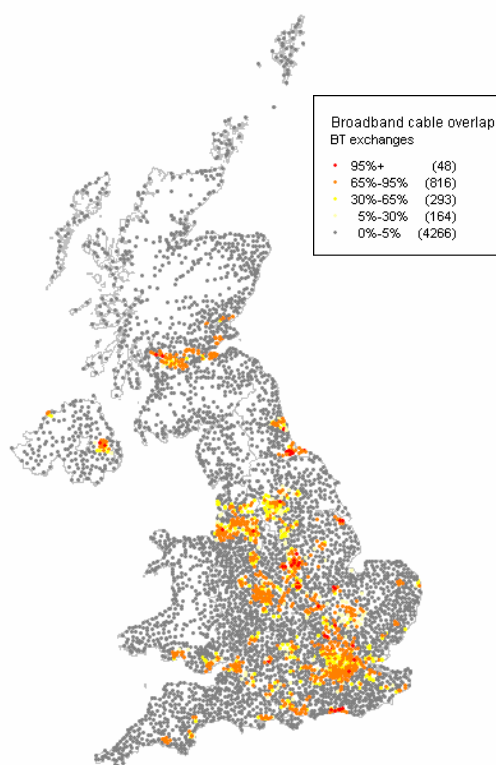


Table A3.2: Breakdown of local exchanges by size

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

Cable overlap calculations

- A3.15 As broadband cable infrastructure is unrelated to the BT exchange areas, the degree of overlap between broadband cable coverage and the BT exchange areas was calculated for each exchange, to allow Ofcom to assess the potential level of competition from the cable operator on an exchange-by-exchange basis.
- A3.16 ntl:Telewest provided data on their broadband cable coverage at postcode level. Mapping this directly to the delivery point data for UK postcodes gives rise to a 45% national delivery point coverage for broadband cable.
- A3.17 A map showing how broadband enabled cable areas map onto BT's exchanges is shown in Figure A3.3. If the overlap at which cable is considered to provide a competitive constraint in an exchange is set at 65%, the level proposed by Ofcom in its methodology, then there are 857 exchanges in which the cable operator is considered to be present and these 857 exchanges serve 45% of the delivery points in the UK. It should be noted however that cable does not actually serve all of these delivery points as it does not have full overlap with all of the 864 exchanges.

Figure A3.3: Broadband cable overlap with BT exchanges

LLU coverage

- A3.18 Analysis on the data for July 2006 indicates that there are 22 'active' (non-BT) LLU operators.
- A3.19 As outlined in Table A3.3, the coverage of individual LLU operators varies widely with many operators focusing on narrow areas representing less than 10% coverage. 991 BT exchanges (54% of UK delivery points) are enabled by at least one LLU operator, and the maximum number of operators active in any one exchange is 10. As expected, there is a high correlation between the size of the exchange and the number of LLU operators active in an exchange.

Table A3.3: Breakdown of all non-BT LLU operators by their planned coverage over time

Coverage	Jul 06	Jan 07	Jan 08
up to 10%	22	22	22
up to 20%	7	8	8
up to 30%	4	8	8
up to 40%	1	7	8
up to 50%	0	5	7
up to 60%	0	3	7
up to 70%	0	0	2

- A3.20 Ofcom's proposed approach is to include only those LLU operators who plan to have at least 10% coverage (by January 2008) for the purposes of the geographic market assessment.
- A3.21 As can be seen from Table A3.3, there are currently 7 LLU operators with more than 10% coverage and this increases to 8 operators by January 2007. The number of LLU operators with more than 10% coverage then remains at 8 by January 2008. These 8 LLU operators are referred to as the 'Principal LLU Operators'.

The Principal LLU Operators

- A3.22 Table A3.4 outlines the significant increase in coverage expected to January 2007 by the Principal LLU Operators. This represents the combined coverage of these operators. Further increases in coverage are expected during 2007 but at a much lower rate.

Table A3.4: Current and forecast delivery point coverage for the Principal LLU operators

	Jul-06	Jan-07	Jan-08
Coverage	46%	72%	77%
No. exchanges	720	1,320	1,503

The Principal Operators

- A3.23 If BT and ntl:Telewest are added to the Principle LLU Operators then there is a total of 10 operators (“the Principal Operators”) upon which the geographic market assessment can be based.
- A3.24 Table A3.5 provides a breakdown of the number of exchanges (and the percentage of homes/businesses they cover) by the number of Principal Operators within each exchange footprint. Once again, Ofcom has used data at three time points to inform its geographic market definition: actual data from July 2006 and forecast data for January 2007 and January 2008.

Table A3.5: Exchange breakdown by number of operators in exchange footprint⁵⁰

No. of Principal Operators	Jul 06		Jan 07		Jan 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
1 (BT only)	4,412	37.4%	4,074	24.1%	3,932	20.4%
2	582	22.1%	363	8.8%	312	5.9%
3	249	13.9%	201	7.7%	173	5.4%
4	88	6.6%	159	7.3%	155	6.2%
5	70	6.0%	135	7.8%	110	4.6%
6	54	3.8%	131	7.2%	139	6.6%
7	47	3.5%	119	7.4%	147	8.0%
8	77	6.2%	153	10.6%	170	10.3%
9	8	0.6%	172	12.7%	272	19.2%
10	0	0.0%	80	6.4%	177	13.6%

Grouping exchanges

- A3.25 The next stage of the analysis was to assess the scope for consolidating geographic areas, starting from the base unit of individual exchanges, to inform the definition of the geographic market(s) boundary(s) in terms of the homogeneity of competitive conditions.
- A3.26 The aim was to define groups of exchanges based on the factors that could be indicative of differing competitive conditions in different geographic areas, and define where the possible breaks in homogeneity of competitive conditions might occur. This could be driven by competition from cable and/or the LLU operators.
- A3.27 Ofcom believes that defining groups based on the number of operators within each exchange footprint, as illustrated in Table A3.5, is the most appropriate starting point for this analysis to capture the different competitive conditions that could exist during the period of the review.
- A3.28 Ofcom, as discussed in Section 4, has created three groupings of exchanges using the number of Principal Operators providing services from the exchange: BT only, 2 or 3 operators, 4 or more operators. The size of these groups and their respective UK delivery point coverage, based on the current market data (July 2006) and

⁵⁰ Note that this part of the analysis does not include the Hull area.

forecast data from operators at January 2007 and January 2008, are provided in Table A3.6.

Table A3.6: Three exchange groups using number of Principal Operators within each exchange footprint

No. of Principal Operators	Jul 06		Jan 07		Jan 08	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
BT only	4,412	37.4%	4,074	24.1%	3,932	20.4%
2 or 3	831	36.0%	564	16.6%	485	11.3%
4 or more	344	26.6%	949	59.3%	1170	68.3%

A3.29 In addition, as discussed in Section 4, Ofcom believes that to identify areas of sufficiently homogeneous competitive conditions exchange size is an important factor to inform the geographic boundary, and that an exchange size of at least 10,000 end users is a size from which sustainable entry is achievable.

A3.30 The final exchange groupings were therefore defined on the basis of the number of Principal Operators present in the individual exchanges and the number of delivery points served by the exchange. The number of Principal Operators present is based on the forecast data for January 2007. These group sizes are detailed in Table A3.7.

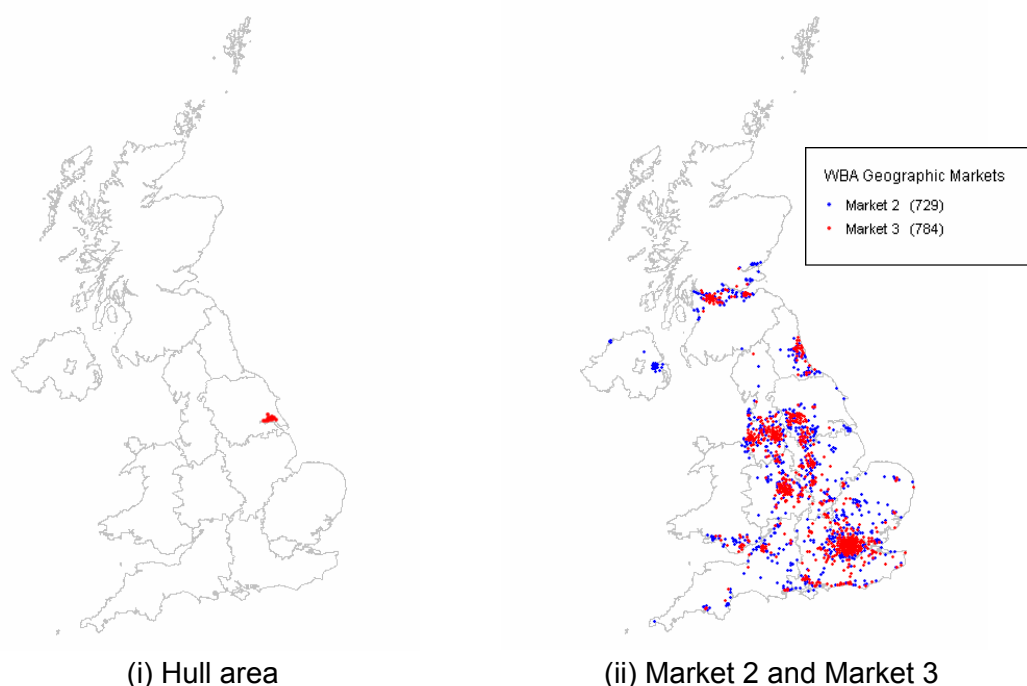
Table A3.7: Groupings based on number of operators and exchange size

Market	No. Exchs	Coverage
BT only exchanges	4,074	24.1%
Exchanges with 2 or 3 operators AND exchanges with 4 or more operators where the exchange serves less than 10,000 homes and businesses	729	21.5%
Exchanges with 4 or more operators where the exchange serves 10,000 or more homes and businesses	784	54.4%

Wholesale broadband access markets

A3.31 Figure A3.4 maps the exchanges belonging to the 4 geographic markets resulting from Ofcom's proposal for the definition of the exchange groupings for the definition of the geographic boundary of the wholesale broadband access market:

- exchanges where Kingston Communications is the only Principal Operator, being the Hull area;
- exchanges where BT is the only Principal Operator ("Market 1");
- exchanges where there are 2 or 3 Principal Operators and exchanges where there are 4 or more Principal Operators where the exchange serves less than 10,000 homes and businesses ("Market 2"); and
- exchanges where there are 4 or more Principal Operators and where the exchange serves 10,000 or more homes and businesses ("Market 3").

Figure A3.4: Maps illustrating the exchanges in the Hull area, Market 2 and Market 3

A3.32 Note that each point represents the location of the exchange itself and not the precise area served by the exchange. Also note that Market 1 exchanges are all other areas not represented in Figure A3.4 (i) and (ii).

Sensitivity analysis

A3.33 In order to identify the separate 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 suppliers required in an exchange footprint (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 (excluding the Hull areas), as a reference.⁵¹

Table A3.7: Sensitivity to changes in the exchange size factor (X)

	X = 8,000		X = 10,000		X = 12,000		X = 14,000	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	4,074	24.1%	4,074	24.1%	4,074	24.1%	4,074	24.1%
Market 2	619	17.9%	729	21.5%	847	26.2%	973	32.2%
Market 3	894	58.0%	784	54.4%	666	49.7%	540	43.7%

A3.34 Changes in the exchange size factor affect Market 2 and Market 3 only; increasing the exchange size factor shifts exchanges from Market 3 to Market 2, and vice-

⁵¹ Note: the combined coverage of Markets 1, 2 and 3 represent 99.3% of the total UK delivery points; the remaining 0.7% of delivery points are in the Hull area.

versa. Between exchange size factor values of 8,000 and 14,000, the largest variation in the size of any one market is 14% of delivery points.

Table A3.8: Sensitivity to changes in the minimum number of suppliers required in an exchange footprint

	Min suppliers = 3		Min suppliers = 4		Min suppliers = 5		Min suppliers = 6	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	4,074	24.1%	4,074	24.1%	4,074	24.1%	4,074	24.1%
Market 2	650	16.8%	729	21.5%	813	26.7%	911	33.4%
Market 3	863	59.1%	784	54.4%	700	49.2%	602	42.5%

A3.35 Changes in the minimum number of suppliers required in an exchange footprint affect Market 2 and Market 3 only; increasing this factor shifts exchanges from Market 3 to Market 2, and vice-versa. Between values of 3 and 6 for the number of suppliers, the largest variation in the size of any one market is 16% of delivery points.

Table A3.9: Sensitivity to changes in the amount of cable overlap required

	Overlap > 55%		Overlap > 65%		Overlap > 75%		Overlap > 85%	
	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage	No. Exchs	Coverage
Market 1	4,042	23.6%	4,074	24.1%	4,125	24.9%	4,186	25.9%
Market 2	756	21.7%	729	21.5%	682	21.1%	634	20.9%
Market 3	789	54.7%	784	54.4%	780	54.0%	767	53.2%

A3.36 Changes in the cable overlap required affect all three markets, but none are subject to a significant change when this factor is altered. Between values of 55% and 85% for the cable overlap required, the largest variation in the size of any one market is 2% of delivery points.

Exchange lists for the UK (excluding Hull) Geographic Markets

A3.37 The list of exchanges (MDF code only) that fall within Market 1, Market 2 and Market 3, as defined using Ofcom's proposed methodology for defining the geographic boundaries of the wholesale broadband access market, are listed below. Ofcom has also provided this information in a supplementary spreadsheet.

Market 1 (4,074 exchanges)

A3.38 Exchanges where BT is the only Principal Operator.

CMAACK, CMALB, CMALC, CMALDM, CMBARF, CMBAR, CMBIF, CMBKN, CMBROB, CMBRAU, CMBRE, CMBRI, CMBWN, CMCLA, CMCLAV, CMCOLE, CMCRI, CMCUR, CMDIT, CMEARL, CMELMD, CMETT, CMFIL, CMFRA, CMFUR, CMGREA, CMHAMP, CMHARBU, CMHASN, CMHEN, CMHIG, CMKINE, CMKVR, CMLAP, CMMART, CMMER, CMMID, CMMOR, CMMORT, CMPAI, CMPAT, CMPEB, CMQUA, CMSFD, CMSHE, CMSMBK, CMSNI, CMSON, CMSOUC, CMSWI, CMTAN, CMWEE, CMWEL, CMWESH, CMWOL, CMWOR, CMWYT, CMYOX, EAABR, EAABY, EAACL, EAAALB, EAARD, EAARR, EAASD, EAASW, EAATT, EAAYL, EABAC, EABAD, EABAW, EABBY, EABDC, EABDF, EABEC, EABEY, EABFD, EABFN, EABGC, EABGY, EABIL, EABIN, EABIR, EABKW, EABLA, EABLU, EABLY, EABMD, EABMF, EABMK, EABNC, EABND, EABNH, EABNM, EABNW, EABOT, EABRD, EABRI, EABRK, EABRP, EABRR, EABRT, EABRU, EABSM, EABTF, EABTM, EABUR, EABUX, EABYF, EACAA, EACAI, EACAR, EACAX, EACDN, EACFD, EACHA, EACHF, EACHR, EACHT, EACHY, EACLA, EACLE, EACLV, EACLY, EACOD, EACOG, EACOM, EACOP, EACOX, EACRO, EACST, EACTD, EACTP, EACTS, EACUL, EACWT, EADAN, EADEB, EADED, EADIC, EADIS, EADNE, EADNM, EADOC, EADOW, EADSM, EAEGB, EAEHL, EAELC, EaelM, EAELS, EAELV, EAEMS, EAERD, EAERI, EAESW, EAEYE, EAEYK, EAFAK, EAFDM, EAFFD, EAFIN, EAFLE, EAFLT, EAFME, EAFML, EAFOR, EAFOU, EAFOW, EAFRN, EAFRP, EAFSD, EAFTN, EAFUN, EAFXD, EAFYF, EAGAR, EAGAY, EAGBF, EAGBN, EAGBT, EAGCR, EAGCT, EAGDE, EAGDM, EAGES, EAGHD, EAGHM, EAGHY, EAGLE, EAGMS, EAGOL, EAGRE, EAGR, EAGRY, EAGSM, EAGST, EAGWH, EAGWK, EAGYD, EAGYT, 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, EAhSD, EAhST, EAhSW, EAhTM, EAhTT, EAhUL, EAhWH, EAhWO, EAILK, EAING, E AISL, EAKBC, EKAKL, EAKEN, EAKSH, EAKSL, EAKTN, EALAK, EALAT, EALAV, EALAY, EALIN, EALIT, EALNT, EALOD, EALPT, EALST, EALT, EALWT, EAMAD, EAMAN, EAMBN, EAMEN, EAMET, EAMFD, EAMHD, EAMHM, EAMID, EAMIL, EAMKT, EAMLK, EAMLS, EAMOR, EAMTC, EAMTS, EAMUL, EAMUN, EANAC, EANAR, EANAY, EANDL, EANE, EANEW, EANPT, EANWS, EAOCC, EAOFF, EAORF, EAORM, EAORS, EAOUS, EAOVE, EPAK, EAPEA, EAPEL, EAPLE, EPOT, EPAP, EPAPC, EPAPL, EPAPR, EPAPY, EPAUI, EPAR, EPART, EPARV, EPARD, EARN, EARE, EAREN, EARID, EARMS, EAROO, EAROW, EARO, EASAL, EASAP, EASBM, EASBN, EASBY, EASCK, EASCR, EASFM, EASFR, EASFT, EASGM, EASGN, EASHE, EASHI, EASHL, EASHM, EASHR, EASIC, EASIL, EASIX, EASMA, EASMD, EASMN, EASNA, EASOH, EASOS, EASRM, EASRP, EASRY, EASTB, EASTD, EASTK, EASTL, EASTN, EASTR, EASTT, EASTW, EASUR, EASUT, EASWD, EASWL, EASWM, EASWN, EASWO, EASWT, EASXM, EASXP, EASYD, EATER, EATFD, EATHA, EATHE, EATHU, EATIP, EATIV, EATKL, EATLL, EATLW, EATNM, EATOL, EATSC, EATTS, EATWI, EAUBB, EAWAN, EAWBS, EAWCT, EAWDB, EAWDF, EAWEL, EAWEN, EAWFY, EAWIL, EAWIN, EAWIV, EAWIX, EAWKB, EAWLD, EAWLW, EAWLY, EAWMK, EAWMS, EAWOD, EAWOL, EAWOR, EAWRD, EAWRE, EAWRI, EAWRO, EAWRU, EAWSM, EAWSP, EAWST, EAWTL, EAWTN, EAWTS, EAWWR, EAWYM, EAYOX, EMABBOT, EMABRIP, EMALFRE, EMALREW, EMALSTO, EMAMBER, EMANCAS, EMASBOU, EMASFOR, EMBAIN, EMBAKEW, EMBARTO, EMBENE, EMBENWI, EMBGWOR, EMBILLE, EMBILLI, EMBILST, EMBLAKE, EMBLEAS, EMBLISW, EMBLLTO, EMBOSTO, EMBOTTE, EMBOURN, EMBOZEA, EMBRAIL, EMBRIGS, EMBRIXW, EMBROUG, EMBUCKD, EMBUCKM, EMBULWI, EMBURGH, EMBUTTE, EMBYFIE, EMBYTHO, EMCABYT, EMCARSI, EMCASTO, EMCHATT, EMCHRIS, EMCHSTL, EMCLIFT, EMCLIPS, EMCLOPT, EMCNTON, EMCOPEN, EMCOLLI, EMCOTGR, EMCOTTE, EMCRAF, EMCRLN, EMCROWL, EMCROXT, EMCRTON, EMCRWLL, EMCTSK, EMCULVE, EMCWRS, EMDARLE, EMDEPI, EMDETHI, EMDFFIE, EMDINGL, EMDNGTN, EMDODDI, EMDOWSB, EMDRAYC, EMDSSFO, EMDUDDI, EMEASTB, EMEASTH, EMEASTS, EMEDENH, EMEDWIN, EMEKKBY, EMELLAS, EMELTON, EMEMPIN, EMESSTL, EMETWLL, EMFARN, EMFENTO, EMFLECK, EMFOLKI, EMFOSDY, EMFRIDA, EMFRISK, EMFULBE, EMGADDE, EMGEDNE, EMGILLS, EMGLINT, EMGOSBE, EMPONT, EMGRETC, EMGRETI, EMGRTO, EMGRGTGL, EMGUYHI, EMHACKL, EMHECKI, EMHLBCH, EMHLLTO, EMHNGTN, EMHOARC, EMHOLSJ, EMHOLSM, EMHORSL, 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, EMMAARC, EMMAIDW, EMMANEA, EMMARCH, EMMARKB, EMMARSM, EMMATLO, EMMEDBO, EMMELBO, EMMERES, EMMESHM, EMMKFIE, EMMMLCHA, EMMMLTON, EMMNTON, EMMORCO, EMMRTON, EMNEBOR, EMNETHB, EMNEWLE, EMNEWOL, EMNEWTO, EMNLUFF, EMNWTON, EMOOLD, EMOSSGA, EMOUNDL, EMOVERS, EMPADVE, EMPAPSA, EMPARWI, EMPATTI, EMPAULE, EMPFATL, EMPLEAS,

EMPNCHB, EMPREST, EMRDDEE, EMRGATE, EMMRMSEY, EMROCKI, EMROTTB, EMRPLEY, EMRPTON,
 EMRRSBB, EMSAWTR, EMSBSEY, EMSCALF, EMSCREM, EMSHARD, EMSHIRE, EMSILVE, EMSKGN,
 EMSLFRD, EMSOMER, EMSOSH, EMSOUTH, EMSPCOT, EMSPLSB, EMSRAUC, EMSRFLT, EMSTICK,
 EMSTKEG, EMSUBGE, EMSUDBU, EMSUTER, EMSUTSJ, EMSUTTO, EMSWATN, EMSWSHD, EMTBSHE,
 EMTERSJ, EMTGBY, EMTHTST, EMTHTOR, EMTHRAP, EMTHRNY, EMTHTL, EMTILTO, EMTNGND,
 EMTRVES, EMTTYDD, EMTUTBU, EMTWCRO, EMUPPIN, EMUPWLL, EMWALGR, EMWALSA, EMWARBY,
 EMWARSO, EMWDHOU, EMWEDDO, EMWELFO, EMWELNY, EMWHAPL, EMWHISS, EMWHTTO,
 EMWINST, EMWINWI, EMWIOTH, EMWIRKS, EMWISSM, EMWLTHA, EMWLVEY, EMWMNDH, EMWNFLT,
 EMWOLEY, EMWSFRD, EMWYSWO, EMYARDL, EMYOULG, ESABE, ESABF, ESABL, ESABN, ESABR,
 ESABY, ESACB, ESACG, ESAIR, ESALL, ESALM, ESALV, ESALY, ESAMU, ESANC, ESANS, ESARB,
 ESARH, ESARN, ESARR, ESARY, ESASB, ESASH, ESATH, ESAVO, ESAYT, ESBAF, ESBA, ESBBE,
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 ESCAR, ESCAT, ESCAY, ESCER, ESCHI, ESCLD, ESCLF, ESCLH, ESCLO, ESCLR, ESCLV, ESCOB,
 ESCOL, ESCOM, ESCOU, ESCOW, ESCOY, ESCRF, ESCRG, ESCRL, ESCRN, ESCRO, ESCSR, ESCUP,
 ESDAB, ESDEC, ESDER, ESDIR, ESDOL, ESDOP, ESDOU, ESDRO, ESDUG, ESDUK, ESDUN, ESDUR,
 ESDUS, ESEAL, ESEAR, ESEDD, ESEDZ, ESELI, ESERR, ESESS, ESETB, ESETV, ESEYE, ESFA, ESFAU,
 ESFER, ESFET, ESFFR, ESFIN, ESFLK, ESFOL, ESFOR, ESFOS, ESFRD, ESFRI, ESGAG, ESGAL, ESGAR,
 ESGAS, ESGAT, ESGIF, ESGLA, ESGLE, ESGLF, ESGLI, ESGLL, ESGLM, ESGOW, ESGRB, ESGRD,
 ESGRE, ESGRT, ESGSH, ESGUL, ESHAD, ESHAR, ESHAW, ESHER, ESHIL, ESHUM, ESIK, ESIKR,
 ESINC, ESINN, ESINW, ESIVA, ESIVB, ESIVG, ESIVS, ESJED, ESKCA, ESKEL, ESKEN, ESKGH, ESKGL,
 ESKIL, ESKIN, ESKIP, ESKKM, ESKLO, ESKLR, ESKLS, ESKLY, ESKNR, ESKRL, ESKRM, ESLAD, ESLAK,
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 ESLTM, ESLUN, ESLUT, ESMAD, ESMAL, ESMEL, ESMEK, ESMEL, ESMEN, ESMET, ESMIN, ESMON,
 ESMRB, ESMUC, ESMUI, ESMUT, ESNBF, ESNBG, ESNML, ESNOA, ESNPT, ESNRB, ESNRW, ESNTY,
 ESXOT, ESPCD, ESPEB, ESPIH, ESPIT, ESPRM, ESPTI, ESQUE, ESRAI, ESRES, ESROX, ESSCO, ESSEL,
 ESSLA, ESSLY, ESSMA, ESSRA, ESSRK, ESSRM, ESSRT, ESSRY, ESSTB, ESSTC, ESSTF, ESSTH,
 ESSTM, ESSTN, ESSTO, ESSTW, ESSWI, ESSYB, ESTAR, ESTAY, ESTEA, ESTEM, ESTEV, ESTHO, ESTIL,
 ESTRO, ESTRY, ESTUM, ESUPL, ESWAL, ESWCA, ESWES, ESWHK, ESWHS, ESWLI, ESYAR, ESYET,
 ESYRF, LCABT, LCALL, LCAMB, LCAPP, LCARM, LCASD, LCASP, LCBAD, LCBAM, LCBAN, LCBAR, LCBAS,
 LCBBN, LCBEC, LCBEL, LCBEM, LCBMO, LCBOB, LCBOD, LCBOR, LCBRC, LCBRH, LCBRI, LCBRN,
 LCBRS, LCBRT, LCBTN, LCBUG, LCBUS, LCBUT, LCCAF, LCCAL, LCCAT, LCCBK, LCCHA, LCCHE, LCCHI,
 LCCLA, LCCLE, LCCOC, LCCON, LCCRB, LCCRG, LCCRO, LCCRS, LCCTN, LCCUL, LCDEN, LCDLS,
 LCDTF, LCDUN, LCEAR, LCECC, LCEGR, LCESK, LCFLO, LCFRE, LCFRT, LCGAL, LCGAR, LCGIL, LCGIS,
 LCGLE, LCGOS, LCGRC, LCGRE, LCGRS, LCGRY, LCGSF, LCGYG, LCHAC, LCHAL, LCHAM, LCHAR,
 LCHAS, LCHAW, LCHAY, LCHBK, LCHBY, LCHET, LCHFY, LCHMK, LCHOG, LCHOL, LCIING, LCKES,
 LCKFS, LCKIR, LCKKB, LCKLE, LCKNO, LCKST, LCKTH, LCLAM, LCLAZ, LCLGD, LCLKB, LCLNB, LCLOG,
 LCLOI, LCLON, LCLOR, LCMAR, LCMEL, LCMIL, LCMIL, LCMIL, LCMIL, LCNBL, LCNBR, LCNIC, LCORT, LCPAR,
 LCPIL, LCPYB, LCRAU, LCRAV, LCRDH, LCRIC, LCRKF, LCRUF, LCRVW, LCSAM, LCSAT, LCSCA, LCSEA,
 LCSED, LCSEG, LCSEL, LCSHA, LCSIL, LCSKE, LCSLA, LCSOW, LCSTM, LCSTO, LCSTV, LCSVD, LCTHR,
 LCTOD, LCTUR, LCUVL, LCWAL, LCWAL, LCWEE, LCWET, LCWGT, LCWHA, LCWHI, LCWHW, LCWIL,
 LCWIN, LCWOR, LCWSK, LNDZ2, LNSFD, LNTHB, LSBET, LSMOG, LSNUT, LSOTT, LSWOL, LVAUG,
 LVFRO, LVHIG, LVKIN, LVMAN, LVMOO, LVMPK, LVNCB, LVPADPK, LVRAI, LVUPH, LVWTW, LWDEN,
 LWHA, LWWRA, MRALD, MRARL, MRBUC, MRCHA, MRCHI, MRCHL, MRCOM, MRDIS, MRHTN, MRLNR,
 MRLOW, MRMHE, MRMOB, MRNRD, MRPIC, MRRSP, MRSAN, MRSUT, MRTAD, MRTID, MRWEA, MRWHA,
 MRWNC, MYADD, MYAIR, MYALD, MYAMP, MYAPP, MYARN, MYART, MYBAG, MYBBY, MYBEE, MYBEN,
 MYBIL, MYBIR, MYBKA, MYBKE, MYBLU, MYBNS, MYBOL, MYBOR, MYBOS, MYBPI, MYBPM, MYBPW,
 MYBRE, MYBRN, MYBRW, MYBUB, MYBYP, MYCAL, MYCAM, MYCAW, MYCAY, MYCLO, MYCLO, MYCON,
 MYCOP, MYCOX, MYCRA, MYCRF, MYCTN, MYDAL, MYDAR, MYDFF, MYDUN, MYEAO, MYEAT, MYELV,
 MYESC, MYFIL, MYFLM, MYFLO, MYFLX, MYGAT, MYGIL, MYGOO, MYGRA, MYGRE, MYGRG, MYHAC,
 MYHEB, MYHIR, MYHLI, MYHLM, MYHLP, MYHMB, MYHNS, MYHOV, MYHOW, MYHRW, MYHSM, MYHUB,
 MYHUG, MYHUM, MYKET, MYKEY, MYKIL, MYKKB, MYKMP, MYKMS, MYKMZ, MYLAN, MYLAS, MYLEC,
 MYLEV, MYLIN, MYLOC, MYLON, MYMAL, MYMAR, MYMAS, MYMID, MYMLB, MYMMB, MYNCV, MYNGR,
 MYNND, MYNSY, MYNUN, MYPBG, MYPIC, MYPOC, MYPTN, MYRAM, MYREE, MYRIC, MYRIL, MYRPN,
 MYRPP, MYRUF, MYRWC, MYSAW, MYSBG, MYSBN, MYSET, MYSHF, MYSKP, MYSKR, MYSKS, MYSM, MYSM,
 MYSNH, MYSNN, MYSP, MYSPU, MYSTI, MYSTO, MYSTR, MYSYK, MYTAD, MYTHR, MYTHT, MYTHW,
 MYTIB, MYTOC, MYTOL, MYWAT, MYWAY, MYWBG, MYWEN, MYWEW, MYWHE, MYWHL, MYWIL, MYWIT,
 MYWLT, MYWOH, NDAGR, NDALD, NDALL, NDAPP, NDASH, NDAYL, NDBAL, NDBAR, NDBAT, NDBEC,
 NDBEN, NDBET, NDBG, NDBID, NDBIR, NDBOU, NDBRD, NDBRE, NDBRG, NDBRI, NDBRK, NDBRO,
 NDBUR, NDBUX, NDCAS, NDCGA, NDCHA, NDCHD, NDCHI, NDCHL, NDCHR, NDCHS, NDCLI, NDCOO,
 NDCOW, NDCRA, NDCRW, NDCST, NDDEA, NDDHI, NDDOD, NDDPA, NDDYM, NDEAS, NDECH, NDEDE,
 NDEGE, NDELH, NDELM, NDEPE, NDETC, NDFAI, NDFEL, NDFLI, NDFOR, NDFRA, NDFRI, NDFRM,
 NDFRO, NDGOD, NDGOU, NDGUE, NDHAD, NDHAK, NDHAL, NDHAR, NDHAW, NDHDO, NDHEA, NDHED,
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NDSER, NDSEI, NDSER, NDSER, NDSGO, NDSHA, NDSHO, NDSHP, NDSMA, NDSMB, NDSMI, NDSML, NDSOU, NDSTA, NDSTP, NDSTU, NDSVA, NDTEN, NDTEY, NDTHA, NDTIC, NDUCK, NDWAD, NDWAT, NDWES, NDWET, NDWIN, NDWIT, NDWKI, NDWOO, NDWOR, NDWYE, NEAC, NEAL, NEALD, NEALH, NEALS, NEAM, NEASG, NEAW, NEBC, NEBDL, NEBEA, NEBED, NEBEL, NEBGM, NEBHM, NEBLA, NEBLS, NEBML, NEBNG, NEBRT, NEBU, NEBUR, NEBW, NEBWS, NECAP, NECB, NECBN, NECC, NECFD, NECHA, NECI, NECOD, NECOT, NECOX, NECR, NECSN, NECST, NECTN, NEDP, NEDUDL, NEE, NEEB, NEEGT, NEEHL, NEELA, NEEN, NEES, NEFEL, NEFH, NEFSL, NEFT, NEGA, NEGLA, NEGMT, NEGND, NEGNFD, NEGRE, NEGS, NEGTD, NEGWT, NEHAR, NEHAS, NEHAY, NEHDL, NEHH, NEHID, NEHPL, NEHR, NEHSY, NEHTR, NEHWH, NEJV, NEKBW, NEKDR, NEKF, NEKP, NELC, NELEB, NELK, NELL, NELM, NELO, NELT, NEMIL, NEMTD, NENA, NENB, NENCT, NENH, NENR, NEOC, NEOM, NEON, NEP, NEPB, NEPG, NEPX, NERB, NERD, NEREH, NERFD, NERG, NERHB, NERM, NERN, NESBY, NESDP, NESEH, NESFE, NESG, NESGT, NESH, NESH, NESH, NESK, NESL, NESLS, NESLY, NESNS, NESP, NESSDS, NESTA, NESTK, NESTO, NESUT, NETI, NETL, NETMN, NETP, NETW, NEUL, NEULM, NEWAU, NEWF, NEWGM, NEWH, NEWHD, NEWHY, NEWLF, NEWLL, NEWLW, NEWN, NEWSNS, NEWO, NEWOP, NEWOR, NEWR, NEWT, NEWU, NEWV, NEWYL, NIAA, NIAE, NIAFN, NIAGH, NIAH, NIAL, NIAM, NIAN, NIAR, NIAT, NIAY, NIBB, NIBC, NIBCO, NIBDY, NIBEK, NIBGL, NIBGY, NIBH, NIBK, NIBKB, NIBKR, NIBL, NIBMS, NIBN, NIBNA, NIBNB, NIBNH, NIBO, NIBRA, NIBRN, NIBRS, NIBSB, NIBT, NIBW, NIBWR, NIBY, NIC, NICA, NICB, NICD, NICDN, NICDY, NICE, NICG, NICGR, NICH, NICI, NICK, NICL, NICLK, NICM, NICMG, NICMN, NICN, NICRH, NICRS, NICSD, NICSI, NICUS, NICW, NIDBO, NIDD, NIDG, NIDK, NIDL, NIDM, NIDMA, NIDMR, NIDNM, NIDO, NIDOD, NIDP, NIDPT, NIDQ, NIDR, NIDRY, NIDV, NIDY, NIDYN, NIEG, NIEK, NIFCT, NIFH, NIFIN, NIFN, NIFY, NIGF, NIGFD, NIGM, NIGN, NIGT, NIGVA, NIGWY, NIGY, NIHB, NIHO, NIIM, NIIT, NIJP, NIK, NIKH, NIKI, NIKL, NIKN, NIKS, NIKTS, NIKVY, NIKY, NIKYL, NILA, NILE, NILG, NILGL, NILI, NILN, NILY, NIMA, NIME, NIMF, NIMFD, NIMH, NIMM, NIMO, NIMOY, NIMR, NIMTN, NIMZ, NINB, NINE, NINH, NINS, NINY, NIOM, NIPE, NIPO, NIPP, NIPR, NIPS, NIPT, NIPVE, NIPY, NIRD, NIRI, NIRL, NIRLN, NIRN, NIRS, NIRT, NISD, NISE, NISEA, NISF, NISM, NISP, NISTF, NISTN, NISW, NITB, NITC, NITG, NITO, NITP, NITR, NIWD, NIWP, NIWT, NSABC, NSABL, NSABO, NSADV, NSAGR, NSAGY, NSALB, NSALF, NSALG, NSALR, NSALT, NSALV, NSANG, NSANS, NSAPP, NSARI, NSASC, NSASH, NSASN, NSASR, NSASS, NSATB, NSATL, NSAVI, NSAVR, NSBAC, NSBAD, NSBAY, NSBBN, NSBCS, NSBCY, NSBDI, NSBDS, NSBEA, NSBEN, NSBER, NSBET, NSBFD, NSBFR, NSBIG, NSBIR, NSBIX, NSBKI, NSBLD, NSBLG, NSBL, NSBLT, NSBMC, NSBMD, NSBMR, NSBNF, NSBNS, NSBOG, NSBOW, NSBRA, NSBRK, NSBRN, NSBRR, NSBRV, NSBRY, NSBSY, NSBTS, NSBVO, NSBVS, NSCAB, NSCAL, NSCAN, NSCAR, NSCAT, NSCAW, NSCBK, NSCBS, NSCBY, NSCGM, NSCHL, NSCLN, NSCLO, NSCNI, NSCP, NSCPY, NSCRB, NSCRN, NSCRR, NSCRU, NSCRY, NSCTI, NSCTN, NSCTR, NSCTS, NSCTW, NSCTY, NSCUM, NSCUN, NSCWY, NSDAV, NSDBG, NSDBL, NSDBT, NSDCH, NSDCR, NSDCT, NSDDL, NSDEE, NSDEN, NSDET, NSDGW, NSDIA, NSDIN, NSDLS, NSDLT, NSDMK, NSDMR, NSDNC, NSDNI, NSDNS, NSDOC, NSDPH, NSDRN, NSDRS, NSDTU, NSDUF, NSDUL, NSDVG, NSDWH, NSDYC, NSEDD, NSEDI, NSEDN, NSEDY, NSELG, NSELL, NSERI, NSEVA, NSEVI, NSFAG, NSFAR, NSFET, NSFEU, NSFEN, NSFIS, NSFOC, NSFOW, NSFRA, NSFSG, NSFRR, NSFSS, NSFSE, NSFSS, NSFSTN, NSFWM, NSFYV, NSGAI, NSGBD, NSGBT, NSGDL, NSGFN, NSGIL, NSGKD, NSGLA, NSGLG, NSGLV, NSGMT, NSGMZ, NSGOL, NSGOR, NSGOS, NSGOT, NSGQT, NSGRE, NSGRN, NSGRO, NSGRV, NSGSL, NSGTN, NSGTY, NSGUT, NSGVR, NSHAM, NSHAT, NSHEL, NSHIL, NSHLD, NSHLK, NSHOK, NSHOP, NSHOY, NSHRS, NSHRY, NSHUN, NSICL, NSIGD, NSIGR, NSIMD, NSINS, NSISL, NSIUR, NSIVA, NSIVS, NSJOG, NSKBC, NSKCG, NSKCN, NSKDM, NSKDY, NSKED, NSKEM, NSKEN, NSKES, NSKGL, NSKGS, NSKGW, NSKHS, NSKIR, NSKIS, NSKLB, NSKLL, NSKLN, NSKLV, NSKLW, NSKNC, NSKNL, NSKNO, NSKON, NSKSS, NSKTH, NSKTR, NSKTY, NSKYL, NSLAG, NSLAI, NSLAT, NSLBD, NSLBM, NSLCN, NSLER, NSLEV, NSLHA, NSLHP, NSLLT, NSLMD, NSLMN, NSLMR, NSLMY, NSLNG, NSLOS, NSLPT, NSLSD, NSLSV, NSLUM, NSLVR, NSLYB, NSLYT, NSMAL, NSMAN, NSMAU, NSMDF, NSMEL, NSMEM, NSMER, NSMET, NSMID, NSMIN, NSMOF, NSMON, NSMOO, NSMOR, NSMUL, NSMUN, NSNAI, NSNBR, NSNBY, NSNDR, NSNER, NSNET, NSNIG, NSNIC, NSNMC, NSNMR, NSNPT, NSNRE, NSNRS, NSNST, NSNTH, NSNTT, NSOLL, NSOMD, NSONI, NSORN, NSORP, NSORT, NSOUT, NSPET, NSPIT, NSPLO, NSPMH, NSPON, NSPOO, NSPOY, NSPPS, NSPPW, NSPRT, NSPSY, NSPTR, NSRAA, NSREY, NSRHL, NSRHT, NSRHY, NSRMY, NSRNM, NSROG, NSROU, NSRTS, NSRWK, NSSAL, NSSAU, NSSBY, NSSCH, NSSCN, NSSCO, NSSCP, NSSDN, NSSDS, NSSDY, NSSFR, NSSHA, NSSHI, NSSKB, NSSKD, NSSKL, NSSLI, NSSLW, NSSNS, NSSNV, NSSOL, NSSOR, NSSPB, NSSPF, NSSPY, NSSSH, NSSST, NSSSY, NSSTA, NSSTE, NSSTF, NSSTH, NSSTM, NSSTN, NSSTR, NSSUL, NSSUL, NSSUM, NSSUN, NSSVN, NSSWL, NSSWY, NSSYM, NSTAI, NSTAL, NSTAN, NSTCR, NSTDN, NSTHR, NSTHU, NSTIM, NSTKV, NSTLD, NSTON, NSTPH, NSTRD, NSTTL, NSTTN, NSTUL, NSTUR, NSTVS, NSUDN, NSUIG, NSULL, NSURR, NSUYE, NSVID, NSVOE, NSWAL, NSWAR, NSWDL, NSWEI, NSWES, NSWFC, NSWHL, NSWIC, NSWNS, NSWRS, NSWRY, NSWWS, NSWTT, NSYTH, SDBLCMB, SDBLLNG, SDBLNY, SDBMBRD, SDBRCKL, SDBRCMB, SDBRDHM, SDBRGHS, SDBRY, SDBSHM, SDCHLGR, SDCHLLR, SDCLBRN, SDCLHM, SDCMPTN, SDCWFLD, SDCWS, SDFNDN, SDFRSHW, SDFTTLW, SDFYGT, SDGDSHL, SDGLYND, SDGRFFH, SDGTWCK, SDHMBLD, SDHNDNR, SDHNFLD, SDHRSTM, SDHRSTP, SDHRTNG, SDHSSCK, SDHWKLY, SDKRDFR, SLDLSWR, SLDLFRST, SLDLDFL, SLDLWRBD, SLDXWD, SDMDLT, SDMDHRS, SDMSWRT, SDNRWDH, SDNTN, SDNWHVN, SDPGHM, SDPLBRG, SDPLGT, SDPLMPT, SDPLSTW, SDPRTRD, SDPRVTT, SDPTCHN, SDPTWRT, SDPVNSM, SDPYNNG, SDRDGWC, SDRDNGL, SDRGT, SDRNDL, SDRNGMR, SDRP, SDRSPR, SDRWLND, SDSCYNS, SDSDSLH, SDSHNGT, SDSHNLK, SDSLNDN, SDSLNFL, SDSLSY, SDSNDWN, SDSNGLT, SDSTDN, SDSTHWT, SDSTMN, SDSTMRD, SDSTRGT, SDSTRRN, SDSTTN, SDSTYNN, SDVNTNR,

WWBEAW, WWBERE, WWBFAS, WWBIDE, WWBIGB, WWBKNO, WWBLAG, WWBLYD, WWBNYM, WWBODM, WWBOSC, WWBOW, WWBRAN, WWBRAU, WWBRAY, WWBRDY, WWBREA, WWBRIX, WWBROA, WWBROM, WWBRUL, WWBSTM, WWBSTW, WWBTON, WWBTOR, WWBTRA, WWBUDE, WWBUDL, WWBURN, WWCALL, WWCAMB, WWCAME, WWCANW, WWCARD, WWCARY, WWCBIS, WWCKKW, WWCKFIT, WWCHAG, WWCHID, WWCHIS, WWCHIT, WWCHIV, WWCHLL, WWCHRD, WWCHRI, WWCHRM, WWCHRS, WWCHUD, WWCHUL, WWCLAY, WWCLOV, WWCMAC, WWCMAR, WWCOAD, WWCOLY, WWCONS, WWCOOP, WWCORN, WWCORS, WWCORT, WWCPOL, WWCRAD, WWCRAL, WWCRAN, WWCREC, WWCREW, WWCROY, WWCRWC, WWGSTN, WWGULL, WWGWIC, WWGART, WWGITT, WWGOWB, WWGOLT, WWGOWN, WWGDRN, WWGDRW, WWGULV, WWGUNS, WWGALL, WWGWER, WWGEXBO, WWGEXFO, WWGEXMN, WWGEXMO, WWGFALM, WWGFARW, WWGFENI, WWGFILL, WWGFOWE, WWGFRAD, WWGFROG, WWGARA, WWGERM, WWGHAM, WWGRAM, WWGUNN, WWHARB, WWHART, WWHATH, WWHAWK, WWHAYL, WWHBCX, WWHBCM, WWHCRX, WWHELE, WWHELK, WWHEMY, WWHENL, WWHOLB, WWHOLF, WWHOLN, WWHOLS, WWHONI, WWHTOR, WWILCH, WWILFR, WWILMI, WWINST, WWIPPL, WWISLE, WWIVYB, WWKEND, WWKENT, WWKGWR, WWKILK, WWKKWL, WWKNGB, WWKSTM, WWLAND, WWLANR, WWLAPF, WWLAUN, WWLDOW, WWLEED, WWLIFT, WWLISK, WWLLAW, WWLODD, WWLOOE, WWLOST, WWLPRT, WWLSTL, WWLSUT, WWLTRE, WWLUPP, WWLVET, WWLWDN, WWLYDF, WWLYME, WWLYNT, WWMABT, WWMARA, WWMARK, WWMART, WWMAWG, WWMBSH, WWMCAN, WWMDAM, WWMEVA, WWMILV, WWMINE, WWMITC, WWMLBK, WWMMAG, WWMODY, WWMORT, WWMORW, WWMOUS, WWMPRT, WWMSMT, WWMTON, WWMTVY, WWMULL, WWNANP, WWNCAD, WWNCUR, WWNCYR, WWNETH, WWNEWQ, WWNFER, WWNMOL, WWNPTN, WWNPWI, WWNTAM, WWNTAW, WWNTCY, WWOAKE, WWOKEH, WWOSMY, WWOSTN, WWPADS, WWPAR, WWPCMB, WWPERR, WWPIPE, WWPISA, WWPLRN, WWPOLP, WWPORL, WWPOST, WWPOUN, WWPRAZ, WWPREA, WWPRIN, WWPRYN, WWPSCO, WWPTRE, WWPTWN, WWPURI, WWRACK, WWREDR, WWRILL, WWROCH, WWRUMF, WWSAGN, WWSALC, WWSAMP, WWSAUS, WWSBNT, WWSBUR, WWSKAN, WWSCHD, WWSCIL, WWSCLM, WWSCOL, WWSDAY, WWSDOM, WWSEAT, WWSENN, WWSFLM, WWSGAB, WWSGEN, WWSGER, WWSHAL, WWSHAU, WWSHEB, WWSHER, WWSHIR, WWSIDB, WWSIDM, WWSILV, WWSIVE, WWSJUS, WWSKEV, WWSMAB, WWSMER, WWSMOL, WWSMWG, WWSMWS, WWSOME, WWSOWT, WWSPAX, WWSPET, WWSTAL, WWSTAR, WWSTAV, WWSTEN, WWSTIC, WWSTIT, WWSTOC, WWSTOG, WWSTUD, WWSUTT, WWSWIM, WWTAVI, WWTEDB, WWTEIG, WWTEMP, WWTHRE, WWTIMB, WWTINT, WWTIVE, WWTLIZ, WWTORR, WWTORX, WWTOTN, WWTPNT, WWTREB, WWTREG, WWTRES, WWTRUR, WWUPOT, WWVERY, WWWADE, WWWASH, WWWBAY, WWWCKR, WWWDGT, WWWDWN, WWWEEK, WWWELL, WWWEMB, WWWFRD, WWWHEA, WWWHIM, WWWILL, WWWILM, WWWINC, WWWITH, WWWIVE, WWWKLH, WWWMON, WWWMOR, WWWOOD, WWWOOL, WWWSHM, WWWZOY, WWYEAL, WWYELV, WWYETM, WWZELA.

Market 2 (729 exchanges)

A3.39 Exchanges where there are 2 or 3 Principal Operators and exchanges where there are 4 or more Principal Operators where the exchange serves less than 10,000 homes and businesses.

CLBIS, CLCOV, CLFAR, CLFLE, CLHOL, CLMON, CLMOO, CLWAP, CLWOO, CMALD, CMALL, CMARM, CMASHF, CMASTX, CMBIR, CMCAL, CMCEN, CMCHAP, CMCHAY, CMCHY, CMCOD, CMDUN, CMEARD, CMEXH, CMFIN, CMFOR, CMFOU, CMHIGW, CMHILL, CMJAM, CMKER, CMKNO, CMLYE, CMMLD, CMPEL, CMPEN, CMRAD, CMREC, CMSTOX, CMTOL, CMWHY, CMWOM, EABEL, EABNT, EABOR, EABSE, EABWL, EACFH, EACHE, EACHU, EACOS, EACTM, EADER, EADRA, EAEBY, EAELY, EAEP, EAEPD, EAEXN, EAFEL, EAFUL, EAGBD, EAGIR, EAGOR, EAHAE, EAHAV, EAHAW, EAHIS, EAHWD, EAKLN, EAKSG, EALGH, EALLN, EANBF, EANMK, EANWD, EAONG, EARAY, EAROC, EARST, EASAB, EASAF, EASBW, EASCI, EASST, EASTM, EASUD, EASWV, EATEV, EATHB, EATHP, EATLB, EATRU, EAWAR, EAWAS, EAWHI, EAWLM, EAWTB, EMALLES, EMARKWR, EMASHBB, EMATTHE, EMAYLES, EMBELPE, EMBINGH, EMBIRSS, EMBLDWO, EMBREAD, EMBRLAT, EMBURTJ, EMCASTL, EMCHALF, EMCHAPE, EMCHELL, EMDESBO, EMEARLS, EMEDWAL, EMERRSS, EMESTLE, EMEVING, EMEYEPE, EMFINED, EMGRETO, EMGTTHA, EMHARRO, EMHTHER, EMIBSTO, EMIRTHL, EMKIMBE, EMKRBYM, EMLEABR, EMLUTTE, EMMKDEE, EMOAKHA, EMOODBY, EMPLUMT, EMPOLSW, EMQURRN, EMRADCL, EMRANND, EMROTHW, EMRTHLY, EMSHEPS, EMSLEBY, EMSPDNG, EMSTMTD, EMSTNYG, EMSTTEL, EMTOWCE, EMWHITT, EMWOLLA, EMWOODB, EMWSBCH, EMYXLEY, ESARM, ESBK, ESBAN, ESBAX, ESBON, ESBRF, ESBRO, ESBUC, ESBYB, ESCAU, ESCLA, ESCOC, ESCOR, ESCTN, ESDAL, ESDAV, ESDEN, ESDYS, ESFAI, ESFML, ESGLC, ESGLN, ESGLS, ESGRG, ESKNW, ESLEV, ESLNW, ESLOA, ESLOC, ESLVB, ESMAY, ESMID, ESMNF, ESMOR, ESPAR, ESPCK, ESPEN, ESPOL, ESROS, ESSCN, ESSHO, ESSTA, ESSTI, ESTNT, ESWHA, ESWHI, ESWIN, LCADL, LCAIN, LCAPB, LCASL, LCBAC, LCBIR, LCBLP, LCCLR, LCCLV, LCCOL, LCCOP, LCFLW, LCFUL, LCGRH, LCHIN, LCKEN, LCKHA, LCLAY, LCLIT, LCLOT, LCLYT, LCMOR, LCNSH, LCPAD, LCPEN, LCPEW, LCPLB, LCPLC, LCPOU, LCPRE, LCRAM, LCSOU, LCSTA, LCSTD, LCTOT, LNBGN, LNCLA, LNCNW, LNCUF, LNAZ, LNPFT, LNPKS, LNSOK, LNWIN, LSASH, LSBKM, LSCHER, LSCOB, LSCTHM, LSDOW, LSESH, LSFARN, LSGRNH, LSHAY, LSLEA, LSLODH,

A3.40 Exchanges where there are 4 or more Principal Operators, and where the exchange serves 10,000 or more homes and businesses.

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LCDAR, LCDAU, LCFAR, LCFOM, LCHEW, LCHIG, LCHOR, LCLAN, LCLEI, LCLEY, LCMAT, LCNEL, LCCORR,
 LCRIB, LCROC, LCROS, LCSSH, LCWES, LCWIG, LNADK, LNBAR, LNBKG, LNBPK, LNCED,
 LNCHF, LNDAG, LNEDM, LNENF, LNFIN, LNGDM, LNGHL, LNHAC, LNHAI, LNHAT, LNHOD, LNHOR,
 LNHPK, LNILC, LNILN, LNING, LNLEY, LNLOU, LNLVY, LNMED, LNMUS, LNNFN, LNNWS, LNPON, LNPN,
 LNPOP, LNPOT, LNRAI, LNROM, LNSTA, LNSTB, LNSTF, LNTOT, LNUPK, LNUPM, LNWCR, LNWFN,
 LNWGN, LNWSN, LNWD, LSADD, LSBAL, LSBEC, LSBEU, LSBEX, LSBRO, LSBURH, LSBYF, LSCHE,
 LSCHI, LSCLPM, LSCRAY, LSCRO, LSCTFD, LSDAR, LSDEP, LSDUL, LSELT, LSEPSM, LSERI, LSEWE,
 LSFAR, LSFOR, LSGIP, LSGRNW, LSGRO, LSKID, LSKIN, LSLEE, LSMAL, LSMEPK, LSMIT, LSMOL,
 LSMOR, LSNCHM, LSNOR, LSORP, LSPUR, LSPUT, LSRED, LSREI, LSRIC, LSSAN, LSSID, LSSLA, LSSTR,
 LSSUN, LSSUR, LSSUT, LSSWA, LSSYD, LSTED, LSTHMD, LSTHO, LSTUL, LSWAL, LSWAN, LSWEY,
 LSWIM, LSWLTN, LSWOO, LSWOR, LSWWKM, LVAIN, LVANF, LVARR, LVBOO, LVCHI, LVCLA, LVCRE,
 LVELL, LVGRE, LVHOO, LVHUN, LVHUY, LVLAR, LVMA, LVMSX, LVNLW, LVPAD, LVPRE, LVRNE,
 LVRNM, LVROC, LVROY, LVSAI, LVSEF, LVSIM, LVSK, LVSTA, LVSTK, LVSTO, LVWAL, LVWAR, LVWAT,
 LVWID, LWACT, LWASH, LWCHI, LWCOL, LWCRI, LWEL, LWEDG, LWELS, LWFEL, LWGAR, LWGOL,
 LWGRE, LWHAM, LWHARL, LWHARR, LWHAT, LWHAY, LWHEN, LWHOU, LWISL, LWKGR, LWKIN,
 LWKNE, LWMIL, LWNOR, LWNWEM, LWPER, LWPIN, LWRIC, LWRUI, LWSHA, LWSHE, LWSOU, LWSTAI,
 LWTWI, LWUXB, LWWAT, LWWDRA, LWWEM, LWWIL, MRALT, MRASH, MRBLA, MRBRO, MRBUR,
 MRCH, MRCHO, MRCOL, MRCON, MRDEN, MRDID, MRDRO, MREAS, MRECC, MRFAI, MRGAT, MRGLO,
 MRHEA, MRHUL, MRHYD, MRIRL, MRLON, MRMAC, MRMAR, MRMER, MRMID, MRMOS, MROLD, MRPEN,
 MRPRE, MRRAD, MRRUS, MRSAL, MRSTA, MRSTE, MRSTO, MRSWI, MRURM, MRWAL, MRWHI, MRWIL,
 MRWIN, MRWOO, MRWYT, MYACO, MYADE, MYARM, MYBAT, MYBD, MYBIN, MYBRG, MYCAS, MYCLE,
 MYCSG, MYDEW, MYELL, MYGRF, MYHAL, MYHBK, MYHEA, MYHEC, MYHGT, MYHHL, MYHLT, MYHOB,
 MYHUD, MYIDL, MYKEI, MYLAI, MYLOF, MYLOW, MYLS, MYMAN, MYMIL, MYMOO, MYMOR, MYMSG,
 MYNMN, MYPON, MYPUD, MYQUE, MYROT, MYSAN, MYSEA, MYSEM, MYSHI, MYUND, MYWAK, MYYO,
 NDASF, NDBEX, NDBLH, NDCAN, NDDOV, NDEGR, NDFOL, NDGIL, NDGRA, NDMAI, NDMED, NDRAI,
 NDRAM, NDSEV, NDSIT, NDSTR, NDTON, NDTWE, NDWMA, NEAT, NEB, NEBDT, NEBH, NEBO, NECM,
 NECT, NEDB, NEDL, NEDU, NEEHN, NEF, NEGF, NEGHD, NEHAL, NEHLS, NEILB, NEJW, NEK, NEKI,
 NELF, NEMI, NENS, NENT, NENTE, NEPTE, NERC, NES, NESS, NESU, NESUN, NEW, NEWB, SDBGNRR,
 SDBRGSS, SDCHCHS, SDCRWLY, SDCSHM, SDESTBR, SDFRHM, SDGSPRT, SDHRLY, SDHRSHM,
 SDHV, SDHVNT, SDHYWRD, SDKMPTW, SDLNCNG, SDPCNTC, SDPNRTH, SDPRTSL, SDRSTNG,
 SDSFRD, SDWCNTR, SDWSWND, SDWTHDN, SDWTRLV, SDWWST, SLAC, SLBAL, SLBC, SLBH, SLBY,
 SLCBR, SLCD, SLDC, SLDF, SLDIO, SLEF, SLGTP, SLHY, SLIN, SLMEX, SLMOS, SLRH, SLRHN, SLSEK,
 SLSF, SLSW, SLWB, SLWD, SLWKZ, SLWL, SLWW, SMAI, SMAY, SMBA, SMBF, SMI, SMBK, SMBT,
 SMC, SMCCH, SMD, SMHD, SMHH, SMHI, SMHR, SMHY, SMLBD, SMLEA, SMLH, SMLT, SMOF, SMSM,
 SMSSF, SMSU, SMSX, SMWV, SSB, SSBED, SSBIS, SSCIR, SSCMN, SSCSY, SSDOW, SSEAS, SSEAV,
 SSFIS, SSFLT, SSGLR, SSHE, SSKMD, SSKWD, SSOR, SSRED, SSSOU, SSSWN, SSTRO, SSWES,
 SSWHI, SSWSM, STANDVR, STBNMTH, STBOTLY, STCFORD, STEASTL, STHMPTN, STLOCKH, STMRHLL,
 STPOOLE, STPRKST, STSHRLY, STSOTON, STTOTTN, STWINCH, STWINTN, STWLSN, SWBIG, SWBNP,
 SWCFATE, SWCFK, SWCRS, SWLJZ, SWLNI, SWMDE, SWMLZ, SWNE/EX, SWNM, SWPBM, SWPTB,
 SWQJA, SWRTH, SWSZX, SWWXC, THAD, THBEN, THBK, THBN, THBO, THBZ, THC, THCV, THCW,
 THEAR, THFB, THFJ, THFT, THGG, THGI, THLL, THM, THNU, THRG, THS, THSL, THT, THTT, THWK,
 THWM, THWO, WEWBAY, WEWHAM, WEWLOR, WEWMAI, WEWMAY, WEWNPN, WEWPAD, WEWPRI,
 WMBID, WMBPZ, WMBUR, WMCIT, WMFER, WMHAS, WMHX, WMIPS, WMKD, WMKDG, WMLEE, WMLON,
 WMNEW, WMRJ, WMRUG, WMSPA, WMSTK, WMSTP, WMWLN, WNCSC, WNCN, WNDEE, WNWEL,
 WRBATT, WRBRIX, WRCHL, WRECT, WRFULM, WRNELMS, WRPGRN, WRPIM, WRSKEN, WRVAUX,
 WRWKEN, WSAIR, WSALE, WSB, WSBAR, WSBEA, WSBIS, WSBLA, WSBRI, WSCAM, WSCLY, WSCOA,
 WSCRO, WSCUM, WSDOU, WSDUM, WSEKI, WSGIF, WSHAL, WSHAM, WSJOH, WSKIL, WSKIR, WSLAN,
 WSMAR, WSMER, WSMOT, WSNW, WSPA, WSPOL, WSRUT, WSSCO, WSSHE, WSSPR, WSWES,
 WSWIS, WWBWAT, WWCRWN, WWDPRT, WWEXTR, WWNABB.

Annex 4

Consumer Research

Introduction

- A4.1 This Annex contains further information and analysis that was used to inform Ofcom's market definition identification as set out in Section 4.
- A4.2 The first part of this Annex explains the consumer research questions asked and the methodology adopted by Ofcom. The second part then sets out the formal calculation of the HMT for both residential and business customers. The third part further explains the formula used for calculating for the critical loss calculation used in the HMT.

Consumer survey overview

- A4.3 Ofcom commissioned a consumer survey of business and domestic customers. This Section sets out the key findings of this survey relevant Ofcom's assessment of market definition issues set out in Section 4.
- A4.4 The interview process was carried out during February/March 2006 and June 2006 and was conducted amongst the decision makers responsible for purchasing telecom and internet connections. There were two key objectives to the survey:
- to determine current connection behaviour and the features of broadband markets that they most value and how these may evolve through time; and
 - to assess predicted switching behaviour, in particular the likely response to a SSNIP (at 10% level) and the type of products that consumers would anticipate switching to.
- A4.5 For the issues considered by the first objective Ofcom has referred to the results of the consumer survey in the main Sections of this document. Ofcom will also publish the consumer research results separately. This Annex primarily focuses on the results of the responses to the SSNIP questions contained in the consumer surveys and the relevant assumptions and calculations used.
- A4.6 Although these survey results have been used to inform Ofcom's market definitions set out in Section 4, the customer survey results used to conduct the SSNIP tests in this Annex are suggestive rather than definitive. In addition to providing only limited forward-looking analysis, the consumer survey results are also subject to the important caveats of being based on claimed behaviour as opposed to observed customer behaviour and despite being based on relatively robust sample sizes they are subject to error margins.

Formal calculation of the SSNIP test

- A4.7 This Section of the Annex explains how Ofcom has conducted its SSNIP analysis using the results from its customer surveys and sets out Ofcom's estimations of the results of a formal calculation of the SSNIP test using the current information available. As explained in Section 4, Ofcom considers there to be one market for residential and business customers of broadband internet access and therefore it would be appropriate to conduct the SSNIP test on an aggregated basis across

business and residential customers. However, Ofcom does not have adequate information to conduct the test on that basis. Nevertheless, it is possible for Ofcom to conduct the test for residential and business customers separately and this is set out below. This Section explains the components required to undertake SSNIP tests in particular the so-called 'critical loss factor'. As it is necessary as part of the SSNIP test to consider prices and costs, this Section then assesses possible estimates of retail broadband prices and costs. Finally the results of the customer survey are considered and compared the SSNIP test.

Summary of SSNIP test

- A4.8 As explained in Section 4, the important question underlying the SSNIP test is the impact that a price increase would have on profitability (i.e. would a 10% increase in prices be profitable to a hypothetical monopolist supplier of the focal product). The change in profitability will depend on the extent of any loss of net revenue (i.e. taking account of the marginal costs of provision saved). In order to assess this change in profitability it is necessary to estimate marginal costs and the impact on revenue (which will depend on the initial starting price, the SSNIP and the likely reaction of customers to that price increase).
- A4.9 The above test would only show whether or not a price rise would be profitable. In the context of consumer surveys it is helpful to consider the SSNIP test based on a critical loss calculation. The critical loss calculation shows the change in demand at which a SSNIP would have a neutral effect on profitability. If the reduction in demand from a SSNIP is greater than the critical loss factor then the SSNIP will be unprofitable and vice versa. As the key output of the consumer survey is the likely change in demand (i.e. extent of customer switching), the critical loss calculation is a simpler way of considering the results of consumer surveys and whether a SSNIP is likely to be unprofitable.
- A4.10 The critical loss is calculated as $SSNIP/(1+SSNIP-\alpha)$. Essentially the critical loss is a function of the SSNIP (which in Ofcom's survey is at the level of 10 per cent) and α , which is the ratio of the marginal cost to the current price (i.e. the price before the SSNIP). The derivation of the critical loss equation is given later in this Annex.
- A4.11 Table A4.5 provides some indicative calculations of the critical loss based on the ratio of marginal cost to the current price. For example, it shows that if the marginal cost saved were zero, then a SSNIP of 10 per cent would be unprofitable if demand falls by more than 9.1 per cent. If the marginal cost represented 70 per cent of the current price, then a SSNIP of 10 per cent would be unprofitable if demand fell by more than 20 per cent.

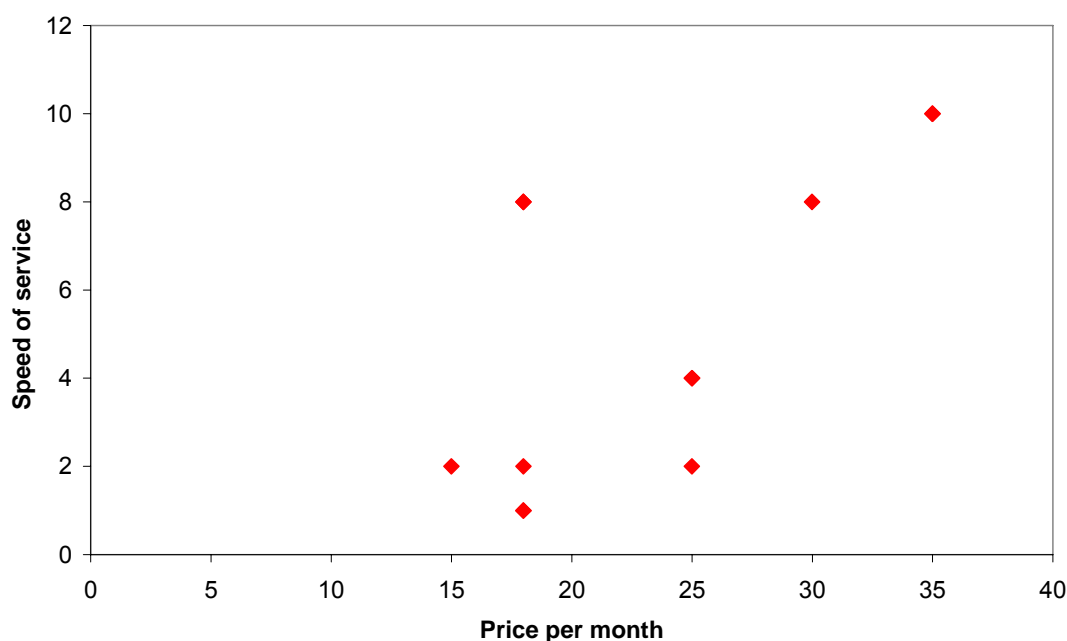
Estimates of retail broadband prices and costs of provision

- A4.12 In order to estimate in detail the marginal cost of supplying an asymmetric broadband internet access retail customer, Ofcom would need to consider the underlying telecommunications and ISP components used to serve a customer and the likely change in the costs of serving an additional customer. This would include marginal elements of LLU shared access rental and connection costs; any marginal costs associated with backhaul, broadband conveyance, IP conveyance, aggregate link (ISP delivery) and internet connection costs; ISP service and marketing costs.
- A4.13 For the purpose of this exercise Ofcom has not looked to model in detail each of these cost components. Nevertheless, Ofcom, based on information available to it,

has estimated that the marginal costs are likely to fall within the range of £4 to £8 per customer per month.

- A4.14 In relation to current prices, Ofcom's most recent communications market report⁵² provided estimates of the current prices of broadband services at different speeds from different providers. Figure A4.1 below refers to the price of broadband services per customer per month.

Figure A4.1: Illustrative comparison of the price of broadband services available from major ISPs (per customer per month as at May 2006)⁵³



- A4.15 Figure A4.1 shows a range of broadband offers between £15 to over £35 for the highest speed services. The weighted average price of retail broadband services is currently around £19.10 per month⁵⁴, as reported in Ofcom's most recent communications market report. Comparing this to the estimated range of marginal costs of £4 to £8, Ofcom can estimate that marginal costs as a percentage of current prices would be between 25 and 50 per cent for retail customers.
- A4.16 The estimated proportion of marginal costs to prices and the assumed level of the SSNIP allow Ofcom to calculate the critical loss factor. Ofcom's estimates of prices and costs suggests that demand needs to fall by more than 12 per cent at the lower end of the range and 17 per cent at the higher end for the SSNIP of 10 per cent to be unprofitable.
- A4.17 The above estimate does not seek to distinguish between retail and business customers. However, there is likely to be differences in the price and cost of serving the average business customer relative to an average domestic customer. The more bespoke nature of the business broadband internet access services means that the identification of a representative business service price is difficult. The same difficulties hold when estimating a marginal cost for asymmetric broadband

⁵² <http://www.ofcom.org.uk/research/cm/cm06/>

⁵³ Source: The Communication Market 2006, Ofcom, August 2006. These prices represent the cheapest service on offer (excluding introductory offers), and do not take into account capacity limits

⁵⁴ Excluding VAT this would equate to £16.26, which would be the relevant mark-up that a hypothetical monopolist would take into account when applying a SSNIP

retail provision to SMEs. In the absence of more disaggregated information in terms of exact customer packages, coupled with the assumption made in the present analysis that current prices are competitively set, Ofcom considers the best estimate of the critical loss range for SMEs to be the same as the range estimated for residential customers: 12 to 17 per cent.

Customer survey results

- A4.18 The above Section has calculated a critical loss range which can be compared against the results of the customer survey to examine whether a SSNIP would be unprofitable.
- A4.19 As explained at the beginning of this Annex, customers were asked about their likely switching behaviour following a 10 per cent increase in the current broadband price they pay. Tables A4.1 and A4.2 below set out the results of the surveys for residential and business customers.

Table A4.1: Reaction of residential customers to 10% SSNIP

Reaction	ADSL only	Cable only	ADSL & Cable
Continue to use current service	70%	76%	77%
Change to alternative way of accessing the internet	22%	15%	10%
Stop using the internet	5%	9%	10%
Other	2%	0%	2%
Don't know	1%	0%	1%

- A4.20 In relation to residential users the survey evidence suggests that 77 per cent of residential broadband customers (ADSL and cable) would continue to use broadband internet access and 20 per cent said that they would stop using ADSL or cable (be this via switching to other internet access technologies or ceasing to take an internet access service at all).
- A4.21 This suggests that 77 per cent of residential broadband customers attach an average value to their broadband service of at least £21.01 (the current weighted average price, £19.10, plus 10 per cent).

Table A4.2: Reaction of business customers to 10% SSNIP

Reaction	ADSL only	ADSL & Cable*
Continue to use current service	80%	84%
Change to alternative way of accessing the internet	16%	7%
Stop using the internet	1%	4%
Other	1%	1%
Don't know	2%	4%

*Results of the survey of business customers on cable only are excluded due to the small sample size

- A4.22 In relation to business users the survey evidence suggests that 84 per cent of business broadband customers would continue to use broadband internet access with 11 per cent stating that they would stop using ADSL or cable (be this via switching to other internet access technologies or ceasing to take an internet access service at all).
- A4.23 This suggests that 84 per cent of business broadband customers attach an average value to their broadband service of at least £21.01 (the current weighted average price, £19.10, plus 10 per cent).
- A4.24 It should be noted that the survey results for both residential and business have been adjusted to take account of potential issue associated with the way in which consumers responded to some of the questions asked. Some respondents indicated that they would switch away from their current connection type to an alternative way of accessing the internet. However, when asked what that alternative connection type might be some of the respondents said that they would switch to their current technology type⁵⁵. In this respect, these customers were potentially contradicting their earlier response that they would switch to an alternative to the connection type that they currently use.
- A4.25 One way to take account of these answers could be to include those customers that indicated that they would 'switch' to their current connection type by classifying those consumers as 'continuing to use their current connection type'. This approach might result in Ofcom concluding narrower markets than were necessarily the case.
- A4.26 A further point to note in relation to the responses to the SSNIP questions to residential customers is the proportion of customers who claimed that they would stop using the internet in response to a 10 per cent price increase is unrealistically high.

Comparing critical loss factors to customer survey results

- A4.27 Based on the calculations in the previous two Sections Ofcom has estimated the critical loss factors in the range of 12 to 17 per cent. Based on consumer survey results it also has estimated the likely switching behaviour in relation to a SSNIP. Table A4.3 summarises these results and considers whether a SSNIP would be profitable.

Table A4.3: Comparison of customers' demand responses to the critical loss

	Residential			Business	
	ADSL only	Cable only	ADSL and Cable	ADSL only	ADSL and Cable
Change to alternative way of accessing the internet	22%	15%	10%	16%	7%
Stop using the internet	5%	9%	10%	1%	4%
Critical loss range [2]	12% - 17%	12% - 17%	12% - 17%	12% - 17%	12% - 17%
Would SSNIP be profitable?	no	no	no	no	yes

⁵⁵ For example, ADSL customers indicated that they would switch to an alternative way of accessing the Internet. When asked what that alternative might be, a small proportion indicated ADSL

- A4.28 For business customers the evidence suggests that the market is as wide as ADSL and cable. For residential customers, as noted above, the proportion of customers who claimed that they would stop using the internet in response to a 10 per cent price increase is unrealistically high. In light of this it appears likely that the market is also as wide as ADSL and cable. However, to conclude definitively on this question Ofcom intends to conduct further consumer research before its next consultation document.

Narrowband and broadband markets

- A4.29 The results for business customers suggest that the broadband market is only as wide as ADSL and cable. For residential customers the evidence shows that 10 per cent would switch to an alternative way of accessing the internet, one of which may be narrowband. On its own this would suggest that broadband is in a separate market to narrowband. However, an additional 10 per cent of residential customers claim that they will stop using the internet, but as noted above Ofcom believes that this figure is unrealistically high. In light of this it appears likely that broadband is in a separate market to narrowband. However, to conclude definitively on this question Ofcom intends to conduct further consumer research before its next consultation document.
- A4.30 In considering the question of whether narrowband internet access should be included within the same relevant market as broadband internet access, it is also relevant to consider more qualitative information available. This includes whether certain internet applications that can be access using broadband internet access are accessible over narrowband internet access. Moreover, there appears to be little switching away from broadband internet access to narrowband after a customer has experienced accessing the internet using a broadband connection. This echoes the view of the Commission in its consultation on a draft Recommendation on the relevant product and service markets. In this draft Recommendation the Commission states that demand-side substitutability from broadband to narrowband seems limited. The Commission goes on to state that the services or quality features of the services from a narrowband connection would not be seen as viable substitutes by an end user.

Critical loss derivation

Outline of methodology

- A4.31 The critical loss measures the percentage reduction in demand to a given SSNIP that would leave profits unaffected. Hence, a larger loss of demand than the critical loss factor would make a SSNIP unprofitable.
- A4.32 In order to calculate the critical loss it is necessary to look the change in profits following a SSNIP. The change in profit equals the change in revenue less the marginal costs saved (assuming constant marginal cost, c):-

$$\pi_1 - \pi_0 = p_1 q_1 - p_0 q_0 - c(q_1 - q_0) \quad (1)$$

where:

π is profit, c is marginal cost

$p_1 \equiv p_0(1 + s)$ where s is the size of the SSNIP

$q_1 \equiv q_0(1 + L)$ where $L < 0$ is the percentage loss of demand

$c \equiv \alpha p_0$ i.e. α is the ratio of marginal cost to the initial price

A4.33 Substituting these definitions in (1), specifying $\pi_1 - \pi_0 < 0$ and rearranging gives the critical loss:-

$$\tilde{L} < -\frac{s}{1+s-\alpha} \quad (2)$$

Examples

A4.34 The examples below provide indicative values for critical loss based on a 10% SSNIP and different marginal cost assumptions. Marginal costs based are based on the identify above $c \equiv \alpha p_0$ (i.e. marginal costs are expressed as a percentage of initial prices).

Table A4.5: Indicative critical loss for 10% SSNIP based on different cost assumptions

	A	B	C	D
Marginal cost assumption	$c = 0\% \times p_0$	$c = 50\% \times p_0$	$c = 60\% \times p_0$	$c = 70\% \times p_0$
Critical loss (\tilde{L})	-9.1%	-16.7%	-20%	-25%

Annex 5

Ofcom's Consultation Principles

- A5.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

- A5.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

- A5.3 We will be clear about who we are consulting, why, on what questions and for how long.
- A5.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened version for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.
- A5.5 We will normally allow ten weeks for responses to consultations on issues of general interest.
- A5.6 There will be a person within Ofcom who will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. This individual (who we call the consultation champion) will also be the main person to contact with views on the way we run our consultations.
- A5.7 If we are not able to follow one of these principles, we will explain why. This may be because a particular issue is urgent. If we need to reduce the amount of time we have set aside for a consultation, we will let those concerned know beforehand that this is a 'red flag consultation' which needs their urgent attention.

After the consultation

- A5.8 We will look at each response carefully and with an open mind. We will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 6

Consultation Response Cover Sheet

- A6.1 In the interests of transparency, we will publish all consultation responses in full on our website, www.ofcom.org.uk, unless a respondent specifies that all or part of their response is confidential. We will also refer to the contents of a response when explaining our decision, without disclosing the specific information that you wish to remain confidential.
- A6.2 We have produced a cover sheet for responses and would be very grateful if you could send one with your response. This will speed up our processing of responses, and help to maintain confidentiality by allowing you to state very clearly what you don't want to be published. We will keep your completed cover sheets confidential.
- A6.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their cover sheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A6.4 We strongly prefer to receive responses in the form of a Microsoft Word attachment to an email. Our website therefore includes an electronic copy of this cover sheet, which you can download from the 'Consultations' Section of our website.
- A6.5 Please put any confidential parts of your response in a separate annex to your response, so that they are clearly identified. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only so that we do not have to edit your response.

Cover sheet for response to an Ofcom consultation**BASIC DETAILS**

Consultation title: **Review of the wholesale broadband access markets 2006/07**

To (Ofcom contact): **David Clarkson**

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

What do you want Ofcom to keep confidential?

Nothing

☐

Name/contact details/job title

☐

Whole response

☐

Organisation

☐

Part of the response

☐

If there is no separate annex, which parts?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response. It can be published in full on Ofcom's website, unless otherwise specified on this cover sheet, and I authorise Ofcom to make use of the information in this response to meet its legal requirements. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

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

☐

Name

Signed (if hard copy)

Annex 7

Consultation Questions

- A7.1 Within this consultation document Ofcom has identified 15 key questions that it would like stakeholders to consider. These questions are listed below:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Question 15: Do respondents agree that the alternative broadband technologies referred to in this annex are unlikely to be sufficiently widespread or utilised within the period of this review to constrain prices in the market for wholesale broadband access services?

Annex 8

Glossary

ADSL	Asymmetric Digital Subscriber Line
ASC	Active Street Cabinet
ATM	Asynchronous Transfer Mode
BT	British Telecommunications
DP	Delivery Point
DSLAM	Digital Subscriber Line Access Multiplexer
EC	European Commission
ERG	European Regulators Group
GIS	Geographical Information System
HMT	Hypothetical Monopolist Test
IP	Internet Protocol
IRG	Independent Regulators Group
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
LLU	Local Loop Unbundling
MDF	Main Distribution Frame
NRA	National Regulatory Authority
PLT	Powerline Technology
PPC	Partial Private Circuit
PSTN	Public Switched Telephone Network
SDSL	Symmetric Digital Subscriber Line
SOHO	Small Office / Home Office
SMP	Significant Market Power
SSNIP	Small but Significant Non-transitory Increase in Price
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network