

Section 7

Market power assessment

Introduction

- 7.1 In the preceding sections we set out our proposed definitions of the relevant markets. In this section we present our Significant Market Power (SMP) assessments in those relevant markets, explaining where we propose to make market power determinations (i.e. determinations of persons having SMP) and where we do not. Consistent with the SMP Guidelines, our market power determinations are the result of a thorough and overall forward-looking¹ analysis of the economic characteristics of each relevant market, based on existing market conditions.²
- 7.2 We have structured this section as follows:
- Our approach to SMP assessment;
 - SMP assessment in the relevant wholesale symmetric broadband origination markets;
 - Assessment of factors common to the relevant wholesale symmetric broadband origination markets;
 - Analysis and market power determinations for each relevant wholesale TISBO, AISBO and MISBO market in turn;
 - Analysis and market power determinations in the relevant retail markets; and
 - Analysis and SMP determinations in the relevant wholesale markets for TI trunk segments.
- 7.3 Table 46 below sets out our proposals to make market power determinations (or not to do so) in the relevant markets.³

1 The forward-look period of this market review is three years.

2 See paragraphs 75 and 78.

3 For clarity, we refer to three sets of relevant markets in this section: 'relevant wholesale symmetric broadband origination markets', 'relevant retail markets' and to 'relevant wholesale trunk segment markets'.

Table 46: Proposals regarding market power

Relevant market			Proposed SMP designation
Wholesale / Retail	Product scope	Geographic scope	
Wholesale	Low bandwidth TISBO (<=8Mbit/s)	UK excluding the Hull area	BT
		The Hull area	KCOM
	Medium bandwidth TISBO (>8Mbit/s, <=45Mbit/s)	UK excluding the Hull area & the WECLA	BT
		The Hull area	KCOM
		The WECLA	No SMP
	High bandwidth TISBO (>45Mbit/s, <=155Mbit/s)	UK excluding the Hull area & the WECLA	BT
		The Hull area	KCOM
		The WECLA	No SMP
	Very high bandwidth TISBO (622Mbit/s)	UK excluding the Hull area	No SMP
		The Hull area	KCOM
	Low bandwidth AISBO (<=1Gbit/s)	UK excluding the Hull area & the WECLA	BT
		The Hull area	KCOM
		The WECLA	BT
	MISBO	UK excluding the Hull area & the WECLA	BT
The Hull area		No SMP	
The WECLA		No SMP	
National trunk segments	UK	No SMP	
Regional trunk segments	UK	BT	
Retail	Low bandwidth TI retail leased lines (<=8Mbit/s)	UK excluding the Hull area	BT
		The Hull area	KCOM
	Low bandwidth AI retail leased lines (<=1Gbit/s)	The Hull area	KCOM

- 7.4 After the SMP assessments, we present how, in our view, the so-called three criteria test is satisfied for each of the markets we propose to identify as markets in the UK in which *ex ante* regulation may be warranted, and which are not included in the EC's Recommendation.

Approach to SMP assessment

- 7.5 We have carried out market analyses of the leased lines markets on two previous occasions.⁴ Many stakeholders with an interest in these markets will therefore be familiar with our market review process, including how we assess SMP. We set out our analytical approach to this market review at Annex 6 for those who wish to gain a better understanding.
- 7.6 We set out our proposed definitions of the relevant markets in the preceding sections. We now assess whether those relevant markets will be effectively competitive for the period of this market review,⁵ or whether any Communications Provider (CP) has SMP. In Sections 8 to 14 we set out the competition problems we have identified in those relevant markets in which we have proposed market power determinations. We then set out our considerations as to whether national and Community competition law remedies would be sufficient to address the competition problems we have identified in those relevant markets.
- 7.7 SMP is defined in the Act as being equivalent to the competition law concept of dominance, namely a CP shall be deemed to have SMP 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.
- 7.8 We have taken due account of the Commission's SMP guidelines (SMP Guidelines)⁶ and, where relevant, we have had regard to the equivalent guidelines published by Ofcom and the ERG's revised working paper on SMP (ERG Revised SMP Paper).⁷
- 7.9 The SMP Guidelines set out a non-exhaustive list of criteria for assessing SMP. The SMP Guidelines also state that a dominant position may derive from a combination of these criteria, and that taken separately the criteria may not necessarily be determinative.⁸ As such, our proposed SMP findings are based on an *overall*

⁴ Business Connectivity Market Review, December 2008, <http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr08/summary/bcmr08.pdf>

Review of the retail leased lines, symmetric broadband origination and wholesale trunk segments markets, June 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/lmr/statement/state_note.pdf

⁵ The forward-look period of this market review is three years.

⁶ 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.

⁷ Revised ERG Working Paper on the SMP concept for the new regulatory framework, September 2005. http://erg.eu.int/doc/publications/public_hearing_concept_smp/erg_03_09rev3_smp_common_concept.pdf

⁸ Paragraph 79.

assessment of the application of a number of these criteria to each relevant market. In our view, this overall assessment enables us to undertake a thorough and forward-looking analysis of the economic characteristics of each relevant market, based on existing market conditions.⁹

Market shares are an important criterion to take into account when assessing SMP and the SMP Guidelines note that “market shares are often used as a proxy for market power”.¹⁰ Market shares and market share trends provide an indication of how competitive a market is now and has been in the past. They are a measure of the outcome of the competitive process. If a CP has a persistently large market share it usually implies that there have been impediments to effective competition in the past. In many cases, impediments to competition will not change and therefore market shares can be a good indicator of competitive conditions in the future. The SMP Guidelines state that,¹¹ in the EC’s practice, single dominance concerns normally arise where market shares are over 40%, although dominance concerns may arise even with lower market shares depending on the market shares of competitors.¹² Very large market shares in excess of 50% are in themselves evidence of the existence of a dominant position, save in exceptional circumstances. The SMP Guidelines also state that a share below 25% usually implies that a CP does not have SMP.

- 7.10 However, underlying competitive conditions can and often do change. As a result, market shares are not always a reliable indicator of future competitive conditions. For example, a CP who risks investment in a new technology may gain an early advantage in an emerging market. Assuming the technology is also available to other CPs, and assuming switching costs are not materially high, the initial high share is unlikely to be sustained over time. This is a relevant factor in some of the proposed relevant markets we have identified where technology continues to develop at a rapid pace, and often faster than the lifecycle of the investments needed to bring new technologies to market.¹³ Equally, however, although the gradual erosion of market share by a very large CP may indicate that the relevant market is gradually becoming more competitive, it does not in itself preclude a finding of SMP.
- 7.11 Consequently, a large market share alone is not sufficient to establish SMP - the SMP Guidelines state that “the existence of a dominant position cannot be established on the sole basis of large market shares”.¹⁴ Therefore, and as already noted, our SMP assessments are based on an overall assessment of the economic characteristics of the market in question which takes account of all of the relevant SMP criteria. We also note that in carrying out our SMP assessments we adopt the modified Greenfield approach. This approach is explained in detail in Section 3. Therefore, our SMP assessments assume that no *ex ante* competition regulation applies to any CP within the relevant market in question.

⁹ This is consistent with the SMP Guidelines. See paragraphs 75 and 78.

¹⁰ See paragraph 75.

¹¹ See paragraph 75.

¹² See also section 3 of the ERG Revised SMP Paper.

¹³ See our market power assessment below of the low bandwidth AISBO and MISBO markets.

¹⁴ See paragraph 78.

SMP assessment in the relevant wholesale markets

7.12 In order to undertake a thorough and overall forward-looking analysis of the economic characteristics of each relevant wholesale symmetric broadband origination market, based on existing market conditions, we have used the following criteria that we consider to be particularly relevant to the markets in question:¹⁵

- market shares and market share trends;
- profitability;
- control of infrastructure not easily duplicated;
- economies of scale and scope;
- barriers to entry and expansion;
- countervailing buyer power; and
- prospects for competition.

7.13 We conduct SMP assessments of 16 distinct wholesale symmetric broadband origination markets. Some of the most important characteristics affecting supply and demand are common to all of these markets.¹⁶ As a result of these shared economic characteristics, the analysis of the SMP criteria is often the same - or similar - between markets. Therefore, before assessing each of the relevant wholesale markets, we begin with a discussion of how each of the SMP criteria that we consider particularly relevant here applies in general to all of the relevant wholesale markets, albeit to varying degrees. We refer back to this general assessment in many of the market specific assessments in order to avoid unnecessary repetition.

General assessment of SMP criteria in the relevant wholesale markets

Market shares and market share trends

7.14 As explained above, market shares and market share trends provide an indication of how competitive a market has been in the past. If a firm has a persistently high market share, then that in itself gives rise to a presumption of SMP. However, changes in market share are also relevant to our assessment of prospects for competition. For example, a market share trend which shows a decline may suggest that competition will provide an effective constraint within the time period over which

¹⁵ These criteria include all those we took into account in conducting our SMP assessment in the relevant wholesale markets in the 2007/8 Review. See paragraph 7.157 of the January 2008 Consultation.

¹⁶ For example, on the supply-side, entry into a wholesale TISBO, AISBO or wholesale trunk segment market requires significant investment in laying duct and fibre to customer premises. On the demand-side, retail leased line customers require an end to end connection between two or more sites in specific locations. These features mean that economic characteristics such as the importance of sunk costs and the need for contiguous network presence in order to connect customer sites in different locations are relevant to all the markets considered in this review.

the SMP assessment is being conducted.¹⁷ Equally, data which shows that a CP has a large but declining market share may well indicate that the market is becoming more competitive, but it does not preclude the finding of SMP.¹⁸

- 7.15 A related factor is the growth in demand in the market. In general, in a growing (declining) market CPs are more (less) willing to invest. As a result, barriers to entry and expansion tend to be less of an impediment to competition in rapidly growing markets.
- 7.16 As the SMP Guidelines make clear, the choice of metric for measuring market shares will depend on the characteristics of the relevant markets, and it is for us, as the NRA¹⁹ in the UK, to decide which metric is the most appropriate.²⁰ Our approach to the measurement of market shares in relevant markets is set out in detail in Annex 8. In summary, the metric we have used is numbers - i.e. the volume - of leased line termination points.²¹ We did seek to measure market shares based on both volume and leased lines revenues, however this was not possible because many CPs were unable to present their revenue data at the required level of granularity. As such, contrary to the observation made in the SMP Guidelines,²² this measurement exercise was more complicated to carry out than measuring market shares using the volume of leased line termination points.
- 7.17 In our view, using volume of leased line termination points to measure market share is appropriate. Importantly, the SMP Guidelines state that “the mere number of leased line termination points does not take into account the different types of leased lines that are available on the market”.²³ This is not directly relevant to our market shares measurements since our proposed relevant wholesale markets are - to a significant degree - defined according to differences in the type of leased line that are available in the UK. Further, we have also assessed the development of market shares over time. Consequently, we consider our assessment of market shares and market share trends using volume of leased line termination points enables us to paint a realistic picture of the position and economic significance of CPs in the relevant wholesale markets.

Profitability

- 7.18 The SMP Guidelines refer to the importance, when assessing market power, of considering the power of CPs to raise prices without incurring a significant loss of sales or revenue.²⁴ If a CP has SMP then, by definition, it has the ability and

¹⁷ As explained above and in other sections, the forward-looking time period over which our market review is conducted is three years.

¹⁸ See, for example, paragraph 75 of the SMP Guidelines.

¹⁹ National regulatory authority.

²⁰ See paragraph 77.

²¹ This is recognised in the SMP Guidelines as one of the possible criteria for measuring a CP's relative strength on leased lines markets (see paragraph 77).

²² The SMP Guidelines observe, at paragraph 77 that “leased lines revenues *may* be more transparent and less complicated to measure” (emphasis added).

²³ See paragraph 77.

²⁴ See paragraph 73.

incentive to make excess profits by raising prices above the competitive level. Firms without SMP are constrained by the market, and therefore cannot sustain profits which are substantially above the cost of capital. Persistently high profits, i.e. profits substantially above the cost of capital, are therefore an indicator of market power.

- 7.19 The reverse is not true: consistently low profits, i.e. profits at or below the cost of capital, cannot be taken as evidence of an absence of market power. It may simply be evidence of inefficiency. For example, if a firm with SMP were to have inefficiently high costs, it may charge a price above the level we would expect to see in a competitive market but this would not result in high profits. In addition, price regulation exists in many of the wholesale markets considered, and therefore low profits may simply be the result of regulation rather than a reflection of the underlying competitive conditions.
- 7.20 Return on capital employed (ROCE), benchmarked against the weighted average cost of capital (WACC) is often used to assess profitability, and that is the approach we adopt.
- 7.21 Our primary source of profitability data is BT's regulatory financial statements. These are Current Cost Accounts (CCA) prepared under the Financial Capital Maintenance (FCM) convention. Under the FCM convention, changes in asset values over time are recognised as 'holding gains' if the asset price increases, or 'holding losses', if the asset price falls. Holding gains and losses are treated in the accounts as a cost (a negative cost in the case of holding gains). We would expect holding gains and losses to be reflected in average prices over the lifetime of an asset, because this is necessary for overall cost recovery. However, CCA asset values and consequently the associated holding gains and losses can fluctuate from one year to the next due to changes in the market values of assets. These fluctuations can be sizeable.²⁵ The presence of holding gains and losses in annual profit figures can then obscure the underlying level of profitability and its trend from year to year.
- 7.22 Due to this volatility in CCA measures of profitability, we use two sets of data²⁶ when considering profitability for the purposes of assessing SMP:
- i) CCA figures from BT's regulatory financial statements; and
 - ii) adjusted figures based on the data from BT's regulatory accounts, but excluding all holding gains and losses and other one-off adjustments which result from changes in accounting methodology.
- 7.23 The second set of figures provides a useful indicator of the trend in profitability which is unaffected by the volatility caused by holding gains and losses. We use both sets of profitability data in our SMP assessments, relying more on the adjusted data to assess trends, and a combination of both adjusted and reported figures to assess the current level of profitability.

²⁵ For example, BT recently changed some of the assumptions used in assessing the value of its duct network assets. This resulted in a substantial holding gain which significantly increased the reported profitability in the accounts for the year ending April 2010.

²⁶ We should note that all of our analysis of profitability is conducted on nominal values.

- 7.24 There are limitations with the accounting data we are using to assess profitability. Our ultimate aim is to understand the underlying economic profits of the relevant CP in the relevant market. Given the high proportion of common costs in many of the markets considered in this review, the accounting measures of profitability may reflect the choices of common cost allocation. To some degree, these choices are a matter of judgement. Equally, the allocation of common costs may be enforced through price regulation in many of the wholesale markets under review, and therefore profitability may also reflect the design of the regulatory regime.²⁷ In addition, the data often does not match our market definitions precisely, and therefore may not represent a close approximation of the economic profits we wish to understand.
- 7.25 Taking all this into account, we interpret profitability data in the following manner:
- No weight is attached to low levels of profitability in markets where there is price regulation. That is, we do not infer anything about competitive conditions in these circumstances.
 - Some weight is attached to high levels of profitability. That is, in markets where we find high levels of profitability, we consider that this provides some evidence that the relevant CP could have market power.
- 7.26 As discussed above, our proposals regarding market power determinations never rely on any one indicator alone. Although the existence of profits persistently and significantly above the competitive level often indicates that a CP has SMP, it is not a necessary condition for finding SMP.²⁸

Control of infrastructure not easily duplicated

- 7.27 As the former monopolist, BT's trench and duct network is effectively ubiquitous outside the Hull area. In some cases, BT can use the existing PSTN copper infrastructure to provide low bandwidth connectivity services. Where copper is not appropriate, BT is still likely to have duct infrastructure in which it can install fibre. BT therefore has the necessary physical infrastructure in place to supply symmetric broadband origination services to almost any site in the UK excluding the Hull area within a relatively short period of time and without incurring substantial costs.
- 7.28 We do not consider that OCPs²⁹ have the ability or incentive to duplicate BT's network infrastructure. As discussed in Section 2, the provision of leased lines

²⁷ This point was noted in relation to the TISBO market for 155Mbit/s services in the 2007/8 Review: "BT's high fully attributed cost based profitability in this market does not necessarily indicate that BT has SMP. Instead, it may reflect the recovery of common costs assumed when the last set of charge controls were set. BT's chosen price structure indicates a stronger tendency for price to increase with bandwidth than its cost structure, as given by the way costs are allocated in its accounts. This pricing structure may be efficient and indeed it may be consistent with a competitive market (based on infrastructure competition). It may reflect demand side factors (willingness to pay) in recovering a greater proportion of fixed costs (which are common between circuits of differing bandwidths) from higher bandwidth circuits than is allocated to them under the accounting rules", paragraph 5.34, *Review of the wholesale very high bandwidth traditional interface symmetric broadband origination markets*, July 2008. http://stakeholders.ofcom.org.uk/consultations/bcmr_tisbo/

²⁸ This is consistent with the ERG Revised SMP Paper (see section 3, paragraph 20).

²⁹ Other CPs, i.e. CPs other than BT.

services usually requires a physical connection: via fibre or copper in a duct. The civil engineering costs associated with building this passive physical infrastructure are largely sunk, common to most fixed telecommunications services and represent a significant proportion of total costs.

7.29 However, CPs can and do extend their networks on a customer-by-customer basis. If a CP is not already connected to a customer site, it can build its own physical infrastructure or try to lease access to duct or fibre owned by a third party. The route length of network is one of the primary drivers of cost. In general, therefore, only short build distances can be justified to connect a single customer. One concern that has been raised by CPs is that the costs of network extensions are often high relative to the value of the services being provided in this market. If a CP attempts to pass on these one-off costs to the customer, they are unlikely to be competitive relative to BT who will likely either already be connected to the customer site, or have network infrastructure closer to the site.

7.30 We consider there are a number of other reasons why BT benefits from its network coverage:

- BT will, on average, be able to serve new customers faster than other CPs;
- a ubiquitous network avoids the need to rely on third party services. This reduces the possibility of technical limitations on a service due to interoperability issues. Similarly, greater levels of control of network equipment are possible (such as the ability to set quality of service parameters) within a network which is managed end-to-end. These controls will not necessarily be accessible through a wholesale interface.³⁰ In this scenario, a CP using wholesale access inputs to reach a customer site would be restricted in terms of the downstream services it could offer;
- a corollary of the previous point is that by avoiding the need to expose any network control parameters to third parties, a CP who owns and manages the network end-to-end can make a claim to greater network security;³¹

³⁰ For example, it may be possible to run diagnostic tests on a line remotely by controlling the active equipment at either end of a terminating segment. Access to these functions is often provided via a separate network management port on the equipment, and a separate connectivity service is needed to access these controls remotely. When developing a wholesale access service for third party CPs, the network owner can choose the level of access that the third party gets to these network management functions. At one extreme, the network owner could provide direct access to the network management port and thus provide full access to all controls. However, if the terminal equipment is shared with other customers this would present a security issue. In this case, they could develop an overlay system which gives the wholesale customer *indirect* access to the network management controls via, for example, an online interface. In this way, the network owner can maintain security and integrity of the network by limiting the level of control that the wholesale customer has over the shared components in the network.

³¹ It should be noted, however, that these technical advantages of a ubiquitous network are a function of the active equipment. They can, therefore, be replicated if a CP extends its network using passive infrastructure elements from a third party such as duct or dark-fibre. In this way, a CP can install its own network equipment and maintain full control and offer the fullest feature set offered by the underlying technology.

- the costs of sale are lower for a CP with ubiquitous network coverage to the extent that it is more likely that they will be invited to tender to provide connectivity services, and are less likely to have to turn down the invitation due to lack of network coverage; and
- the amount of network infrastructure also creates technical advantages in terms of building diverse physical routes, which can be beneficial in developing services with high availability. For fixed networks, some of the most serious faults are location specific - for example, someone digs through a duct or a cable. This type of accidental damage is unavoidable and it can take time to locate and repair, with the result that customers may suffer a significant outage. Physically separate routes are required to create a service which is resilient to these types of fault. This reduces the risk that the event which damaged the network affects both routes. The greater the separation distance, the lower the risk. The need for diverse routings in order to provide resilience increases the investment and the extent of sunk costs required to enter the market.

Economies of scale and scope

- 7.31 Economies of scale and scope are characteristic features of fixed telecoms networks, and are often a significant determinant of competitive conditions in connectivity markets. Economies of scale (or increasing returns to scale) refer to any circumstances in which the average cost of a service falls as production volume increases. Economies of scope occur when the average cost of one service falls as the production volume of a *different* service increases.
- 7.32 For the purposes of our SMP analysis, it is useful to draw a clear distinction between scale and scope economies in order to assess the independent influence of each characteristic on a market. Therefore, in the analysis which follows, we assume the following:
- economies of scale refer to circumstances in which the average cost to supply a service in a specific economic market falls as the volume of services sold by the same firm within that market increases. That is, scale means scale *within the market*, and
 - economies of scope refer to circumstances in which the average cost of supplying a service falls as the volume of supplied *in different markets* increases.
- 7.33 Scope economies are caused by the presence of costs which need to be incurred in order to provide any of a group of services, but which do not then need to be incurred again in order to supply additional services. The existence of such costs (which we refer to as common costs) means that the total costs which need to be recovered from a given service fall as the production of a service in an adjacent market increases.³²

³² This is true on the reasonable assumption that common costs need to be recovered through charges. We can make a further distinction between two types of such costs: fixed costs and common costs. Fixed costs are those which do not vary as output increases, and therefore give rise to economies of scale. Common costs are those which are incurred in the production a number of different services, and therefore give rise to economies of scope.

7.34 Both economies of scale and scope may arise in TISBO and AISBO wholesale markets where these services are provided over network infrastructure which is used to supply:

- more than one service to a single customer (resulting in scope economies); or
- a single service to more than one customer (resulting in scale economies).

7.35 The ability to spread the fixed costs of network infrastructure, either over additional units of a single service, or over a large number of different services is key. Whether economies of scale or scope are important in any particular case, and which is more important, then depends on the extent to which network facilities can be used to supply additional units of services in the same market or in different markets. The general discussions of scale and scope below explain why these characteristics are likely to arise in wholesale symmetric broadband origination markets.

Scale

7.36 Economies of scale are an important feature of telecoms networks. However, they are not *necessarily* important within narrowly defined markets. The most significant returns to scale are driven by costs which are both fixed and common which relate to the underlying physical network infrastructure, and these also generate scope economies. Therefore, a CP may be able to benefit from a relatively low average cost despite a low market share due to scale in adjacent markets.

7.37 A proportion of the cost associated with symmetric broadband origination lies in dedicated access links. This is the network infrastructure which is, to a large degree, incremental to each customer. Consequently, these costs do not give rise to economies of scale as the number of customers connected increases. The costs of an access link are however largely invariant to the capacity of the link and so, as the capacity of a given link is increased, its average cost per unit of capacity (in kbit/s, Mbit/s or Gbit/s) will decline.

Scope

7.38 A large proportion of costs of providing wholesale connectivity services are common to all connectivity services - both residential and business. The same physical infrastructure and network services support virtually all downstream communications services. This generates economies of scope which imply that CPs selling a wide range of communications services will tend to have lower average costs.

7.39 There are also costs which may be incremental to the provision of business connectivity services, and common to all of these services (regardless of technology). For example, the costs of maintaining a national optical fibre network are, at least in part, independent of transmission technology so a company selling both Ethernet and SDH will be able to share these costs between these two sets of services. This implies that CPs providing a full spectrum of business connectivity services will tend to have lower average costs.

7.40 Similarly, there are costs which are common to the provision of business connectivity services of a particular technology. For example, the costs of core SDH switches are shared between all SDH services regardless of bandwidth (but will not usually be

shared by Ethernet services). This creates scope economies which benefit CPs who have scale across the set of markets which use that technology.

- 7.41 The scope of BT's operations in the UK is greater than all of its competitors - across TISBO and AISBO markets individually, across all business connectivity markets, and perhaps even more importantly, across all fixed telecoms markets. BT's closest competitor in this regard is Virgin Media, but its access network only covers about half the population.³³

Barriers to entry and expansion

- 7.42 In general, a significant investment is needed to build the network infrastructure to supply wholesale symmetric broadband origination services. To a large degree, the costs associated with this investment are sunk and therefore, in our view, give rise to entry barriers.
- 7.43 Sunk costs are fixed costs that have already been irretrievably incurred. In the context of charge-setting, for which a long-run definition of costs is appropriate, we define a sunk cost as one which has been paid in the past, is not recoverable on exit from the market and does not need to be paid again in order to remain in the market over the period under consideration.
- 7.44 However, whether a particular cost is regarded as sunk may depend on the context. In the present context of market power assessment, the OFT's guidelines on the assessment of market power³⁴ (OFT 415) define sunk costs in the following way: "sunk costs of entry are those costs which must be incurred to compete in a market, but which are not recoverable on exiting the market".³⁵ OFT 415 also explains that:
- "sunk costs might give an incumbent a strategic advantage over potential entrants. Suppose an incumbent has already made sunk investments necessary to produce in a market while an otherwise identical new entrant has not. In this case, even if the incumbent charges a price at which entry would be profitable (if the price remained the same following entry), entry may not occur. This would be the case if the entrant does not expect the post-entry price to be high enough to justify incurring the sunk costs of entry".³⁶
- 7.45 These costs also tend to be common across a large number of markets and largely fixed with respect to volumes within the low bandwidth TISBO market.³⁷ This generates economies of scale and scope as discussed in the previous section. However, it may be that the costs are not entirely sunk in the context of an individual product market: for example, it may be possible for a CP to exit a TISBO market, but re-use some assets to provide services in an AISBO market.

³³ The Virgin Media broadband network passes 48% of households in the UK (Ofcom Communications Market Report, August 2011). According to its marketing, Virgin Media is within reach of 85% of UK businesses. However, it is not clear how this figure has been calculated.

³⁴ The Competition Act 1998: assessment of market power, OFT415, Dec. 2004.

³⁵ Paragraph 5.9.

³⁶ Paragraph 5.10.

³⁷ An important exception is customer connection costs.

- 7.46 In addition, the costs of switching supplier can be high,³⁸ requiring investment by both customer and supplier. The switching process generally requires physical changes in the network and a temporary loss of service for the downstream customer. As a result, switching in the wholesale market tends to take place infrequently. Switching costs tend to be more important in markets which are static or declining than in growing markets. One reason is that, to gain market share in a static or declining market, CPs must win the existing customers of other CPs.
- 7.47 Incompatibility of technology can be a significant barrier to switching supplier. This is most likely to arise in relation to IT systems and customer equipment. These are discussed in turn below.
- 7.48 Wholesale customers may develop IT systems and processes to help automate and manage transactions with their supplier. The initial investment to develop systems and processes to interface with BT are usually justified on the basis of expected transaction volumes, or the fact that a CP will necessarily have to transact with BT in order to gain coverage in areas where they are the only provider with network infrastructure. In order to persuade a customer to develop a second set of IT systems and processes, the expected transaction volume with the new supplier must be significant. We consider this creates barriers to entry and expansion for suppliers with relatively limited network coverage.
- 7.49 The second compatibility issue relates to customer equipment. Although network technologies are usually based on international standards, compatibility is not guaranteed. Although these issues are unlikely to be insurmountable from an engineering perspective, they are likely to make customers more reluctant to switch supplier, and therefore we consider they add to barriers to entry and expansion.

Countervailing buyer power

- 7.50 A concentrated market need not lead to harmful outcomes if buyers have sufficient countervailing buyer power to curtail the exercise of market power. In general, wholesale purchasers may have a degree of buyer power where they purchase large volumes and can make a credible threat to switch supplier or to meet their requirements through self-supply to a significant degree. It is important to note, however, that the volumes involved must be large enough to make a material difference to the profitability of the current supplier. That is, an individual wholesale customer must represent a significant proportion of the total volume supplied by the relevant CP.
- 7.51 In many of the relevant wholesale markets, BT's largest customer is its downstream retail division.³⁹ In addition, as discussed above, wholesale leased lines markets are often characterised by both barriers to entry and expansion and economies of scale and scope driven by the costs of building an alternative fixed access network infrastructure, and by the fact that BT already has this infrastructure in place. The same underlying reasons imply that alternative sources of supply, including self-build, are likely to be limited.

³⁸ This is discussed further in Section 3.

³⁹ The same is true for KCOM in relation to wholesale symmetric broadband origination markets in the Hull area.

7.52 Consequently, we consider there is an absence of, or low, countervailing buyer power in the relevant wholesale markets.

Prospects for competition

7.53 Our assessments of SMP are concerned with the prospects for competition over the review period of three years. Ultimately, we want to understand how the markets are likely to develop, and whether competition is likely to be, or become, effective during this review period. We consider the prospects for competition as a separate criterion to account for the fact that the threat of *potential* entry and *potential* competition can act as a constraint on firms' pricing behaviour. For example, even a firm with a very high market share will consider the risk of inducing entry when setting prices.

7.54 One of the most important factors in assessing the prospects for competition in wholesale symmetric broadband origination markets is to understand the potential revenues associated with different services. The reason is that, for CPs other than BT, a large proportion of the incremental costs to supply a leased line relate to the construction of physical network infrastructure, and these costs tend not to vary with the type of service provided.⁴⁰ In contrast, prices vary considerably by service type with higher bandwidth services earning higher revenues. As a result, leased lines services with higher average revenues tend to attract the highest levels of competitive investment. In turn, and other things being equal, the prospects for competition tend to be greater in markets with relatively higher value services.

7.55 The supply decision for CPs other than BT usually comes down to a comparison between the potential revenues from a customer, and the costs of the physical network connection to the customer site(s). The physical connection costs are driven by the distance it would likely have to dig to reach the new customer site(s). This connection usually requires the installation of a duct from a distribution point (usually a manhole) into the customer premise. Fibre can then be added to the new duct and spliced to existing fibre on the existing network route. The costs can be significant even for a small amount of new duct infrastructure, and do not vary with the bandwidth of the service provided. Estimates for the cost of building small additions to fixed network infrastructure are often in the region of £100 per metre - more in urban areas and where network needs to cross a main road; less in rural areas and for duct underneath the footway.⁴¹

7.56 Given that BT is usually already connected to a site, it will be difficult for a CP to pass these costs onto the customer through an increased connection charge.⁴² It is more likely that the CP will need to treat the costs as an investment, and recover them

⁴⁰ Some customers require physically diverse routes into a building. The physical network costs for these services are obviously much higher than for a single point of entry. However, this only affects a tiny proportion of total demand.

⁴¹ See, for example, table 31 in the CSMG report, 'Economics of Shared Infrastructure Access', prepared for Ofcom in 2010. This shows the range and distribution of estimates for the costs of trenching in different geographic areas.

<http://stakeholders.ofcom.org.uk/binaries/consultations/wla/annexes/csmg.pdf>

⁴² Data from BT regarding excess construction charges for Ethernet services suggests that BT only requires new ductwork in less than [<]% of cases. All these services require a fibre connection, whereas analogue and some digital low bandwidth TI services are provided over copper. Given the existence of copper for PSTN services, it is likely that the equivalent percentage is much lower in the low bandwidth TISBO market.

through margins on recurring revenues. Therefore, the expected revenues from a new site will usually determine whether the CP is prepared to incur the costs to reach the site.

- 7.57 Prices vary considerably by service type with higher bandwidth services earning higher revenues. Therefore all other things being equal, the prospects for competition tend to be greater in markets with relatively higher value services.
- 7.58 We have therefore assessed the relative differences between the average revenues across a range of different leased lines services. Ideally, we would use market-wide average revenues. However, due to the level of granularity in the data supplied by a number of CPs it was not possible to reconcile revenues to a consistent set of wholesale leased line volumes and therefore calculate averages. We therefore use BT's average revenues as a proxy for the market-wide averages. Table 47 below presents the figures for a range of services in the relevant wholesale markets. We consider that this is appropriate in the context of assessing prospects for competition for two reasons: first, we are most interested in the relative differences in average revenues between different services types, and would expect BT's price structure across the different service types to be consistent with the market; and second, because we are interested principally the prospects for investment by CPs who wish to compete against BT. As such, we consider that BT's average revenues are an appropriate benchmark.
- 7.59 The table shows the average revenue per circuit end for various TISBO and AISBO services. For MISBO services we have calculated the average revenue per connected site.⁴³ As the BT data is confidential, we also present an index showing the values of the various services relative to a 2Mbps service. The figures suggest that TISBO services generate much higher revenues per unit of bandwidth relative to AISBO. In particular, even 1Gbit/s AISBO services generate less revenue than 34/45Mbit/s services. In addition, there is a significant difference in value between low bandwidth TISBO services and medium and high bandwidth services.⁴⁴ Finally, MISBO services attract significantly higher revenues than other services, although it should be noted that these figures include one-off connection revenues.

⁴³ Ideally, we would have calculated the average revenue per connected site for TISBO and AISBO. However, this was not practical given the size and complexity of the underlying data sets for these markets.

⁴⁴ We do not have price / revenue data for very high bandwidth TISBO services (i.e. 622Mbit/s services and higher bandwidths delivered without WDM). As non-SMP services, these are not subject to the same reporting requirements as the others, but we believe that these attract even higher revenues than 155Mbit/s.

Table 47: Average wholesale revenue per circuit end or per site

Product market	Product	Approximate average annual revenue*	Index of value relative to a 2Mbit/s service	Units
Low bandwidth TISBO (<=8Mbit/s)	Analogue	∞	∞	Per half-circuit
	64 kbit/s	∞	∞	Per circuit end
	2 Mbit/s	∞	∞	Per circuit end
Medium bandwidth TISBO (>8Mbit/s, <=45Mbit/s)	34/45 Mbit/s	∞	∞	Per circuit end
High bandwidth TISBO (>45Mbit/s, <=155Mbit/s)	140/155 Mbit/s	∞	∞	Per circuit end
Low bandwidth AISBO (<=1Gbit/s)	10 Mbit/s	∞	∞	Per circuit end
	100 Mbit/s	∞	∞	Per circuit end
	1 Gbit/s	∞	∞	Per circuit end
	Whole market	∞	∞	Per circuit end
MISBO (WDM at all bandwidths and AI services >1Gbit/s)	single 2.5 Gbit/s Ethernet	∞	∞	Per circuit end
	single 10 Gbit/s Ethernet	∞	∞	Per circuit end
	Whole market	∞	∞	Per connected site

* This includes revenues from both recurring and one-off charges.

** The figure for analogue refers to retail revenue, and represents half the total circuit revenue.

7.60 Given the costs of supply for other CPs and the magnitude of the differences in average revenues, it is not surprising that we find significant differences in competitive intensity. In particular, it is notable that the only relevant markets which were found to be effectively competitive in the 2007/8 Review relate to higher value services: the medium and high bandwidth TISBO markets in the CELA, and - implicitly - the MISBO market. The main caveat to this general rule is that demand for TISBO services is declining rapidly. As a result, the prospects for competitive investment are weak despite services attracting relatively high revenues.

SMP assessment of each relevant wholesale symmetric broadband origination market

7.61 The preceding discussion explains how the SMP criteria apply, albeit to varying degrees, to all relevant wholesale symmetric broadband origination markets. We now set out, in turn, our SMP assessments for each of these markets. Our proposals regarding market power are based on an overall forward-looking analysis of the economic characteristics in each relevant market. Each market assessment is presented in the same format:

- first, we summarise our proposal to either make a market power determination or to find that the market is effectively competitive;

- second, we set out our analysis of each of the SMP criteria in turn, noting that each criterion is not necessarily individually determinative; and
- finally, we set out our overall assessment of the economic characteristics of the market, taking account of the SMP criteria as appropriate to the conditions in that market, and explain the derivation of our proposal.

Wholesale market for low bandwidth TISBO in the UK excluding the Hull area

7.62 We propose that BT has SMP in the market for wholesale low bandwidth traditional interface symmetric broadband origination in the UK excluding the Hull area, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 48 below in measuring BT's power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 48: Summary of proposed SMP determination for the wholesale market for low bandwidth TISBO (<=8Mbit/s) in the UK excluding the Hull area

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
BT	-31%	86%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	BT

7.63 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative.⁴⁵ We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.64 We estimate BT's share of volume in this market to be 86%, which is little changed from the 89% we found in 2007. This is well above the threshold for the presumption of dominance. The volume shares of the largest CPs are presented in Table 49 below.

⁴⁵ Again, this is consistent with the SMP Guidelines (see paragraph 79).

Table 49: Volumes shares in the low bandwidth TISBO market in the UK excluding the Hull area

CP	Volume share 2007	Volume share 2011
BT	89%	86%
C&WW	3%	3%
Virgin Media	2%	3%
KCOM	2%	2%
Verizon	1%	2%
Other	3%	4%

Source: CP data, Ofcom analysis

- 7.65 The most significant discernible trend in this market is the decline in volume: since 2007 the market has shrunk by over 30%. This is likely to continue, but we expect a significant number of customers to continue to demand low bandwidth TISBO services during the review period of three years.⁴⁶
- 7.66 Also, in terms of volume, this remains the largest of the relevant wholesale markets by some distance, with more than three times the number of customer circuit ends compared to the next largest market (low bandwidth AISBO in the UK excluding Hull and the WECLA). We estimate that these two markets are currently broadly the same size in terms of revenue.⁴⁷

Profitability

- 7.67 Despite falling volumes, we can see from Table 50 below that BT's revenues have stayed broadly the same since 2006/07. BT's reported ROCE was 13.7% in 2010/11, which has increased since the 2007/8 Review, but is not significantly above BT's cost of capital.⁴⁸ However, the adjusted ROCE (which removes the effects of CCA adjustments which apply only in that year) is somewhat higher at 19.9%. Furthermore, both the reported and adjusted profit figures appear to be increasing over time, which is consistent with a finding of SMP.
- 7.68 However, there are a number of caveats associated with our use of profitability to assess market power. A high proportion of the costs to supply services in this market are common to all wholesale TISBO services. In addition, BT is price regulated in a

⁴⁶ This is discussed further in the retail and wholesale market definition chapters, where we conclude that AI and TI circuits are not sufficiently close substitutes to be in the same economic market.

⁴⁷ In addition, the precision of our market share estimates is affected by a number of factors. First and foremost, the data collected from CPs contained a number of inconsistencies. The process by which the data was cleaned to enable like-for-like comparison and the method for calculating the shares is detailed in Annex 8. Given the level of BT's share in the low bandwidth TISBO market, we can be confident that the possibility of data error does not affect our conclusions.

⁴⁸ We consider that there are two relevant levels for the cost of capital for different parts of BT Group – one for Openreach and another for the 'rest of BT'. TISBO services are provided by the rest of BT, and the relevant cost of capital for this part of BT was 11% in 2010/11.

number of the wholesale TISBO markets. It is required to provide the services on a cost orientated basis and is subject to a charge control. The trends we see in the accounting profit data may therefore reflect the effects of the choice of common cost allocation which is embedded in the price regulation more than the effects of underlying competitive conditions.⁴⁹

7.69 Overall, we consider that BT's increasing profitability provides some evidence to support our proposed market power determination. However, given BT's market share in particular, we do not consider that this profitability evidence is necessary to reach a robust conclusion regarding SMP in this market.

Table 50: BT profitability in the wholesale low bandwidth TISBO market

Market	Year	Reported ROCE	Adjusted ROCE	Turnover (£m)	Reported profit (£m)	Adjusted profit (£m)	Mean Capital Employed (£m)
Wholesale low bandwidth TISBO	2010/11	13.7%	19.9%	672	146	213	1,069
	2009/10	19.8%	9.3%	654	243	114	1,227
	2008/09	8.1%	6.2%	633	93	70	1,123
	2007/08	8.8%	6.6%	636	97	72	1,099
	2006/07	-0.3%	4.1%	641	-3	54	1,315

Source: BT regulatory financial statements, Ofcom analysis

Control of infrastructure not easily duplicated

7.70 We consider that BT gains a material competitive advantage in this market resulting from its extensive network infrastructure. The reasons why BT benefits in this way are explained in the general assessment of this criterion above. Of BT's competitors Virgin Media has the most extensive access network infrastructure.⁵⁰ This network was designed to serve residential areas with cable TV, and therefore is not always in the right location to provide business connectivity services. In many cases, its network infrastructure will be relatively close to business customer sites. However, the relatively low value of services in the low bandwidth TISBO market means that it will not always be economic for Virgin Media to extend its physical network to connect new sites on a case-by-case basis.

7.71 The same logic applies to other CPs competing with BT: the low value of the services is unlikely to justify the significant upfront costs associated with reaching and connecting new sites. It may be justified in some cases, but we consider these are likely to be where there is an expectation of increased demand and therefore higher revenues, or if this service is just one part of a higher value contract for multiple circuits and/or multiple services. Furthermore, demand for leased lines services in this market is declining rapidly. The result is that CPs are likely to be less willing to invest to serve new customers.

⁴⁹ This is discussed further in the general discussion of profitability starting at paragraph 7.18.

⁵⁰ Our network reach analysis is discussed further in Section 5.

- 7.72 We consider, therefore, that BT's control of a ubiquitous network infrastructure suitable for providing low bandwidth TISBO services gives it a significant advantage over its competitors. Ultimately, it means that CPs are unlikely to contest BT's supply at a large number of sites across the UK, and therefore BT is more likely to be able to act independently of its competitors and consumers.

Economies of scale and scope

- 7.73 Some of the infrastructure used to supply low bandwidth TISBO circuits can also be used to supply other TISBO and AISBO services. BT's physical access network infrastructure generates economies of scope which reduce the average costs of supplying all these services. BT is likely to benefit from the ability to share infrastructure costs across a range of TISBO and AISBO services to a greater extent than its rivals, at least outside the WECLA.
- 7.74 The fact that BT is the former monopolist of PSTN services is of particular importance in this market. BT has by far the most extensive PSTN access network infrastructure and the largest PSTN customer base. Many of the same network assets, such as the access duct and copper cable, can be used to provide low bandwidth TISBO services. For example, all analogue and SDSL circuits and the majority of sub-2Mbit/s digital leased lines are provided using copper, as are a small proportion of 2Mbit/s tails. Overall, we consider that BT is likely to have a significant advantage over its competitors both in terms of cost and service delivery times as a result of the scope of its operations.
- 7.75 The costs associated with the shared part of the network may be quite significant for low bandwidth TISBO services. For example, dedicated customer access links often connect to network nodes. The equipment and infrastructure required in network nodes, and required to provide connectivity between nodes, is shared by many symmetric broadband origination services. This is particularly true of low bandwidth TISBO services which can be carried over aggregate bearer circuits. As a result, average costs may fall sharply as volumes increase.
- 7.76 On a local level, these economies of scale may be exhausted relatively quickly. For example, an STM1 aggregate bearer can carry up to 63 2Mbit/s circuits. Once the CP has close to this level of volume, they will have a relatively low average cost per 2Mbit/s circuit.
- 7.77 Overall, whilst we consider that economies of scale are relatively less important than scope in the low bandwidth TIBSO market, we do consider that scale economies exist and, given the difference between BT's share of the market (86%) and the next largest CP (3%), our view is that BT is also likely to benefit from a material cost advantage over its competitors due to economies of scale.

Barriers to entry and expansion

- 7.78 A potential new entrant, or an existing entrant wishing to expand, will need to justify the network investment required to reach customers. For the reasons explained in the general assessment above of this criterion, there are a number of risks associated with this investment:
- BT has already made the necessary investments to serve this market, and so potential competitors face the risk that the post-entry/post-expansion price will fall to a level which does not allow full recovery of the investment costs;

radio base stations rather than multiple 2Mbit/s links. In these circumstances, it is extremely unlikely that an MNO would invest in the infrastructure required to self-supply TISBO services when the future network architecture is to be based on Ethernet. As a result, we consider that the MNOs are not in a position to make a credible threat to switch supplier of low bandwidth TISBO services over the course of the review period of three years, and therefore do not possess countervailing buyer power.

Prospects for competition

- 7.84 It is clear from the figures presented in Table 47 above that low bandwidth TISBO services are unlikely to generate sufficient margin on revenues to justify more than a relatively short network extension. Similarly, these conditions are unlikely to attract new entrants.
- 7.85 In addition, the fact that this market is in decline makes it even less likely that CPs will invest. As a result, we do not expect this market to become more competitive over the course of the review period of three years, and we do not consider there is a credible threat of entry which would act as a constraint on BT's behaviour. Any new entry is, in our view, likely to focus on high value high bandwidth services, and on alternative interface technologies.

Overall assessment of economic characteristics

- 7.86 In reaching our proposed market power determination that BT has SMP, we have taken particular account of the fact that BT's share of volume is very high (over 50%) and has not changed significantly since the 2007/8 Review. We consider that BT's SMP also stems from entry barriers resulting from the magnitude of sunk costs which are especially significant relative to the available revenues in low bandwidth TISBO market. These sunk costs give rise to differences between BT's costs of supply and those of its competitors. In particular:
- BT's fixed access network infrastructure is effectively ubiquitous and is already connected to almost all premises in the UK excluding the Hull area. In contrast, CPs' respective networks are only connected to a small proportion of premises, and therefore supplying a new customer often requires additional significant (sunk) investment in network infrastructure. As a result, BT enjoys a significant first-mover advantage over its competitors; and
 - BT's scale within this market, its scale across all leased line markets, and the scale and scope of its fixed network services throughout the UK also provide BT with a cost advantage over its competitors.
- 7.87 In addition, two aspects of demand in this market lead us to consider that CPs are unlikely to be willing to make the necessary investments to become more competitive:

- first, relative to CPs' costs and to higher bandwidth services, the value of the services is low;⁵² and
- second, this is a declining market with volumes falling by around 10% per year.

7.88 Overall, we consider that BT's cost advantages due to its network assets and its scale and scope, the high barriers to entry and expansion, the declining demand, and BT's very large share of the market all indicate that BT will have the ability to act to an appreciable extent independently of its competitors, customers and consumers during the three year period of this Review.

Wholesale market for medium bandwidth TISBO in the UK excluding the Hull area and the WECLA

7.89 We propose that BT has SMP in the market for wholesale medium bandwidth traditional interface symmetric broadband origination in the UK excluding the Hull area and the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 51 below in measuring BT's power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 51: Summary of our proposed SMP determination for the wholesale market for medium bandwidth TISBO (>8Mbit/s, <=45Mbit/s) in the UK excluding the Hull area and the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
BT*	-48%**	74%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	BT

* This refers to the market power designation in the 2007/8 Review for the CELA.

** This refers to the change in volume throughout the UK

7.90 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.91 Historically, circuits in this market were used to support a full range of downstream services, from internet access and VPN tails to switched voice traffic. The market has

⁵² Note that this is because prevailing prices are low, which is in turn partly a reflection of the fact that BT's average costs are low, and that BT's prices are regulated to be cost reflective. See Table 47 for the relative values of wholesale symmetric broadband origination services.

been in rapid decline since the last review with many customers migrating to AISBO services to take advantage of much lower prices for equivalent bandwidths.⁵³ To a large degree, the only customers who remain are those using the circuits to support downstream services with very exacting requirements for low and consistent latency, such as carrying switched voice traffic.

- 7.92 We consider that the customers who continue to demand a TI interface for medium, high and very high bandwidth services (i.e. for bandwidths above 8Mbit/s), and continue to pay relatively high charges, do so because they need the higher quality of service offered by TI technologies (for example, TDM voice services), or because they have sunk costs in customer premise equipment which requires the traditional interface.
- 7.93 The number of circuit ends in the UK excluding the Hull area and the WECLA has fallen by 43% since 2006/07. Table 52 below shows how the market shares have changed over the same period. Market shares for 2007 have been recalculated to take account of the WECLA.

Table 52: Volumes shares in the medium bandwidth TISBO market in the UK excluding the Hull area and the WECLA

CP	Volume share 2007	Volume share 2011
BT	45%	74%
C&WW	29%	8%
KCOM	19%	6%
Virgin	2%	7%
Other	5%	3%

Source: CP data, Ofcom analysis

- 7.94 BT's share appears to have increased significantly. However, we do not rely on this market share trend as an indication of market power because, having reviewed some of the data from the 2007/8 Review, we now consider that a number of Ethernet circuits supplied by OCPs were mistakenly included in this market. As a result, OCP shares were overstated and BT's share understated, which exaggerates the trend.
- 7.95 More importantly, BT's current market share of 74% is well above the threshold for the presumption of dominance.

Profitability

- 7.96 As shown in Table 53 below, BT's reported profitability has been either low or negative on sales of wholesale medium bandwidth TISBO services since 2008/09. According to the adjusted profitability data, the profits appear to be increasing, but remain well below BT's cost of capital. These figures relate to products sold

⁵³ As shown in Table 47, the average revenue for a 34/45 Mbit/s service is higher than a 1Gbit/s Ethernet circuit.

throughout the UK. Geographically disaggregated profitability data is not available, but we expect these figures to be representative of BT's profitability in this geographic market. In any event, we do not put any weight on low profitability in our SMP analysis.⁵⁴

Table 53: BT profitability on sales of wholesale medium bandwidth TISBO services

Product	Year	Reported ROCE	Adjusted ROCE	Turnover (£m)	Reported profit (£m)	Adjusted profit (£m)	Mean Capital Employed (£m)
Wholesale medium bandwidth TISBO services	2010/11	(1.9%)	7.2%	42	(2)	7	97
	2009/10	6.6%	(1.4%)	47	9	(2)	141
	2008/09	(3.8%)	(6.3%)	56	(9)	(12)	192
	2007/08*	8.4%	5.9%	161	31	23	387
	2006/07*	14%	16.8%	159	45	54	321

* figures for 2006/07 and 2007/08 include both medium and high bandwidth services, and therefore are not directly comparable to the other years.

Source: BT regulatory financial statements, Ofcom analysis

Control of infrastructure not easily duplicated

7.97 For the reasons given in the general assessment of this criterion above, BT has a significant advantage over its competitors in this market as a result of its ubiquitous access network infrastructure. This infrastructure means that, on average, BT can provide the services in this market faster and at a lower cost than its competitors. As a result, we do not consider CPs in this market would be able to constrain BT's pricing behaviour.

Economies of scale and scope

7.98 The general assessment above in relation to these criteria applies to this market. BT has a significant cost advantage over its competitors due to its scale within this market, but more importantly because of its scale and scope across all TISBO markets, across all the relevant wholesale markets, and across all fixed telecoms markets.

Barriers to entry and expansion

7.99 The general assessment above in relation to this criterion, and in relation to this criterion in the low bandwidth TISBO market, also applies to this market. Barriers to entry and expansion are high due to high sunk costs associated with building fixed access network infrastructure and high switching costs. The high value of services in this market implies that these barriers are less important in comparison to the low bandwidth TISBO market. However, as shown by our network reach analysis,⁵⁵ OCP

⁵⁴ See paragraph 7.25.

⁵⁵ See Section 5.

network coverage outside the WECLA is limited. Only 22% of business sites in the UK⁵⁶ have two or more OCPs with network infrastructure within 200m. In contrast, 92% of business sites within the WECLA have two or more OCPs within 200m. Therefore, OCPs would often need to incur substantial costs to reach new customer sites.

Countervailing buyer power

7.100 The general assessment above in relation to this criterion applies to this market. Wholesale customers may have a degree of buyer power if they can make a credible threat to switch supplier. The limited extent of competing networks outside the WECLA leads us to consider that any such threat would not be credible for many customers: BT's ubiquitous network, economies of scale and scope, and the barriers to entry and expansion all indicate that BT's average costs are likely to be lower than any alternative supplier. Finally, this market is declining rapidly, which makes it less likely that CPs will be willing to undertake the investments necessary to provide an alternative source of supply to BT.

Prospects for competition

7.101 Demand in this market is falling fast, and we expect this trend to continue. In addition, we do not expect any fundamental change in the costs of supply which would reduce barriers to entry and expansion. As a result, we do not foresee any substantial increase in competition over the course of the review period of three years.

Overall assessment of economic characteristics

7.102 In forming our proposal that BT has SMP in this market, we have taken particular account of the fact that BT's share of volume is very large (over 50%) and stable. In addition, we consider that BT's access network infrastructure creates a considerable competitive advantage in this market. The cost for OCPs associated with reaching new end-user premises creates barriers to entry and expansion. In the past, the high value of downstream services has meant that CPs and/or customers have been prepared to incur these costs for sites located sufficiently near to a CP's network.

7.103 However, given the rapidly declining demand in this market we consider that, in all but exceptional circumstances, OCPs and customers will not be prepared to make the necessary investments to contest either BT's current supply or potential future supply to any material degree. Furthermore, even if they were to try to contest BT's supply, many areas within this geographic market are poorly served by OCP network infrastructure. As a result, OCPs would need to incur considerable cost to extend their networks in order to supply customers in these areas, and would therefore be uncompetitive.

7.104 Overall, we consider that BT's cost advantages due to its network assets and its scale and scope, the high barriers to entry and expansion, the declining demand, and BT's very large share of the market all indicate that BT will have the ability to act to an appreciable extent independently of its competitors, customers and consumers during the three year period of this Review.

⁵⁶ Note that these figures refer to the whole of the UK - including the Hull area and the WECLA - and not just to the area covered by this market.

Wholesale market for medium bandwidth TISBO in the WECLA

7.105 We propose that no CP has SMP in the wholesale market for medium bandwidth traditional interface symmetric broadband origination in the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 54 below in measuring whether any CP has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 54: Summary of proposed SMP determination for the wholesale market for medium bandwidth TISBO (>8Mbit/s, <=45Mbit/s) in the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
No SMP*	-48%**	17%	<ul style="list-style-type: none"> - Significant amount of alternative network infrastructure in the WECLA - BT's economies of scale and scope provide limited benefit - Barriers to entry and switching expected to have limited impact on competition - Effective competition is expected to be maintained 	No SMP

* This refers to the market power designation in the 2007/8 Review for the CELA.

** This refers to the change in volume throughout the UK

7.106 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.107 We consider that BT's low market share, the low concentration of supply from OCPs, and the fluctuations observed in these shares all indicate that no CP has SMP in this market.

7.108 We estimate that volume has fallen by approximately 60% in the WECLA since 2006/07. As noted above, this decline reflects the fact that customers are often switching to AI services when the downstream use of the circuit allows this.

7.109 Against this background, almost all CPs have lost a significant number of circuits. The Table 55 below shows how the market shares have changed since 2007.

Table 55: Volumes shares in the medium bandwidth TISBO market in the WECLA

CP	Volume share 2007	Volume share 2011
BT	22%	17%
C&WW	21%	31%
COLT	42%	27%
Verizon	9%	13%
Other	6%	12%

Source: CP data, Ofcom analysis

Profitability

7.110 We do not have geographically disaggregated profitability data for this market. However, we have no reason to believe that BT's profits should be significantly different in the WECLA. In particular, given that BT's reported and adjusted profitability has been either low or negative for sales of medium bandwidth TISBO services across the UK since 2008/09,⁵⁷ we consider it unlikely that BT will be making excessive profits on its sales within the WECLA.

Control of infrastructure not easily duplicated

7.111 Our network reach analysis suggests that the amount of alternative network infrastructure in the WECLA is significantly greater than in other parts of the UK. 92% of business sites are within 200m of at least two CP network flexibility points in addition to BT.⁵⁸ The relatively high value of the downstream services supported by the products in this market has helped OCPs to justify the investments required to reach new customer sites. To a sufficient degree, therefore, OCPs have duplicated BT's access network infrastructure.⁵⁹

7.112 However, even within the WECLA, BT's trench and duct network is more extensive than both any individual OCP network and all of the OCPs combined. As a consequence, it is possible that BT would derive a competitive advantage in supplying new customers during the review period of three years. Given the declining volumes in this market, though, we do not expect any material new demand, and so do not consider that this will have a significant bearing on competition in the market.

⁵⁷ See paragraph 7.96 and Table 53.

⁵⁸ For further details, see Section 5.

⁵⁹ We also believe that our network reach analysis may underestimate the extent of several OCP networks. In particular, we measure the extent of Virgin Media's network using a subset of street cabinets where they are known to have optical fibre. However, we do not have reliable information about flexibility points (chambers/manholes) along the network routes taken by the fibre to get to these street cabinets. The street cabinets may be 1km and more apart, but there will be chambers / manholes at very regular intervals along the fibre routes, and it is likely that many of these could be used as flexibility points. Therefore, we are potentially underestimating Virgin Media's coverage, and this may affect our analysis since Virgin Media has the largest access network footprint of all the OCPs. A similar problem affects a number of other CPs who we believe have relatively extensive network coverage in the WECLA (e.g. Verizon and Geo), but our network reach data suggests they have very few flexibility points in this area.

7.113 Overall, therefore, we consider that BT's control of infrastructure does not indicate it has SMP in this market.

Economies of scale and scope

7.114 Much of the discussion of economies of scale and scope in relation to the low bandwidth TISBO market applies equally to this market: the upfront costs required to build a telecoms network create economies of scale, and the fact that many of these costs are common to a wide range of services implies there are economies of scope. BT is not the largest supplier within this market, and therefore we would not expect its scale within the market to create any competitive advantage. However, BT is by far the largest provider of wholesale leased lines services as a whole, and has greater scope across fixed communications markets than its competitors. We would therefore expect BT to derive some competitive advantage from the scope of its operations outside this specific market.

7.115 However, this benefit appears to be limited, with the majority of the market having been found to be effectively competitive in the 2007/8 Review. This leads us to consider that BT's scale and scope are unlikely to create a competitive advantage which allows it to act independently of competitors, customers and ultimately of consumers in this market over the course of the review period of three years.

Barriers to entry and expansion

7.116 As noted in relation to the market outside the WECLA, barriers to entry and expansion may be high, but to some degree the high value of services being sold offsets the risks associated with the network investment required to supply services. Whereas outside the WECLA the network reach analysis shows that OCPs have generally not overcome these barriers to entry, within the WECLA the reverse is true: for 95% of businesses in this area, there is at least one OCP network within 200 metres. The main reason for this is, in our view, the higher density of customers for high bandwidth leased lines in the London area.

7.117 While the declining nature of this market means that entry is unlikely in the WECLA, we consider that supply is already competitive.

Countervailing buyer power

7.118 Given the relatively low concentration of supply in this market, we do not consider an assessment of countervailing buyer power affects our proposal not to make a market power determination.

Prospects for competition

7.119 We consider demand for these services will continue to fall over the course of the review period of three years. As a result, it is unlikely that there will be any new supply. However, the market already appears to be competitive, and we do not expect any of the larger competitors to exit the market. Therefore, we consider it is unlikely that competition will deteriorate to the extent that it is no longer effective and that one, or more, CPs holds a position of SMP.

Overall assessment of economic characteristics

- 7.120 In the 2007/8 Review, Ofcom concluded that the medium bandwidth TISBO market in the CELA was effectively competitive and therefore no CP had SMP. There is a considerable overlap between CELA and WECLA, and so there has been no SMP regulation in most of this market since that review.
- 7.121 Although BT benefits from the scale and scope of its operations, and from more complete network coverage within the WECLA, these benefits are only marginal relative to its competitors. A number of OCPs have built extensive duct and fibre networks within the WECLA. Many of the buildings served within the WECLA have multiple occupancy or otherwise offer the prospect of additional demand at the same site. These factors, in conjunction with the high value of services in this market, mean that OCPs have been able to justify extending their networks and connecting to a relatively large number of buildings within the WECLA. This can be seen in the market shares: BT's share of volume has remained low and fallen slightly from 22% to 17%.⁶⁰
- 7.122 We consider that the prospects for additional entry are relatively poor given the declining demand. BT may, to some extent, be in a position of relative economic strength due to its network assets and the scope of its operations. However, the trends that we observe in the market shares indicate that no individual competitor has a material advantage over others. Therefore, we consider that competition will continue to provide an effective constraint on the behaviour of all CPs over the course of the review period of three years.

Wholesale market for high bandwidth TISBO in the UK excluding the Hull area and the WECLA

- 7.123 We propose that BT has SMP in the wholesale market for high bandwidth traditional interface symmetric broadband origination in the UK excluding the Hull area and the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 56 below in measuring BT's power to behave to an appreciable extent independently of its competitors, customers and consumers.

⁶⁰ It should be noted that this fall in share represents a difference in the rate at which BT has lost customers given the overall rapid decline in volumes in the market. There has been very little new supply since the 2007/8 Review.

Table 56: Summary of proposed SMP determination for the wholesale high bandwidth TISBO market (>45Mbit/s, <=155Mbit/s) in the UK excluding the Hull area and the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
BT*	-52%**	49%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	BT

* This refers to the market power designation in the 2007/8 Review for the UK excluding CELA and Hull.

** This refers to the change in volume throughout the UK

7.124 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.125 We estimate that volumes have fallen by around 50% in this market since 2006/07. Similar to medium bandwidth TISBO services, high bandwidth TI circuits have been used to support a full range of downstream services. Many of these other uses for the circuits are more tolerant of the variable performance of AI services, and so customers have migrated to these technologies to take advantage of considerably lower prices for similar bandwidths.

7.126 We estimate that over half of the circuits now supplied in this market are used by MNOs to provide connectivity between various sites within their networks. MNOs are in the process of migrating to AI services, and so we believe the overall downward trend in volume is likely to continue over the course of the review period of three years.

7.127 Table 57 below shows how the market shares have changed over the same period.

Table 57: Volumes shares in the high bandwidth TISBO market in the UK excluding the Hull area and the WECLA

CP	Volume share 2007	Volume share 2011
BT	57%	49%
C&WW	35%	28%
Virgin	0%	19%
Verizon	2%	1%
Other	5%	2%

Source: CP data, Ofcom analysis

- 7.128 BT's share of volume currently stands at 49%. This is very close to the 50% threshold which creates a presumption of dominance. We note apparent downward trend in BT's share. However, we consider this apparent trend is due in part to circuits which were missing from Virgin Media's data submitted when carrying out the 2007/8 Review. As shown in the table, Virgin Media's share appears to have risen from 0% to 19% in four years. According to the trend data supplied to us for the purpose of this market review, Virgin Media's sales of 45Mbit/s and 155Mbit/s have fallen by over 40%, which is consistent with the downward trend we see across all suppliers in the market. Therefore, we believe that Virgin Media's share is likely to be understated in the 2007/8 Review, and consequently BT's share is overstated.
- 7.129 Based on the evidence available to us, we consider BT's share is both high and stable in a declining market.

Profitability

- 7.130 The data in Table 58 below suggests that BT's profits on sales of wholesale high bandwidth TISBO services have increased since 2008/09, and currently stand at a level which is substantially in excess of its cost of capital. Although we do not have geographically disaggregated data for profitability, we know that the majority of BT's 155Mbit/s circuits are outside the WECLA and the Hull area. Therefore, we regard the profit levels for the UK as a whole as a reasonable approximation of BT's profitability in this market.
- 7.131 Following the approach set out in the general assessment at paragraph 7.25 above, we regard profits which are persistently and significantly above the cost of capital as an indicator of the existence of SMP even in the presence of *ex ante* regulation in this market, although we do not consider it to be a necessary condition for finding SMP.

Table 58: BT profitability on sales of wholesale high bandwidth TISBO services

Product	Year	Reported ROCE	Adjusted ROCE	Turnover (£m)	Reported profit (£m)	Adjusted profit (£m)	Mean Capital Employed (£m)
Wholesale high bandwidth TISBO services	2010/11	0.8%	38%	68	29	35	92
	2009/10	49%	40.7%	77	42	44	108
	2008/09	22.3%	21.3%	104	46	45	211
	2007/08*	8.4%	5.9%	161	31	23	387
	2006/07*	14%	16.8%	159	45	54	321

* figures for 2006/07 and 2007/08 include both medium and high bandwidth services, and therefore are not directly comparable to the other years.

Source: BT regulatory financial statements, Ofcom analysis

Control of infrastructure not easily duplicated

- 7.132 The general assessment above in relation to this criterion applies to this market. BT's virtually ubiquitous network infrastructure throughout the UK gives it a significant advantage over its competitors. The geographic scope of this network enables it to

supply 155Mbit/s TISBO services at most locations within a reasonable period of time and without incurring substantial additional costs. In contrast, OCPs do not have extensive local access networks throughout the UK, and therefore incur substantial sunk costs when extending their networks to reach new sites.

7.133 These are relatively high value services. As shown in Table 47, the average revenue for a 155Mbit/s terminating segment is more than 20 times that of a 2Mbit/s segment. The costs associated with building network extensions are largely invariant to the bandwidth of the service provided. OCPs are therefore much more likely to duplicate BT's infrastructure on a customer-by-customer basis in this market compared to the low bandwidth TISBO market.

7.134 This is a mature market which is now in decline. We consider that, to a large degree, OCPs will already have replicated BT's infrastructure where this has been economic to do so. BT's high market share suggests there continue to be areas where it has not been economic to replicate the BT infrastructure - in particular, outside the WECLA which has the greatest concentration of OCP network infrastructure. Only 22% of business sites throughout the UK have two or more alternative OCPs to BT within 200m. While it is possible that CPs would be prepared to dig further than 200m to supply services in this market, we consider these circumstances will become increasingly rare over the course of the review period of three years as the market continues to decline and CPs focus their network investment on serving AISBO and MISBO markets.⁶¹

Economies of scale and scope

7.135 BT benefits from the fact that the same trenches and ducts are used to serve customers across the full range of fixed telecom service markets. A number of OCPs also benefit from scale and scope across fixed telecoms in general and in the provision of leased lines services in particular - but, importantly' not to the same significant extent as BT. In particular, BT's relative scale in wholesale local access markets,⁶² in the low bandwidth TISBO market and in call conveyance⁶³ markets, means that it can recover a significant proportion of its common costs from these markets.

7.136 155Mbit/s symmetric broadband origination services require a fibre connection. Although BT will not always have fibre already connected to a customer site, in many cases its duct network will already be connected to provide copper based services. In contrast, OCPs are much less likely to be connected to the site, and will therefore need to dig new trenches, install ducts and gain the necessary wayleaves. In these

⁶¹ A similar point was made by a number of stakeholders in response to early consultations during the 2007/8 Review. For example, in paragraph 5.25 of the July 2008 Consultation, we noted evidence of the inability for customers to find alternative suppliers outside major metropolitan areas, and unwillingness on the part of CPs to extend network coverage to reach these regions. Given the declining nature of this market, we consider it is now even less likely that CPs would be prepared to undertake these investments.

⁶² See "Review of the wholesale local access market", October 2010
http://stakeholders.ofcom.org.uk/binaries/consultations/wla/statement/WLA_statement.pdf

⁶³ See "Review of the fixed narrowband services wholesale markets", September 2009
http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

circumstances, BT will be in a much stronger position than competitors, first by having significantly lower incremental costs for connecting to the customer site, and second, by being able to offer the connection faster than its competitors.

- 7.137 Furthermore, even if BT's duct network does not already reach the customer site, they are still likely to have a cost advantage since they are likely to have existing network infrastructure physically closer to the site.
- 7.138 BT's scale across TISBO markets is of particular importance. This means that BT is likely to benefit from better average equipment utilisation on its SDH network. It also means that BT is in a position to negotiate better prices from vendors. It is important to note that these effects are driven by the scale and extent of BT's SDH network. It therefore relates to the scale and extent of BT's operation across all the TISBO markets rather than its scale within any specific relevant market. In this regard BT also benefits from additional scale driven by its internal demand for SDH circuits for use in its voice network.
- 7.139 Another benefit which is of particular importance to this market, is the fact that BT's extensive physical network infrastructure means that they are in a better position to engineer resilient services through physical redundancy in the network.⁶⁴
- 7.140 Overall, we consider BT is likely to enjoy greater economies of scope, and will benefit from greater scale across all the TISBO markets, relative to OCPs. This leads to a cost advantage over its competitors in the supply of 155Mbit/s symmetric broadband origination services which is likely to strengthen BT's position in this market.

Barriers to entry and expansion

- 7.141 The general assessment of this criterion above, and our assessment of this criterion in the low bandwidth TISBO market, also apply to this market. Relative to the low bandwidth market, the barriers to entry and expansion are offset to some degree by the high value of the services in this market. However, we consider they remain significant and sufficient to impede the competitive process. In particular, the declining nature of this market leads us to consider that existing and potential entrants will be less likely to invest and overcome the various barriers discussed.

Countervailing buyer power

- 7.142 We consider BT is likely to be the only commercially viable option for supply in large parts of the UK outside the WECLA and the Hull area. This is driven by:
- the cost of the network infrastructure investment required to serve customers;
 - the fact that BT has a more extensive network infrastructure already in place;
 - economies of scale and scope enjoyed by BT;
 - switching costs; and
 - the fact that the market is in decline.

⁶⁴ This point is discussed in more detail in paragraph 7.30.

7.143 As a result, despite the fact that BT's existing supply of wholesale 155Mbit/s symmetric broadband origination is concentrated with a small number of customers, they will often have few, if any, alternatives to BT. Therefore, we consider there is an absence of, or low, countervailing buyer power in this market.

Prospects for competition

7.144 The prospects for competition in this market are very limited. Over the course of the review period of three years we consider the demand for high bandwidth TISBO services will continue to fall rapidly. This decline in demand makes investment for OCPs much less commercially attractive. Given the barriers to entry discussed above, it is also unlikely that there will be new entry in this market. Overall, therefore, we do not consider the intensity of competition is likely to increase over the review period, nor that prospective competition will act as a constraint on BT's behaviour.

Overall assessment of economic characteristics

7.145 In forming our proposal that BT has SMP in this market, we have taken particular account of the fact that BT's share of volume is large (just under 50%). The market is now witnessing a rapid decline in volumes as customers switch to AI and higher bandwidth services. The total number of circuit ends in the UK as a whole has fallen by over 50% since the 2007/8 Review, and whilst BT's share may have fallen slightly, it remains large at 49%.

7.146 Our proposed market power determination is also based on the following three factors:

- competing fixed network infrastructure is mostly limited to urban areas. Therefore, despite the presence of some competition in some areas, BT's ubiquitous network infrastructure confers on it a significant cost advantage in serving many other areas in this market;
- the declining nature of the market means that OCPs and end-users are less willing to make the investments necessary to contest BT's supply; and
- we consider there is an absence of, or low, countervailing buyer power. In some situations, MNOs may be able to use fixed wireless links as an alternative to fibre, but the ability to expand microwave use in locations where it is not already employed is likely to be limited by the technical requirements of microwave, including the need for a clear 'line of sight'. In addition, MNOs are forecasting significant growth in mobile data traffic, and are planning changes to their network architectures to cater for this including a switch to Ethernet based backhaul circuits. Given this context, we consider it is unlikely that MNOs will be prepared to undertake the significant investments in the current TI-based network which would be required to shift a significant proportion of circuits away from BT.

Wholesale market for high bandwidth TISBO in the WECLA

7.147 We propose that no CP has SMP in the wholesale market for high bandwidth traditional interface symmetric broadband origination in the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had

particular regard to the SMP criteria summarised in Table 59 below in measuring whether any CP has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 59: Summary of proposed SMP determination for the wholesale market for high bandwidth TISBO (>45Mbit/s, <=155Mbit/s) in the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
No SMP*	-52%**	12%	<ul style="list-style-type: none"> - Significant amount of alternative infrastructure - BT's economies of scale and scope provide limited benefit - Barriers to entry and switching expected to have limited impact on competition - Effective competition is expected to be maintained 	No SMP

*This refers to the market power designation in the 2007/8 Review for the CELA.

** This refers to the change in volume throughout the UK

7.148 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.149 Volume has fallen by 64% in the WECLA since 2006/07. As noted above, this decline is driven by the fact that, where possible, customers have been switching to AI services. The equivalent product market in the CELA was found to be effectively competitive in the 2007/8 Review, with BT having a very low share of volume. BT's share has remained very low in the CELA, falling to around 10%. The same is true in the WECLA: we estimate that BT's share has fallen from 18% to 12%.

7.150 Our data shows that almost all CPs have lost a significant number of circuits. The relative proportion of circuits lost varies between CPs, and results in the changes in market shares shown in Table 60 below. We consider this market share evidence indicates that no CP has SMP.

Table 60: Volumes shares in the high bandwidth TISBO market in the WECLA

CP	Volume share 2007	Volume share 2011
BT	18%	12%
C&WW	16%	31%
COLT	52%	28%
Verizon	8%	14%
Other	5%	14%

Source: CP data, Ofcom analysis

Profitability

7.151 Data on BT's profitability is not available for the geographic region of the WECLA. The reported return on capital for high bandwidth TISBO services was 30.8% for the UK as a whole in 2010/11. This is significantly in excess of BT's cost of capital. However, in light of BT's market share of 12% in particular, and the fact that this share appears to be declining, we do not attach weight to our assessment of this criterion.

Control of infrastructure not easily duplicated

7.152 The discussion at paragraphs 7.111-7.113 of this criterion in relation to the medium bandwidth TISBO market in the WECLA applies equally to this market. We consider that BT does not benefit significantly in this market from its ownership of an extensive network infrastructure within the WECLA.

7.153 In order to supply a circuit which spans the WECLA boundary, a CP will need access to infrastructure in both areas. In the absence of regulation, BT's SMP outside the WECLA could enable it to leverage its market power into the WECLA. However, as explained above, we are proposing *ex ante* regulation in adjacent relevant markets in which we have proposed BT has SMP, and therefore we consider this *ex ante* regulation should act to prevent leverage of market power into the present market.

Economies of scale and scope

7.154 The discussion of economies of scale and scope between paragraphs 7.114 and 7.115 in relation to the medium bandwidth TISBO market in the WECLA applies equally to this market. Although it likely that BT derives a benefit from its scale and scope, the market shares point to the fact that this does not appear to have created a material competitive advantage.

Barriers to entry and expansion

7.155 The discussion of barriers to entry in relation to the medium bandwidth TISBO market in the WECLA applies equally to this market. Although barriers to entry and expansion are likely to exist in this market, we do not expect this to have a material impact on competition over the review period of three years.

Countervailing buyer power

7.156 Given the relatively low concentration of supply in this market, we do not consider an assessment of countervailing buyer power affects our proposal not to make a market power determination.

Prospects for competition

7.157 We expect that demand for these services will continue to fall over the course of the review period of three years and that there will be very little new supply. However, the market already appears to be competitive, and we do not expect any of the larger competitors to exit the market over the course of the review period. Therefore, we consider it is unlikely that the level of competition will reduce to the extent that it is no longer effective with the result that one, or more, CPs hold a position of SMP.

Overall assessment of economic characteristics

- 7.158 In the 2007/8 Review we concluded that the market for high bandwidth (155Mbit/s) TISBO services in CELA was effectively competitive and therefore no CP had SMP. As a result, there has been no SMP regulation of these services in the CELA.
- 7.159 The WECLA is a larger area than the CELA with 29% more postcode sectors. However, as shown by the geographic analysis in Section 5, competitive conditions are generally consistent between the CELA and the WECLA. We have recalculated shares for 2007 for the new WECLA area. This shows that BT's share has stayed low throughout the period since the 2007/8 Review, falling to its present level of just 12%. The largest supplier is C&WW with a 31% share, followed by COLT with a 28% share. BT is the fourth largest supplier.
- 7.160 Although BT benefits from the scale and scope of its operations across TISBO markets and across the fixed telecoms sector, and from more complete network coverage within the WECLA, any resulting advantages which BT has over its competitors are small. A number of OCPs have built very extensive duct and fibre networks within the WECLA. This is justified by the extremely high density of business premises across a wide area (relative to other city centre business districts in the UK). Many of the buildings served within the WECLA have multiple occupancy or otherwise offer the prospect of additional demand at the same site. In addition, we are proposing *ex ante* regulation in adjacent relevant markets in which we have proposed BT has SMP, and consider this *ex ante* regulation should act to prevent leverage of market power into the present market.
- 7.161 These factors, in conjunction with the high value of services in this market, mean that OCPs have been able to justify extending their networks and connecting enough buildings within the WECLA to supply a significant proportion of market demand. No individual CP appears to have a significant advantage over others, and therefore we believe that competition will continue to provide an effective constraint on the behaviour of all CPs over the course of the review period of three years.

Wholesale market for very high bandwidth TISBO in the UK excluding the Hull area

- 7.162 We propose that no CP has SMP in the wholesale market for very high bandwidth traditional interface symmetric broadband origination in the UK excluding the Hull area, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 61 below in measuring whether any CP has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 61: Summary of proposed SMP determination for the wholesale market for very high bandwidth TISBO (622Mbit/s) in the UK excluding the Hull area

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
No SMP	-76%	5%	<ul style="list-style-type: none"> - High value of services encourages deployment of alternative infrastructure - BT's economies of scale and scope provide limited benefit - Barriers to entry and switching expected to have limited impact on competition - Effective competition is expected to be maintained 	No SMP

7.163 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market shares and market trends

7.164 Volumes in this market have fallen by 76% since 2006/07. These services are used to carry highly aggregated traffic streams, and as such are often used in core networks and for long distance links. Similar to medium and high bandwidth TISBO, services in this market have historically been used to support a wide range of downstream services. Many downstream services, such as internet access or data traffic on an internal corporate network, do not require the very low latency and low jitter that TI services offer. As a result, many customers have migrated to Ethernet and WDM based services where they benefit from lower costs per unit of bandwidth.

7.165 Table 62 below sets out the market share of the largest CPs in 2007 and 2011. BT's share of the market continues to be very low. Virgin Media is the largest CP with a 24% share, and the next largest is C&WW with 22%.

Table 62: Volumes shares in the market for very high bandwidth TISBO services in UK excluding the Hull area

CP	Volume share 2007	Volume share 2011
BT	7%	5%
C&WW	33%	22%
COLT	1%	13%
Virgin	5%	24%
Verizon	9%	12%
KCOM	40%	3%
Level 3 / GC*	2%	20%
Other	3%	1%

* Includes the share of Global Crossing in both 2011 and 2007 for comparison purposes

Source: CP data, Ofcom analysis

- 7.166 We consider that the market share trends suggesting more dramatic changes in market share - in particular those of Virgin - are likely to be driven by inconsistencies in the data supplied by CPs when carrying out the 2007/8 Review.⁶⁵ It is therefore difficult to discern any clear trends and consequently we have not attached weight to the market share trends.
- 7.167 Overall, however, we consider that the share data for this market indicates that no CP has SMP.⁶⁶ A large number of CPs supply services in this market, with five large OCPs having a share above 10%, and BT has just 5% of the market.
- 7.168 This market includes all wholesale TISBO services in the UK excluding the Hull area at bandwidths of 622Mbit/s. SDH services at higher bandwidths, such as STM16 and STM64, are included in the MISBO market for reasons explained in sections 3 and 4. However, as market definition is a means to an end, the correct identification of SMP, we have considered whether our SMP finding could be affected if higher bandwidth services delivered without using WDM equipment at the customer premises were included in the very high bandwidth TISBO market. We note that BT only offers these higher bandwidth TISBO services using WDM, although some other operators may provide similar circuits using “native” SDH infrastructure. Therefore, we consider that the inclusion, or otherwise, of SDH circuits delivered without WDM equipment at the customer premises is not material to our SMP assessment.

Profitability

- 7.169 Data on BT’s profitability for 622Mbit/s services is not available. Given the strength of the market share evidence, we do not consider that further investigation of BT’s profits within this market is required to reach our proposal in relation to whether to make a market power determination.

Control of infrastructure not easily duplicated

- 7.170 The high value of the services in this market means that OCPs are generally willing to invest in the high fixed costs that are necessarily to reach new customer sites. Although we do not have directly comparable data to calculate an average revenue per circuit end – as shown in Table 47 for other services – we have assessed the relative prices of some 622Mbit/s services relative to 155Mbit/s services. This analysis suggests that the average revenue for a 622Mbit/s service is in the region of two thirds higher than for a 155Mbit/s service. This high value implies that BT’s control of infrastructure is less likely to be a source of SMP in comparison with other TISBO markets.

Economies of scale and scope

- 7.171 Although BT is likely to benefit from greater scope economies, much as in other TISBO markets,⁶⁷ these potential benefits have not had a material impact on competition. Equally, BT’s scale in this market is unlikely to generate a competitive advantage since they have a much smaller share than a number of the OCPs.

⁶⁵ See discussion of this point in paragraphs 7.94 and 7.128.

⁶⁶ In this respect we note the SMP Guidelines which state that CPs with market shares of no more than 25% are not likely to enjoy a (single) dominant position (see paragraph 75).

⁶⁷ See, for example, paragraphs 7.135-7.140.

Barriers to entry and expansion

- 7.172 Entry to all wholesale TISBO markets requires significant investment in network infrastructure. However, these largely sunk costs have not deterred entry in this market. This is, in our view, because the high value of the services has allowed CPs to justify incremental investments needed to reach new customer sites.
- 7.173 We do not expect any material switching or new demand in this market over the course of the review period of three years, and therefore we do not believe that barriers to entry or expansion are likely to have a significant impact on competitive conditions.

Countervailing buyer power

- 7.174 Given the relatively low concentration of supply in this market, we do not consider an assessment of countervailing buyer power affects our proposal as to whether to make a market power determination.

Prospects for competition

- 7.175 We consider demand for these services is likely to continue to fall over the course of the review period of three years as customers switch to services using WDM and Ethernet interfaces. We do not expect to see a material volume of new supply. However, given the number of CPs present in this market, we expect that competition both for existing supply and for any future supply will continue to be effective.

Overall assessment of economic characteristics

- 7.176 As with the other higher bandwidth TISBO markets, we have seen a significant decline in the number of 622Mbit/s circuits supplied since 2006/07. In the 2007/8 Review we found BT had a very low share of 7% in this market and concluded that no CP had SMP. BT's market share has since declined to 5%.
- 7.177 The costs of the fixed access network infrastructure required to supply very high bandwidth TISBO services are no different from those required to supply TISBO services in the other relevant wholesale markets. As such, there are potentially significant barriers to entry and expansion in this market. However, the important distinction to note here is that the potential revenues from supplying very high bandwidth TISBO services are relatively very high. The high value of these services has allowed OCPs to justify the incremental investments needed to reach new customer sites.
- 7.178 Our analysis suggests that BT is likely to have a competitive advantage due to its network assets which are not easy to duplicate and from the scope of its operations. In particular, the extent of BT's network and the barriers to entry create the potential for first mover advantage. However, it is clear from the market share evidence that BT does not have SMP in this market.
- 7.179 Although there is unlikely to be any significant new supply in this market over the course of the review period of three years, the result of the overall assessment of the SMP criteria leads us to consider that no CP is likely to be able to act to an appreciable extent independently of competitors, customers and ultimately

consumers. We consider, therefore, that this market is effectively competitive with no CP having SMP.

Wholesale market for low bandwidth AISBO in the UK excluding the Hull area and the WECLA

7.180 We propose that BT has SMP in the wholesale market for low bandwidth alternative interface symmetric broadband origination in the UK excluding the Hull area and the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 63 below in measuring BT’s power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 63: Summary of proposed SMP determination for the wholesale low bandwidth AISBO market (<=1Gbit/s) in the UK excluding the Hull area and the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT’s market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
BT*	78%	67%	<ul style="list-style-type: none"> - BT’s control of infrastructure not easily duplicated - BT’s economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - - Lack of prospects for competition 	BT

* This refers to the market power designation in the 2007/8 Review for the UK excluding Hull.

7.181 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.182 We estimate that volumes have grown by 78% in this market since 2006/07. Table 64 below shows the market shares of the largest CPs and how these have changed.

Table 64: Volumes shares in the wholesale low bandwidth AISBO market in the UK excluding the Hull area and the WECLA

CP	Volume share 2007*	Volume share 2011
BT	69%	67%
COLT	0%	1%
Virgin Media	13%	26%
Verizon	0%	1%
C&WW	5%	2%
KCOM	7%	2%
Other	5%	3%

* 2007 shares based on adjusted 2007 data. See discussion below for further details.

Source: CP data, Ofcom analysis

7.183 BT has maintained its position in the market with our estimates showing its share to have fallen from 69% to 67% - a change which is well within the margin of error of the estimates.⁶⁸ In this respect, it is also worth noting that in the 2007/8 Review, albeit in relation to the geographic area of the UK excluding the Hull area, we found that BT's volume share had not changed significantly since 2004.⁶⁹

7.184 In terms of market share trends, it is instructive to consider the share of net additions. These show that BT and Virgin Media supplied virtually all of the growth in demand in the market, with BT supplying about 50% more new services than Virgin Media. This gives us an idea of the market shares that would prevail were this trend to continue, and suggests that Virgin Media is likely to increase its share of the market, but that BT will continue to have a market share well above the 50% threshold for a presumption of dominance.

Profitability

7.185 BT's regulatory financial statements do not currently provide geographically disaggregated data. For the UK as a whole, BT's reported ROCE for low bandwidth AISBO services was 4.5% in the financial year 2010/11 on revenues of £554m. However, the adjusted ROCE is somewhat higher at 12.4%. Both reported and adjusted profitability figures appear to be on a downward trend, but this may simply reflect the effect of existing price regulation rather than any increase in competitive intensity.

⁶⁸ For example, we uplift CPs service counts in an attempt to remove biases due to missing data. As a sensitivity test, we also calculate shares based on the original data without uplifts. This suggests that BT's share of volume is 74%.

⁶⁹ BT's share of AI circuits at all bandwidths was estimated to be 75% in 2004, falling to 73% in 2006.

Table 65: BT profitability on sales of wholesale low bandwidth AISBO services

Product	Year	Reported ROCE	Adjusted ROCE	Turnover (£m)	Reported profit (£m)	Adjusted profit (£m)	Mean Capital Employed (£m)
Wholesale low bandwidth AI services	2010/11	4.5%	12.4%	554	58	161	1,301
	2009/10	25.4%	14.5%	489	284	162	1,120
	2008/09	37.3%	33.8%	494	325	295	873
	2007/08*	31.1%	28.4%	439	266	245	862
	2006/07*	26.9%	31.3%	344	170	197	630

* figures for 2006/07 and 2007/08 relate to all bandwidths of AI services, whereas data for subsequent years will exclude sales of services above 1Gbit/s.

Source: BT regulatory financial statements, Ofcom analysis

7.186 We have no direct evidence to suggest that BT's profits should be significantly different in the UK excluding WECLA and the Hull area in comparison with these figures for the UK as a whole. We therefore proceed on the basis that BT's ROCE in this market is unlikely to be significantly above its cost of capital.⁷⁰

7.187 Whilst BT's profitability on low bandwidth AISBO services as a whole does not appear to be excessive, this does not rule out the possibility that the prices of some individual services within the market may have been above levels consistent with a competitive market, at some times. Indeed as we discuss below, there is evidence that BT has at times charged excessively for some services in this market.

7.188 In line with the approach set out in paragraph 7.25, we do not place any weight on low profitability in our assessment of SMP in this market, and therefore do not consider that this criterion provides material evidence either for or against our proposed market power determination.

Control of infrastructure not easily duplicated

7.189 To a large degree, wholesale AISBO services require the same physical fixed network infrastructure as wholesale TISBO services, and require the same sunk costs to reach and connect to customer sites. BT's extensive network infrastructure creates a significant competitive advantage: the network enables it to supply low bandwidth AISBO services at most locations within a reasonable period of time and without incurring substantial additional costs.

7.190 Our network reach analysis shows that OCP network infrastructure is quite limited outside the WECLA. However, we also consider that even within areas served by OCPs, BT still has a competitive advantage due to the extent of its network. Specifically, BT is likely to either have network infrastructure already connected to a site,⁷¹ or to have infrastructure very close by.

⁷⁰ We consider that there are two relevant levels for the cost of capital for different parts of BT Group – one for Openreach and another for the 'rest of BT'. AISBO services are provided by Openreach, and the relevant cost of capital for Openreach was 10.1% in 2010/11.

⁷¹ Given BT's scale and scope in other fixed telecoms markets, it is much more likely to have already sold to a customer in the same building, for example to provide voice telephony.

- 7.191 In contrast, we expect that OCPs will generally require ductwork to reach new customer sites. Even if a CP's network runs along the same street as a customer site, the CP will still need to build a small amount of additional duct to reach the building unless it has already sold services to a customer in the same building.
- 7.192 In order to assess these inferences, we have collected data from OCPs and BT regarding investments in network extensions to support new customer connections.⁷² The BT data suggests that it requires new ductwork for less than [X]% of new Ethernet connections, and these have a median build distance of [X] and an average of [X].
- 7.193 Although we do not have directly comparable data for OCPs,⁷³ we estimate that COLT and Virgin Media⁷⁴ require new ductwork for over [X] % of new connections, which is around four times as many cases as BT. We also find that both the median and average build distances of these network extensions are approximately double those of BT. Therefore, we consider this supports our view that BT benefits from a competitive advantage due to the extent of its network *even in areas where competitors have access network infrastructure*.⁷⁵
- 7.194 Overall, we find that BT's control of a ubiquitous network infrastructure suitable for providing low bandwidth AISBO services gives BT a significant competitive advantage over its competitors.

Economies of scale and scope

- 7.195 As with all the relevant wholesale symmetric broadband origination markets, the low bandwidth AISBO market is characterised by economies of scale and scope. BT benefits most significantly from the scale and scope of its established presence in the

⁷² Ofcom has collected data from BT regarding the excess construction charges (ECCs) levied on Openreach sales in the six month period from April to September 2011. BT has also provided a detailed breakdown of the constituent elements of the ECCs in a sample period of a week. ECCs are raised by BT in addition to normal connection charges whenever new infrastructure is required to deliver a service (for details of these charges, and examples of the activities which result in these charges, see http://www.bt.com/pricing/current/Excess_Construction_boo/2-1319_d0e1.htm). We have also collected data from OCPs regarding network extensions built in the period since the 2007/8 Review.

⁷³ Whilst we have data regarding network extensions built by OCPs, we do not know precisely which of the circuits sold by an OCP are self-supplied. This is important because the production decision is different for an OCP due to the availability of regulated wholesale inputs from BT. When considering how to supply a new customer, an OCP can find out how much it is likely to cost using BT's infrastructure in addition to working out the costs of self-provision. If the customer site is a significant distance from its network, then an OCP is likely to buy inputs from BT (or possibly another supplier). As a result, the proportion of sales which result in new ductwork is likely to be biased downwards relative to BT who will almost always use its own network infrastructure.

⁷⁴ We believe that COLT and Virgin Media both self-supply (see footnote 73 for an explanation of the relevance of self-supply) a large proportion of low bandwidth AISBO services, and we also have data from both of these CPs regarding the network extensions completed since the last market review.

⁷⁵ This analysis is based on services sold throughout the UK, and as noted, is heavily influenced by the presence of existing regulation of services within this market. However, we believe it provides some quantitative evidence in support of our position that BT derives a significant competitive advantage from the ubiquity of its network.

provision of leased lines services in general and in the provision of fixed network services in general. Its scale specifically within this market is less important, particularly for Ethernet services provided over point-to-point fibre. A proportion of the point-to-point infrastructure is incremental to an individual customer site and not shared and therefore is subject to economies of scale only to the extent that multiple services are provided to the same site.⁷⁶

7.196 BT benefits from the ability to use the network infrastructure which has been deployed to provide services in other communications markets, in particular TISBO services and PSTN services. BT is often already connected to a customer site, which leads us to consider that, on average, it can provide low bandwidth AISBO services more cheaply and quickly than OCPs.

Barriers to entry and expansion

7.197 We consider there are considerable barriers to entry and expansion in this market. These stem primarily from the high sunk costs⁷⁷ required to build network infrastructure and the associated economies of scale and scope. However, they also derive from switching costs. In the general assessment above of the criterion we discuss the following switching costs which are relevant in this market:

- physical changes in network routing are required which will usually result in a temporary loss of service for the downstream customer;
- services provided by different suppliers are rarely identical, for example, with CPs using equipment from different manufacturers. This raises the possibility that customer systems and equipment which have been fine tuned to work with the services from one CP might not work as well after switching to a different supplier. The costs associated with re-optimising IT systems under the new arrangement, or merely the expectation that services might not perform as well following a change of supplier, act as a barrier to switching; and
- similarly, CPs develop IT systems and processes to transact and communicate with their wholesale suppliers. A change of supplier, or the addition of a new supplier, is likely to create additional cost which acts as both a barrier to switching and a barrier to expansion.

7.198 EFM is an option for supplying lower bandwidth AI services. CPs can provide EFM services using regulated access to BT's copper infrastructure. This reduces the barriers to entry and expansion. However, EFM has a theoretical maximum bandwidth of 40Mbit/s using 8 bonded copper pairs, and more realistically will be used to provide services up to 20Mbit/s. These services are also limited by the fact that the service level guarantees for the underlying copper input do not match those offered on BT's fibre-based leased lines. Over the course of the review period of three years, with greater demand growth expected at higher bandwidths, we do not consider EFM will act as an effective constraint on AISBO prices across the market as a whole.

⁷⁶ See discussion of this point, and the definitions of scale and scope economies, at paragraphs 7.31-**Error! Reference source not found.**

⁷⁷ See paragraphs 7.43-7.45 for a discussion of sunk costs.

7.199 Consequently, we consider that barriers to entry and expansion are significant in this market and imply that competition is likely to be slow to develop and to erode BT's current market position.

Countervailing buyer power

7.200 Our view is that buyer power is unlikely to mitigate BT's SMP in this market. Wholesale purchasers need to be able to make a credible threat to switch supplier, or to meet their requirements through self-supply, for a significant proportion of their demand if buyer power is to have a material impact on competitive conditions.

7.201 However, the largest customers of BT's wholesale services are its own downstream businesses. Approximately 60% of low bandwidth AISBO services sold by Openreach are internal sales - both by volume and by revenue. In all but a handful of exceptional cases, BT's downstream businesses will not use alternative suppliers for wholesale symmetric broadband origination. Therefore, any countervailing buyer power would need to come from sales to external customers.

7.202 BT's two largest external customers in this market account for approximately one quarter of external supply, with the remaining supply much less highly concentrated. Both CPs have relatively extensive network infrastructure. Consequently, we expect that they will use this infrastructure to provide services wherever this is financially viable. This means that although it may be economic for CPs to extend their networks in some areas, in those areas where they currently buy services from BT, it is likely that they do not have network infrastructure sufficiently close to the customer site to generate a credible threat to self-supply these services, and we do not expect this situation will change over the course of the review period of three years.

7.203 In this regard, we note that one of these two CPs provided us with a forecast for its sales of leased lines, and the proportion it expected to provide over BT's network. This suggests that 100% of 10Mbit/s, 86% of 100Mbit/s and 60% of 1Gbit/s services will be provided using BT wholesale inputs.

Prospects for competition

7.204 We expect the demand for these services to continue to grow rapidly during the review period. In particular, we are likely to see MNOs migrate existing TISBO services to AISBO. This potentially presents an opportunity for entry and expansion by CPs:

- bandwidth requirements are likely to continue growing rapidly as retail customers make greater use of mobile data services;
- the demand is highly concentrated in a small number of customers, which creates the prospect of very high value contracts; and
- the geographic location of the demand is stable, and supply contracts are likely to be long term.

7.205 These circumstances give CPs a very good opportunity to invest in extending their networks and to recover the costs over the expected life of the contract. We have some evidence of this effect with Virgin Media announcing a £100million deal to

provide connectivity to MBNL (which manages the backhaul networks of Everything Everywhere and Three).⁷⁸

- 7.206 However, it is likely that a substantial proportion of demand from MNOs will remain with BT. First and foremost, BT has already sunk costs in extending its network to reach a large proportion of MNO sites in providing TI-based connectivity. In most cases, the passive infrastructure currently used to provide TI circuits can simply be re-used to provide AI services. This puts BT at a significant cost advantage to its competitors.
- 7.207 More generally, given the high sunk costs associated with building networks, the economies of scale and scope, and the other barriers to entry and expansion discussed above, we do not consider that competition is likely to become sufficiently effective over the course of the review period of three years, and neither do we consider that the threat of increased competition will act as an effective constraint on BT's behaviour over the course of the review period.

Overall assessment of economic characteristics

- 7.208 We consider BT's large market share of 67% and the fact that it has stayed at this level since the 2007/8 Review, provide a strong indication that BT has SMP in this market. The total number of circuit ends supplied in this market has increased by around 80%, with the fastest growth in demand for higher bandwidth circuits. Whilst this has attracted OCP investment with a large number of new circuits being provided by competitors to BT, BT has grown just as fast with the result that its 67% share of volume is virtually unchanged from the 69% we found in the 2007/8 Review.
- 7.209 The rapid growth in demand, which we expect to continue over the course of the review period of three years, does make this market more susceptible to competition. However, many of the same impediments to effective competition exist in this market as are observed in the low bandwidth TISBO market. The sunk costs associated with building physical infrastructure to reach new customer sites are no different, and although the average revenue per circuit end⁷⁹ is higher than for low bandwidth TISBO services, it is much lower than higher bandwidth TISBO services.
- 7.210 BT benefits from its extensive network infrastructure and economies of scale and scope arising from its significant presence across business and residential telecoms markets in general. The extensive network allows BT to serve new customer sites faster and at a lower average cost than its competitors. The costs of digging trenches and building duct network are unlikely to reduce significantly over the review period, and therefore BT will continue to enjoy this competitive advantage.
- 7.211 Finally, despite the relative attractiveness of investment in a growing market since the 2007/8 Review, competition has not become effective and BT has maintained its large share of the market. Although there may be increased competition from EFM and potential indirect constraints from next generation broadband services during the review period, we consider that the fundamental economic characteristics of this market will remain the same. Therefore, we consider that BT will continue to have the

⁷⁸ See <http://www.virginmediabusiness.co.uk/News-and-events/News/News-archives/2011/MBNL/>

⁷⁹ For all low bandwidth AISBO services, i.e. for 10, 100 and 1000Mbit/s services across the UK, the average revenue per circuit end is around £ [> <].

ability to act to an appreciable extent independently of its competitors, customers and consumers.

Wholesale low bandwidth AISBO market in the WECLA

7.212 We propose that BT has SMP in the wholesale market for low bandwidth alternative interface symmetric broadband origination in the WECLA. We consider the prospects for increased competition in this market over the three year forward-looking period may be relatively better than in the other markets in which BT has SMP, but do not consider competition will become effective over the period. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 66 below in measuring BT's power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 66: Summary of proposed SMP determination for the wholesale market for low bandwidth AISBO (<=1Gbit/s) in the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
BT*	86%	45-50%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for effective competition in the short to medium term. 	BT

* This refers to the market power designation in the 2007/8 Review for the UK excluding Hull.

7.213 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.214 Our estimates show that volumes in this market have grown by 86% since 2006/07. We expect demand to continue to increase over the course of the review period of three years, with the highest rates of growth for 1Gbit/s services. As discussed in paragraphs 7.204-7.205, there is a considerable amount of potential demand from MNOs as they migrate from TI circuits to Ethernet. Equally, existing customers of lower bandwidth circuits are likely to upgrade to higher bandwidths as the use of data-intensive applications and services continues to rise.

7.215 Table 67 below sets out our estimates of the changes in shares of volume since the 2007/8 Review. As explained in detail in Annex 8, our wholesale volume share estimates focus on the sales of customer circuit ends. Circuits which are used to connect network nodes to each other do not count towards a CP's market share. Similarly, circuits which connect a customer site to a network site (for example, those used to provide internet access or VPN tails) only count half as much as a circuit

which connects two customer sites. In order to calculate shares in this manner, we asked CPs to classify each end of every circuit supplied as either a 'customer end' or a 'network end'.

- 7.216 This circuit counting methodology was discussed in a meeting with BT in late 2011. Following the meeting, BT suggested that a large number of its circuit ends may have been misclassified in its original submission due to the fact it had only classified a circuit end as a network end if this was explicitly recorded on their systems. BT resubmitted its circuit dataset in December 2011 with a revised classification for the end-types.
- 7.217 For low bandwidth AISBO circuits in the WECLA, this change resulted in a reduction of over 50% in the number of circuit ends supplied by BT which count towards its market share. That is, over half of the ends classified as customer ends in the original submission were reclassified. Due to the magnitude of the change, we have audited BT's new submission and are satisfied that the new classifications are appropriate.
- 7.218 The new data from BT implies it has a share of volume in the WECLA of 41%, whereas the old data suggested a share of 59%. Although we consider our circuit counting methodology is appropriate,⁸⁰ we also believe that CPs may have misclassified circuit ends in a similar manner to BT in its original submission. We have tested a sample of the CPs' data, and checked the circuit end point classifications for specific postcodes against the classification used by BT in its resubmitted data.⁸¹ This analysis suggests that the number of circuit ends contributing to CPs' market shares should be lower. On the presumption that the sample is representative⁸² of all CPs' data, then we consider BT's share is unlikely to be below 45% or much above 50%. We will continue to work with CPs and to analyse the existing data to test this presumption during this consultation period.
- 7.219 Our circuit counting methodology is consistent with that adopted in carrying out the 2007/8 Review. However, due to the misclassification experienced in this market review, we believe that circuit end counts that were used in the 2007/8 Review are likely to have suffered from a similar misclassification. This creates a problem in terms of assessing market share trends - both in terms of volume growth for the market as a whole, and also of relative changes in CPs' market shares. The figures for 2007 presented in Table 67 result from an adjustment to account for these differences in end-type classification and enable an approximate like-for-like comparison.⁸³ Given the sensitivity of our share estimates to this adjustment, the trends identified in market shares provide an approximate picture of market developments since the 2007/8 Review.

⁸⁰ See Annex 8 for a full explanation of this methodology.

⁸¹ Our sample was the wholesale and retail sales data from COLT, C&WW and Virgin Media as the three of the largest OCPs in this market with a combined share of over 40%. We considered the sale of all leased line circuits, regardless of the market in which these services are provided, and calculated how many circuit ends would be reclassified from a 'customer end' to a 'network end'.

⁸² The sample covers the majority of alternative supply in this market, and so ought to be representative. See footnote 81 for details.

⁸³ Specifically, BT's volume in 2007 has been deflated by the same proportion as the change in the number of low bandwidth AISBO circuit ends in the WECLA between the original and the new submissions.

Table 67: Volumes shares in the low bandwidth AISBO market in the WECLA

CP	Volume share 2007*	Volume share 2011
BT	47%	45%-50%
COLT	31%	22%
Virgin Media	7%	15%
Verizon	5%	9%
C&WW	4%	6%
Other	6%	6%

* 2007 shares based on adjusted 2007 data. See discussion above for further details.

Source: CP data, Ofcom analysis

7.220 For the purposes of our SMP assessment in this market, we interpret the market share estimates in the following manner:

- we consider BT's true share of low bandwidth AISBO customer circuit-ends in the WECLA is likely to be within the range 45%-50%;
- in light of the test on a sample of OCP data, we consider that BT's true share could be as high as, but unlikely to be significantly higher than, 50%; and
- we do not discern a clear trend in BT's market share in the period since the 2007/8 Review, and therefore we consider that BT has, on the whole, maintained its position in the market.

7.221 On this interpretation, it would appear that relatively successful OCPs, such as Virgin Media, have gained share not at BT's expense, but at the expense of other competitors to BT. BT has around twice the volume of the second largest competitor, and although OCP shares now appear to be more evenly distributed, the market remains highly concentrated.

Profitability

7.222 As discussed at paragraphs 7.185-7.188 above, the data from BT's regulatory financial statements shows that its return on capital for low bandwidth AISBO services has fallen since the last review. For the UK as a whole, BT's reported ROCE for low bandwidth AISBO services was 4.5% in the financial year 2010/11 on revenues of £554m. However, the adjusted ROCE is somewhat higher at 12.4%.

7.223 We do not have geographically disaggregated data for this market. However, we have no reason to believe that BT's profits should be significantly higher in the WECLA. We therefore assume that BT's ROCE on low bandwidth AISBO services within the WECLA is unlikely to be above its cost of capital.

7.224 In line with the approach set out in paragraph 7.25, we do not place any weight on low profitability in our SMP assessment, and therefore do not consider that this criterion provides material evidence either for or against our proposed market power determination.

Control of infrastructure not easily duplicated

- 7.225 Outside the WECLA, BT has a significant advantage over its competitors as a result of its ubiquitous access network infrastructure. As discussed in relation to the medium and high bandwidth TISBO markets in the WECLA, CPs have built significant access networks within this area. Any advantage which BT derives from the extent of its network infrastructure in the WECLA is likely to be smaller than in other areas. The question that remains is the extent to which BT continues to derive a material competitive advantage from the fact that the coverage of its network assets is more comprehensive than any of its competitors.
- 7.226 As discussed in relation to the low bandwidth market outside the WECLA, even in areas where OCPs have network infrastructure, they generally require ductwork to reach new customer sites.⁸⁴ Unless a CP has already sold leased lines services to a customer in the same building, it will need to build some additional duct to reach the building. The same is true for BT. However, given BT's scale and scope across all fixed telecoms markets, our view is that BT is more likely to have already sold a fixed telecoms service to a customer in the same building, and therefore will have already established a physical connection to that site. The result is, in our view, that OCPs will be less competitive relative to BT. This will be most notable in relation to lower value sites and contracts.⁸⁵
- 7.227 There are two pieces of evidence which support our views. First, the data on build distances and ECCs show that OCPs require network extensions more often than BT, and have to build further on average to reach customer sites. Secondly, BT provides low bandwidth AISBO services to more than twice the number of sites in the WECLA relative to all the OCPs combined.⁸⁶ In light of our market share estimates, this suggests that OCPs sell relatively more to each site served. This is consistent with the idea that OCPs are less successful, or less interested, in serving relatively lower value sites/customers which require fewer services.
- 7.228 Consequently, we consider BT is likely to benefit from its large network which means that, on average, it can connect new customers at lower incremental cost and faster than its competitors.

Economies of scale and scope

- 7.229 As with the low bandwidth AISBO market in the UK excluding the Hull area and the WECLA, this market is characterised by economies of scale and scope. BT benefits from the relative scale and scope of its operations across connectivity markets and fixed network services in general. We do note that scale is unlikely to be a significant factor affecting market power - many of the costs associated with point-to-point Ethernet services are incremental to a particular customer site, and therefore subject

⁸⁴ Paragraphs 7.189-7.193.

⁸⁵ For example, customers requiring a single circuit.

⁸⁶ We have considered the postcodes of each low bandwidth AISBO circuit end provided by the five largest CPs in WECLA. These CPs account for 94% of the market, so we believe this analysis should be representative. In total, there are 4,631 unique postcodes representing the total number of sites served by these CPs in this market. BT provides services to 4,070 and the OCPs provide service to 1,875.

to economies of scale only to the extent that multiple services are provided to the same site.

- 7.230 Nevertheless, BT benefits from the ability to use the network infrastructure which has been deployed to provide services in other communications market. In particular, T1 leased lines and PSTN services. BT is often already connected to a customer site which leads us to consider that, on average, it can provide low bandwidth AISBO services cheaper and faster than OCPs.

Barriers to entry and expansion

- 7.231 Relative to other geographic areas, the barriers to entry and expansion are lower in WECLA due to the high density of businesses in this area. Relative to any other area in the UK of a similar size, there are many more business premises within WECLA, and many more sites with multiple occupants.
- 7.232 Significant sunk costs are still required to build the network infrastructure to compete in wholesale markets in the WECLA, but the high potential demand mitigates the risks associated with this investment. This is sometimes referred to as economies of density: the average cost per customer passed by the fixed network decreases as the density of customer sites increases. Barriers to entry and barriers to expansion are therefore lower in the WECLA compared to other areas in the UK.
- 7.233 A large number of CPs have already entered the market and have built access network infrastructure in the WECLA. As a result, we do not consider that barriers to entry are likely to have a material impact on competition in this market. However, as discussed above CPs still face significant costs extending their networks to reach customer sites, and therefore barriers to expansion are a potential concern.
- 7.234 Our initial conclusion is that barriers to expansion remain a significant factor affecting competition in this market and will continue to do so over the course of the review period of three years. BT continues to have a cost advantage over competitors due to the fact that its network infrastructure is already connected to most sites in the WECLA. This contributes to our view that the current level of competition in the market is unlikely to be able to provide an effective constraint on BT's behaviour.

Countervailing buyer power

- 7.235 We consider buyer power is unlikely to act as an effective constraint on BT's behaviour in the low bandwidth AISBO market in the WECLA. The main reason is that BT's downstream businesses are the largest customers for services in this market, whilst BT's external customers in the WECLA are not large enough to have buyer power.
- 7.236 Whilst further entry and competitive investment in the low bandwidth AISBO market in the WECLA will provide BT's customers with more viable options to switch to, we do not consider that any are likely to become of sufficient size to exert material countervailing power. Consequently, we do not consider the current low level of countervailing buyer power will change sufficiently over the course of the review period of three years.

Prospects for competition

- 7.237 We expect that demand will continue to grow quickly during the review period, with growth likely to be focused on higher value 100Mbit/s-1Gbit/s services. Also, our analysis shows that there is considerable alternative network infrastructure already in place within the WECLA. This will support both existing and potential new entrants. Equally, EFM can be used to provide lower bandwidth services, and potentially provides a cheaper entry point for customers migrating from low bandwidth TISBO services.
- 7.238 However, although competition is likely to increase, we do not consider it will become effective over the course of the review period of three years in the absence of regulation. On the one hand, competitors have already gained a significant share of this market but, on the other, some barriers to entry and expansion remain. Given the expectation of rapidly growing demand at the time of the 2007/8 Review, similar prospects for competition existed at that time. Despite such positive prospects for competition, our proposed market power determination is that BT continues to have SMP. We consider, therefore, that future increases in competitive intensity could give rise to results similar to those that have emerged from our current SMP assessment.

Overall assessment of economic characteristics

- 7.239 We consider that the prospects for competition in this market over the course of the forward-looking period of three years are relatively better than in other markets in which BT has SMP. Demand is expected to continue its rapid growth and a number of large OCPs already have significant network infrastructure in the WECLA. In particular, we expect a considerable amount of demand from MNOs as they migrate from TI to AI services. Also, over the review period we forecast more competition from EFM services which can be provided by LLU CPs, albeit limited to low bandwidths (a theoretical maximum of 40Mbit/s) and subject to constraints on the service levels available on the underlying copper line.
- 7.240 However, we do not consider that competition will become effective in this market over the course of the review period, and propose that BT has SMP in this market. In reaching this conclusion, we have taken particular account of BT current large share of the market, and the fact that it has remained stable since the 2007/8 Review. At the top of our estimated range of 45-50%, BT's share meets the threshold for the presumption of dominance. In addition, the most significant factors which lead us to consider that the prospects for competition are strong today (expectation of strong demand growth and significant OCP network infrastructure) were also present at the time of the 2007/8 Review. Despite these favourable conditions for competitors, BT has maintained its share of the market.
- 7.241 Although there is considerably more alternative network infrastructure in the WECLA compared to any other area in the UK, BT still benefits from the fact that its access network is more extensive and is already connected to more buildings than all of its competitors put together. BT rarely has to build new duct infrastructure to connect new customers, whereas OCPs will often need to undertake such investments.⁸⁷ This

⁸⁷ This point, and the supporting evidence, is discussed above at paragraphs 7.190-7.194 in relation to the low bandwidth AISBO market in the UK excluding Hull and the WECLA and applies equally to this market.

is of particular importance given the relatively low average value of the services supplied in this market.

7.242 We consider that BT's ownership of an extensive access network infrastructure, the scale and scope of its operations, and the barriers to entry and expansion for its competitors result in a material competitive advantage for BT, both in terms of cost and time to market for supplying new customers. Overall, we consider that BT will continue to have the ability to act to an appreciable extent independently of its competitors, customers and consumers in this market during the three year review period.

Wholesale market for MISBO in the UK excluding the Hull area and the WECLA

7.243 We propose that BT has SMP in the wholesale market for multiple interface symmetric broadband origination in the UK excluding the Hull area and the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 68 below in measuring BT's power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 68: Summary of proposed SMP determination for the wholesale MISBO market (>1Gbit/s) in the UK excluding the Hull area and the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
No SMP*	346%	59%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	BT

* MISBO did not exist at the time of the 2007/8 Review. However, there was no SMP in relation to circuits above 1Gbit/s throughout the UK.

7.244 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.245 Demand for very high bandwidth services is witnessing the fastest growth rates of all business connectivity services. Albeit starting from a very low base, volumes of MISBO services across the UK are now over 3.5 times higher than in 2006/07. An increasing number of customers are demanding more than 1Gbit/s of connectivity to particular sites, and in a small number of cases customers are demanding multiple 10Gbit/s circuits between sites. This section begins with a discussion of the types of customers demanding such high bandwidth services. We then consider a number of different measures to estimate market shares for MISBO services in the UK excluding the Hull area and the WECLA.

MISBO customers and demand

- 7.246 Although the number of customers is still relatively small, it is increasing. In many cases the requirement stems from the aggregated demand from a large number of people using bandwidth intensive applications. For example, both business and residential users are watching, creating and interacting with more digital video content than ever before. This creates demand for bandwidth between the end-users and video content servers. Similarly, as businesses start to make use of cloud services - hosting applications and data remotely - the demand for connectivity between offices and the remote source of the applications and content increases.
- 7.247 In addition to this 'machine to end-user' traffic, we are also witnessing significant growth in demand from machine-to-machine transactions. For example, back-up and data mirroring services require very large bandwidths, but are not driven by the immediate use of an end-user.⁸⁸
- 7.248 The willingness to pay for these high bandwidth leased line services depends in part on the underlying application. At one extreme there are financial institutions which are using the networks as a platform to run algorithmic trading, and make use of low latency⁸⁹ and very high bandwidths available to reduce the amount of time it takes to deliver trading instructions to the trading exchange. Even a tiny delay potentially results in significant losses, and therefore such customers are willing to pay a premium to achieve these demands.
- 7.249 In contrast, many of the applications generating demand for very large bandwidths are tolerant of variations in the performance of a circuit. For example, data backup or video streaming services benefit from very high bandwidth, but do not need extremely low latency.
- 7.250 Aside from the niche users such as the financial institutions, demand for bandwidth is greatest in places where traffic from a large number of end users is aggregated. For example, an office with a large number of people may generate a considerable demand for bandwidth through use of a corporate file sharing/collaboration platform (such as Microsoft SharePoint or Lotus Notes). However, if a company has a number of large offices, then the bandwidth required to provide access to the content source is necessarily much greater still. Therefore, some of the most significant growth in demand for MISBO services is coming from access to data centres.
- 7.251 Data centres are sites which house computer and telecoms equipment. They provide a wide variety of services, fulfilling various customer demands from co-location to allow CPs to interconnect with one-another, to very high security in remote locations for disaster recovery services, to simple webhosting. All data centres require connectivity, but the precise demands of the customers within the data centre will depend on the nature of the hosted services. Similar to the discussion above, some

⁸⁸ For example, consider a company with 1,000 employees that wishes to back-up all its files every night. If each employee has on average 500MB of data, the company has to back up 500GB each night. It is usually important to complete the backup within a short window to avoid congestion on the enterprise network and the relevant servers. To complete the backup in 1 hour would require over 1Gbit/s of capacity, and more than 500Mbit/s to complete in 2 hours.

⁸⁹ The MISBO market includes both TI and AI interfaces. In this specific example, low latency trading platforms generally use Ethernet interfaces which can reliably deliver very low latency as long the circuit is not overloaded.

customers, and some data centres, demand very high bandwidth with the very highest levels of availability. However, others are likely to have less stringent requirements.

7.252 Equally, the ever expanding volumes of data traffic need to be carried across CP and MNO networks, and this is driving significant demand for bandwidth in backhaul and core networks.

Volume shares estimates

7.253 Our market share estimates are based on the number of customer circuit- or wavelength-ends supplied by each CP. Ultimately we are measuring market shares to try to inform our understanding of competitive conditions. In an ideal world we would consider revenue shares, but as noted above CPs were not able to provide financial data at a sufficiently granular level to allow the calculation of such shares. Therefore, we use volume data. As a sensitivity test, we also consider unique route volumes and the average bandwidth per route for the largest CPs. This is discussed further below.

7.254 Table 69 below presents our share estimates for the five largest CPs based on circuit/wavelength end count. Where WDM has been used as the transport technology, we have counted each wavelength supplied on any given route separately.

Table 69: Volumes shares in the MISBO market in the UK excluding the Hull area and the WECLA

CP	Volume share 2011
BT	59%
Virgin Media	9%
COLT	8%
GEO	8%
Verizon	5%
Other	12%

Source: CP data, Ofcom analysis

7.255 These figures suggest that BT has captured a significant proportion of this growing market. Unfortunately, we do not have comparable figures for 2006/07, so cannot assess the trend.

7.256 The shares presented above effectively weight wavelengths and circuits equally regardless of bandwidth. Services in the MISBO market range in bandwidth from 1Gbit/s links provided over WDM, through to 100Gbit/s. In addition, WDM bearer circuits may carry 80 wavelengths or even more depending on the equipment used. If some CPs focused just on higher bandwidth services, or tended to sell more wavelengths per bearer, then given the price structure for these services,⁹⁰ our

⁹⁰ The pricing of WDM services tends to match the underlying cost structure, with relatively high upfront one-off charges for the bearer circuit (i.e. to establish the service), and then relatively low

volume share estimates would be less reliable as indicators of revenue shares. For this reason, we have undertaken further analysis of the MI services supplied by the five largest CPs.

Volume shares estimates - sensitivity analysis

7.257 First, we have tried to isolate the number of unique circuit destinations provided by each CP. The analysis considered the unique pairs of A-end and B-end postcodes for MISBO services. This is akin to measuring the number of bearer circuits to unique destinations provided by each CP. It is arguably a useful measure of value since a large proportion of the costs of providing MISBO services relate to the creation of a link between two premises. Once established, the marginal cost of additional bandwidth on that route can be very low.⁹¹

7.258 Table 70 below sets out our findings. It shows the share of routes wholly within the WECLA, wholly outside the WECLA, and spanning these two areas for each of the five CPs. It suggests that BT's share of routes outside the WECLA is marginally higher than our estimate of the volume share for customer ends in this area. Put another way, it suggests that the average number of wavelengths per bearer and circuits per route is roughly the same between the different CPs.⁹²

Table 70: Shares of unique routes for MISBO services

CP	Routes outside the WECLA	Routes within the WECLA	Routes spanning both areas
BT	72%	25%	52%
COLT	2%	26%	29%
GEO	1%	12%	5%
Verizon	10%	34%	5%
Virgin Media	16%	2%	8%

Source: CP data, Ofcom analysis

connection and rental charges for each additional wavelength. Therefore, once a customer has incurred the initial expense, the marginal cost of bandwidth is very low.

There may be further one-off charges to increase capacity beyond certain thresholds. For example, a DWDM chassis with the capability to light up to 80 wavelengths might only be installed with a module which allow up to 16 wavelengths. Another module will then need to be added to each chassis to enable the next 16 wavelengths, and so on. This price structure is usually adopted to reduce the upfront charge. Aside from these discontinuities, the connection and rental charges for each wavelength will generally be the same, and so the average cost per wavelength will tend to decrease as bandwidth demand increases.

The rental charges for both wavelengths and individual (non-WDM) circuits tend to increase with bandwidth, but not in proportion with the bandwidth increment. For example, a 10Gbit/s wavelength or circuit might cost twice as much as a 2.5Gbit/s, but offers four times the bandwidth.

⁹¹ In the case of WDM, the cost of adding wavelengths is often just the cost associated with a new line card in the terminal equipment. Increasing the bandwidth of an Ethernet circuit up to 10Gbit/s might not even require additional hardware.

⁹² This analysis is based on the same circuit data provided by CPs which we used to calculate volume shares. However, the data is processed in a different way. There is no uplifting to account for missing postcodes or bandwidth. Also, no distinction is made between the circuit end types. That is, all circuit entries count equally regardless of the circuit end types.

7.259 Secondly, we have considered the average bandwidth per circuit or wavelength provided by the same five CPs. This analysis does not distinguish between the different geographic markets. Although there are differences between the CPs, BT's average is above the average across all five CPs (5.0).

Table 71: Average bandwidth per circuit or wavelength of MISBO

CP	Average bandwidth (Gbit/s)
BT	∞
Virgin Media	∞
COLT	∞
GEO	∞
Verizon	∞
CP average	5.0

Source: CP data, Ofcom analysis

7.260 Our interpretation of both pieces of analysis is that our estimate of BT's share of volume should not be systematically biased upwards, and should represent a reasonable proxy for BT's share of value in this market.

7.261 In discussions with BT it has been observed that our data gathering may not have taken into account a proportion of supply of MISBO services from smaller CPs who either build or lease dark fibre, and from large corporations and public bodies which self-provide MISBO services. We have interrogated this observation by taking steps to gain an even more granular picture of the market.⁹³ In summary, we have researched over 100 smaller CPs who have code powers, and therefore can build fixed network infrastructure, and are satisfied that the majority of their network infrastructure sits within the WECLA. Self-supply by large organisations is factored into the SMP assessment in relation to countervailing buyer power, as discussed below.

7.262 Another potential issue is the classification of circuit end points. Data centres and carrier hotels can represent both network hub sites and customer end-points. There is therefore a degree of ambiguity over the classification of a circuit end as either network or customer. This issue applies to all markets, but MISBO services are more sensitive to this issue because a large proportion of circuits terminate at these types of site. Although this specific issue is likely to result in less precise share estimates, we do not believe that it should introduce a systematic bias as it applies to all CPs.

7.263 Our estimate of the market shares indicates that BT supplies a significant proportion of total demand (with a share above the threshold for the presumption of dominance), and that no other CP has a share above 9%. The market, therefore, appears to be highly concentrated. Even if we are missing data for the supply of a number of other CPs, these are all likely to be small relative to BT. Therefore, even including these additional suppliers, the market would still appear to be significantly concentrated.

⁹³ For full details of this additional research, see Annex 8.

7.264 Overall, therefore, we consider our assessment of market shares indicates that BT has SMP in this market.

Profitability

7.265 BT's provision of MISBO services is not currently price regulated, and therefore its profitability is potentially more informative than in many of the other markets considered in this review. We have obtained data from BT's additional financial statements regarding the profitability of services over 1Gbit/s sold by Openreach. BT also sells a number of other services which would fall within this market, but for which Openreach does not provide a wholesale input. We do not have profitability data for these services, however, we estimate that the Openreach sales represent around half of BT's total sales of MISBO services.

7.266 As with the other markets, we do not have geographically disaggregated financial data. Over 80% of MISBO circuit ends supplied by BT are in the UK excluding the Hull area and the WECLA, and so we consider the UK-wide data should be a reasonable proxy for the true profitability in this market.

7.267 The figures⁹⁴ imply returns which are above the level that we would expect to find if BT were effectively constrained by competition in the market. We note, though, that the data supplied does not match our market definition precisely. Nonetheless, even the lowest estimate of the ROCE that BT has so far produced is well above the cost of capital. Whilst BT has said that even this estimate may be above current rates of return, this claim cannot be verified in the absence of financial data for the relevant year. As a result, to address potential inaccuracies regarding the implied returns, we do not rely on the precise ROCE figure - instead, we take into account the data we have obtained in the round and on the basis of this we consider that BT's profitability in this market supports our proposed market power determination. We will work with BT to investigate its profitability in this market further during the course of this consultation period.

Control of infrastructure not easily duplicated

7.268 As discussed in relation to both the TISBO and AISBO markets, the costs of duplicating BT's network infrastructure are very high, and BT is likely to derive some advantages from the fact that it has such extensive network infrastructure already in place. However, the relatively high value of the services offered in this market will tend to reduce the significance of these advantages.

7.269 The advantages we consider arise from BT's large network are set out below:

- relative to its competitors, BT is likely to either already be connected to, or have network infrastructure closer to, a potential customer site. This implies that it can generally serve sites faster and for lower cost than its competitors;
- the amount of network creates advantages in terms of being able to create physically diverse routes. This can be a very significant advantage in the provision of MISBO services which can carry traffic aggregated from a large number of end users and services. As such, faults with these services would potentially affect many people and many services. Customers therefore often

⁹⁴ The figures are derived from data which are confidential to BT.

demand circuits which are designed to be resilient to failure through the addition of a physically separate redundant link; and

- BT is less likely to have to rely on third party networks to reach a customer site. This can bring advantages in terms of cost, control of the service specification, and network security.⁹⁵

7.270 An important point to consider in this market is that there is currently no solution in widespread use which allows effective interconnection of optical services. This means that a CP usually self-provides both ends of the downstream customer circuit. In these circumstances, control of network infrastructure takes on extra significance: the potential cost advantages discussed in the first bullet point are effectively doubled.

7.271 Alternatively to the interconnection of optical services, a CP could buy a symmetric broadband origination service to reach a customer site. However, this can be an inefficient solution which requires costly duplication of equipment at the interconnect site.⁹⁶

7.272 Consequently, our view is that BT gains a competitive advantage from its network throughout the UK and specifically in the geographic area covered by this market. Ultimately, it means that for a large number of sites across the UK, neither self-supply nor OCPs are likely to be effective in contesting BT's supply.

Economies of scale and scope

7.273 BT benefits significantly from the scope of its operations across connectivity markets in general which means that a large number of services contribute to the recovery of the substantial common costs associated with an extensive fixed network infrastructure.

7.274 BT's scale within this market is relatively less important. Once a CP has a passive network connection to a customer site (subject to the need to be connected to both ends of a circuit as discussed at paragraphs 7.270-7.271), its costs of providing MISBO services are likely to be similar to BT's. MISBO services tend to use point-to-point infrastructure, and to the extent that this infrastructure is dedicated to a specific customer it will only generate economies of scale to the extent that multiple services are provided to that site. Therefore, while we consider that BT benefits from the scope of its operations, we do not believe that its scale will generate a competitive advantage in relation to MISBO services.

Barriers to entry and expansion

7.275 We consider there are considerable barriers to entry and expansion in this market. Due to the lack of an appropriate interconnection service, a CP would need a physical connection to all customer sites in order to provide cost effective WDM services. As discussed throughout this Section, the costs of building fixed network

⁹⁵ It should be noted that the non-price advantages are likely to be very limited if a CP is able to reach the customer site using third party dark fibre, or to install its own fibre in third party duct.

⁹⁶ The issue of interconnection of WDM services is discussed in more detail in Section 12.

infrastructure are very high, and tend to be both sunk and common. BT benefits from the fact that it has already sunk significant costs in its network, and as a result is either already connected to, or has infrastructure closer to, customer sites. This gives BT the ability to connect new customers faster, and at lower incremental cost, compared to its competitors.

- 7.276 Similarly, BT benefits from its scale and scope across a wide range of leased lines markets and fixed telecoms markets more generally. Although, as we noted above, these benefits may be limited in relation to MISBO services, the high costs of entry, combined with BT's relative cost advantages generate barriers to entry and expansion.
- 7.277 We consider switching costs also create barriers to entry and expansion in this market. Even though we recognise that switching costs tend to be less relevant in a growing market, we identify the following switching costs as most relevant to this market:
- a change of supplier requires a change in physical network routing, and this will generally cause a temporary loss of service for the downstream customer. Given the high value and the traffic volumes associated with these services, we consider this is a significant factor;
 - the price structure of WDM services will tend to incentivise customers to stay with the same supplier. Once a customer has paid the high upfront charges to establish a WDM service, the price for additional bandwidth from its current supplier will be far lower than the price of a service equivalent to the increment in bandwidth from another supplier (since the customer would need to pay high upfront charges for a second time); and
 - customer equipment may not be wholly compatible with new services. For example, a range of different interfaces can be offered to the customer to create specific connectivity services over a WDM system. Not all WDM equipment supports the same range of customer interfaces.
- 7.278 We note that the high value of services in this market, and the price structure of WDM services which typically includes high upfront charges, could act to offset these barriers. In addition, the fact that such high bandwidth is required today is likely to signal that the relevant customer sites will be a source of high demand growth over the course of the review period of three years. For example, when a CP connects to a data centre or a network site, they can be confident that demand for connectivity will continue to grow at that site. As a result, CPs are better able to justify the investments needed to extend their networks to reach these sites. This is particularly true for carrier neutral exchanges, multi-customer data centres and very large multi-tenanted offices, where it may be possible to recover the costs of the network extension to reach the site from a number of different customers.
- 7.279 However, over the course of the review period we do not consider that these factors are sufficient to mitigate the barriers to entry and expansion we have identified in this market.

Countervailing buyer power

- 7.280 Users of MISBO services in this market tend to be large and sophisticated and include a number of large corporate customers, public authorities, smaller CPs and

data centre providers. The value of services is high and, where there is a choice of supplier, this combination of factors suggests that countervailing buyer power may be present. Countervailing buyer power can be augmented by the use of competitive tender and by the ability of some users to self-provide MISBO services.⁹⁷ However, in general, the same barriers to entry and expansion and the same economies of scale discussed above lead us to consider that the lowest cost method of fulfilling demand for MISBO services is likely to be to buy from an existing CP. In our view, BT is in the strongest position to provide the service.

- 7.281 Where self-supply is based on leased dark fibre, then it is most likely to be concentrated in the areas where CPs' network infrastructure, and therefore fibre, is most readily available. This would imply that self-supply would be relatively limited beyond the WECLA and on trunk routes between major metropolitan areas. We do not have data regarding the extent of self-supply, but we have gathered information from the larger CPs regarding sales of dark fibre. This does suggest that self-supply is limited to a relatively small number of routes. In any event, we do not consider that such self-supply is likely to create a significant additional competitive constraint beyond the supply of the CPs from whom the dark fibre has been leased. The existing supply, and network presence, of these CPs has been taken into account in the analysis presented above.⁹⁸
- 7.282 Alternatively, self-supply could be based on the provision of new network infrastructure. However, the same sunk costs which generate barriers to entry in this market will tend to limit the effect of self-supply on competition.
- 7.283 Our view, therefore, is that although we cannot qualify the precise extent of self-supply in this market, we do not consider that buyer power, and self-supply more generally, is likely to act as an effective constraint on BT's behaviour over the course of the review period of three years.

Prospects for competition

- 7.284 We consider the demand for MISBO services is likely to continue its rapid growth over the course of the review period of three years. A key question regarding the prospects for competition is the distribution of this future demand. If the demand is concentrated at a small number of sites such as data centres, network hubs, and very large office buildings, then it may be reasonable to assume that CPs should be able to extend their networks to reach these sites, and to contest the supply of MISBO services. However, if demand grows principally through customers at a large number of different sites increasing the bandwidth of their current services to more than 1Gbit/s, then we consider BT is likely to enjoy a competitive advantage from the extensive coverage of its network infrastructure.
- 7.285 As shown in Table 47, the average revenue *per connected site* in this market is £ [£], which is considerably higher than any of the other wholesale connectivity markets. Given this high value, and the prospect of growing demand from any individual site, we would expect CPs to be prepared to build network to reach

⁹⁷ We believe that a number of large customers do self-provide MISBO services given that they buy dark fibre from CPs such as GEO.

⁹⁸ Although the sales of dark fibre are not represented in the market shares.

potential customers. However, importantly, these factors have been present in the period since the 2007/8 Review and yet we still find that BT has a high market share.

7.286 Consequently, whilst we consider competition will increase in this market, we do not consider it become effective over the course of the review period of three years.

Overall assessment of economic characteristics

7.287 Demand for services above 1Gbit/s has grown significantly since the 2007/8 Review. Volumes have increased more than threefold since 2006/07, and we expect that this rate of growth will continue over the course of the three year period of this review. The high value of services in this market combined with the rapid growth in demand implies that OCPs should be better able to justify the investment required to reach new customer sites than in most of the other relevant symmetric broadband origination markets. As such, the prospects for competition in this market are good relative to most of the other markets under review.

7.288 However, customers demand connectivity between sites, and not just for individual circuit ends. At present, limitations of optical technologies mean that a fully effective product to allow interconnection of WDM, which forms the majority of services in this market, is not yet available. This issue is discussed further in Section 12. The result is that CPs either need to provide both ends of a circuit over their own infrastructure, or to lease dark fibre to extend their network reach. Dark fibre tends to be sold on a bespoke basis, if at all, and therefore cannot be relied upon to reach customer sites.⁹⁹

7.289 The absence of effective interconnection products in this market exacerbates the advantages that CPs derive from access network ownership, and generates a significant barrier to entry and expansion for CPs without these network assets. Given BT's extensive access network infrastructure, BT is able to provide MISBO services faster and at a lower incremental cost than its competitors.

7.290 These underlying economic characteristics are supported by the market share evidence which shows that BT has a 59% share of volume. This is above the threshold for the presumption of dominance. We have undertaken further analysis of the circuit data to test whether this is likely to be a reasonable proxy for BT's share of value. Our conclusion is that it does appear to be a reasonable estimate.

7.291 We note there are a number of reasons why we still treat the 59% figure with some caution.¹⁰⁰ However, we will be working with stakeholders to firm up our market share estimates during this consultation period. In addition, the market appears to be highly concentrated, with BT supplying more than six times the volume of the second largest provider. Even if there are several additional suppliers in the market from whom we currently do not have circuit data, we consider they are likely to be very

⁹⁹ However, some CPs, such as Geo, specialise in selling dark fibre services.

¹⁰⁰ There are a number of smaller CPs who provide MISBO services, but from whom we have not yet requested circuit data due to their very small presence in the market. We also understand that some large corporations and public authorities self-provide MISBO services. However, we expect the impact of any new data on our market share estimates to be small.

small relative to BT.¹⁰¹ This implies that our share estimates in this market are likely reliable an indicator of market power.

7.292 Overall, we consider that, in particular, the advantages that BT derives from its network assets in the absence of an effective interconnection service imply that it is able to act to an appreciable extent independently of its competitors, customers and ultimately consumers, and will continue to be able to do so over the course of the review period of three years.

Wholesale MISBO market in the WECLA

7.293 We propose that no CP has SMP in the wholesale market for multiple interface symmetric broadband origination in the WECLA, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 72 below in measuring whether any CP has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 72: Summary of proposed SMP determination for the wholesale MISBO market (>1Gbit/s) in the WECLA

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
No SMP*	346%	15%	<ul style="list-style-type: none"> - Significant amount of alternative infrastructure - BT's economies of scale and scope provide limited benefit - Barriers to entry and switching expected to have limited impact on competition - Very good prospects for effective competition 	No SMP

* MISBO did not exist at the time of the 2007/8 Review. However, there was no SMP in relation to circuits above 1Gbit/s throughout the UK.

7.294 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.295 Much of the discussion above of market growth for MISBO services outside the WECLA and the Hull area is also relevant in this market. As noted, demand for these services has been growing very fast throughout the UK, and we expect this trend to continue. However, the market shares inside the WECLA are very different from those in the rest of the UK. As shown in Table 73 below, BT has the third largest share after COLT and GEO.

¹⁰¹ See Annex 8 for details of the additional research we have undertaken into suppliers of MISBO services.

7.296 There are a large number of data centres and co-location exchanges within the WECLA, and of course there is a significant concentration of demand from financial institutions.

Table 73: Volumes shares in the MISBO market in the WECLA

CP	Volume share 2011
COLT	35%
GEO	17%
BT	15%
Level 3 & GC	14%
Verizon	9%
Other	10%

Source: CP data, Ofcom analysis

7.297 No CP has a market share above 40% - the level beyond which the Commission considers single dominance concerns normally arise. Furthermore, as discussed in paragraph 7.261, there are several smaller CPs from whom we are yet to obtain circuit data. Based on our subsequent research, we consider the majority of these CPs are based within the WECLA, and some offer MISBO services. As a result, we consider that the shares presented above are likely to represent an upper bound for each of the CPs.

7.298 The evidence suggests that the market is not highly concentrated and supply appears to be contested by many CPs - both small and large. This leads us to consider that CPs' market shares do not indicate any CP has SMP in this market.

Profitability

7.299 We do not have geographically disaggregated financial data from BT for this market. The profitability figures discussed at paragraphs 7.265-7.267 above only cover approximately half of BT's MISBO sales (by volume), and only 20% of BT's volume relates to the WECLA. Therefore, we do not consider these figures are a reliable source of information regarding BT's profitability in this market. In any event, BT's market share is sufficiently low that a finding of high profitability would not alter our SMP assessment in this market.

Control of infrastructure not easily duplicated

7.300 The network reach analysis suggests that there is a considerable amount of alternative network infrastructure in the WECLA, and significantly more than other metro areas in the UK. In addition, there are several smaller CPs who also have network infrastructure within the WECLA, but who have not been factored into the network reach analysis.

7.301 BT has more extensive physical network infrastructure than its competitors, but as is clear from the market shares, they do not appear to derive a material competitive advantage from this. The demand for MISBO services often comes from sites where there is a real prospect of continued and growing demand, such as data centres and multi-tenanted offices. This, combined with the high value of MISBO services, means that CPs are able to justify the investments required to extend their networks to reach new sites, and therefore contest the supply of connectivity to these sites.

7.302 Overall therefore, we consider BT's control of infrastructure is unlikely to be a source of SMP in this market.

Economies of scale and scope

7.303 BT has the greatest potential to benefit from economies of scale and scope.¹⁰² However, given its relatively low share, it appears that BT does not gain a material competitive advantage from its scale and scope.

7.304 Over the course of the review period of three years, it is possible that BT might start to benefit from economies of scope. Specifically, BT's extensive network coverage outside the WECLA gives BT an advantage over its competitors in terms of selling MISBO services which span both the WECLA and the area outside the WECLA. At present, there is no satisfactory method of interconnecting MISBO services at an active level in the network.¹⁰³

7.305 However, this is relevant to the market outside the WECLA, and we are proposing to introduce remedies in the market for MISBO services in the UK excluding the Hull area and the WECLA to address this.¹⁰⁴ Overall, our view is that economies of scale and scope are unlikely to be a source of SMP for any CP in this market.

Barriers to entry and expansion

7.306 Although there are considerable barriers to entry and expansion in this market caused by the high sunk costs required to build network infrastructure, these costs are offset to a degree by the high value of MISBO services. Also, we know from the network reach analysis that a number of CPs have already developed very extensive network infrastructure within the WECLA. Therefore, our view is that barriers to entry and expansion are unlikely to be a source of SMP for any CP in this market.

Countervailing buyer power

7.307 Given the relatively low concentration of supply in this market, we do not believe that countervailing buyer power is a relevant consideration to our assessment of SMP in this market.

Prospects for competition

7.308 We consider the demand for MISBO services is likely to continue its very rapid growth over the course of the review period of three years. Given the high value of the services, and the number of CPs with extensive network infrastructure within the WECLA, we consider the prospects for competition in this market are very good. In these circumstances, we do not consider it is likely that any CP will gain a position of

¹⁰² The factors which generate economies of scope and scale are discussed above from paragraph 7.31.

¹⁰³ As discussed above, BT's network infrastructure is significantly more extensive than its competitors outside the WECLA, and partly as a result of this, our proposed market power determination is that BT has SMP in the MISBO market outside the WECLA.

¹⁰⁴ See Section 12.

strength that would afford them the ability to act to an appreciable extent independently of its competitors, customers and ultimately consumers.

- 7.309 One caveat, however, is that BT has a potential advantage over its competitors in relation to sales of MISBO services which span the WECLA boundary in light of our proposed market power determination that BT has SMP in the market for MISBO services in the UK excluding the Hull area and the WECLA. We are proposing to address this by way of appropriate ex ante regulation in the market for MISBO services in the UK excluding the Hull area and the WECLA.¹⁰⁵

Overall assessment of economic characteristics

- 7.310 We consider that BT is likely to benefit from the scale and scope of its operations, and from more complete network coverage within the WECLA. In addition, CPs face barriers to entry and expansion due to the sunk costs associated with building network infrastructure to reach new customer sites. BT's relative advantages are exacerbated in this market due to the lack of an effective interconnection solution for WDM services.
- 7.311 However, for MISBO circuits entirely within the WECLA, we consider that these benefits are only marginal relative to its competitors. A number of CPs have built extensive duct and fibre networks within the WECLA, and these already reach many of the sites where demand for MISBO services is most concentrated. In addition, the high value of MISBO services in conjunction with the extent of network coverage leads us to consider that CPs will be able to justify the investments required to reach new sites demanding MISBO services.
- 7.312 This analysis of the underlying economic characteristics is supported by the market share evidence which shows that BT is the third largest CP with just 15% of the market. Consequently, we do not consider that any CP has SMP in this market.

Relevant wholesale symmetric broadband origination markets in the Hull area

- 7.313 The following subsection sets out our analysis of the relevant wholesale markets for symmetric broadband origination within the Hull area.¹⁰⁶ We have identified this area as a separate geographic market through the analysis presented in Section 5 above. We have calculated shares for these geographic markets using the same methodology as for BT and other CPs in the rest of the UK. Further, and more detailed, analysis of the underlying data has drawn attention to the fact that this process tends to underestimate KCOM's share in wholesale symmetric broadband origination markets in the Hull area. We explain this issue below, and set out a revised approach for the measurement of volume shares in these markets.
- 7.314 Hull is the only area in the UK where BT is not the former monopoly provider of PSTN services. The local telecoms network infrastructure in the Hull area is owned by KCOM. For PSTN services and DSL-based broadband, which use the same copper infrastructure, there is a well-defined area within which homes and business are served by KCOM, and not by BT. Immediately outside this area, and in the rest of the UK, BT owns and runs the local PSTN network infrastructure. Due to the fact that

¹⁰⁵ See the discussions of this point in Section 12.

¹⁰⁶ We refer to 'Hull' and 'the Hull area' interchangeably throughout this section. They both refer to the area defined in the geographic market definition Section.

the two networks developed at a time when licences restricted where a provider could build network and operate, there is very little overlap between the BT and KCOM networks. Equally, our network reach analysis shows:

- there is no alternative CP network infrastructure in the Hull area; and
- BT has just a handful of flexibility points, and these do not appear to be used to provide leased lines services.

7.315 The methodology we have used for the rest of the UK results in shares for KCOM which range from 89% to 100% across the various wholesale symmetric broadband origination markets. However, two factors suggest that the lower estimates are not correct:

- first, they are not consistent with our understanding of network reach. In most circumstances,¹⁰⁷ a CP needs to be the access network infrastructure provider in order to have a positive share in a wholesale symmetric broadband origination market. As just discussed, we consider KCOM is the only supplier with access network infrastructure in the Hull area which is used to provide leased lines. This implies that KCOM's share will be at, or very close to, 100% in wholesale symmetric broadband origination markets in the Hull area; and
- secondly, our estimates suggest that KCOM's share is 100% in the high value high bandwidth markets and at its lowest in the low bandwidth TISBO market. Given the need for CPs to invest in network infrastructure to reach customer sites in the Hull area, this is the reverse of what we would expect.

7.316 As a result, we have undertaken a further analysis of the underlying data provided by BT, C&WW and KCOM in relation to circuits sold in Hull. BT and C&WW were the two CPs who appeared to have small but not insignificant shares in the Hull area. We have compared data provided by BT and C&WW in relation to sales of services in Hull with data provided by KCOM regarding its wholesale sales to BT and C&WW. As we have done for the rest of the UK, we used postcode sector as the unit for analysis. We calculated each CP's service count within a postcode sector as the sum of retail and wholesale sales less wholesale purchases.

7.317 For C&WW, this analysis showed that all of its sales of leased line services within the Hull area used KCOM wholesale circuits as an input. The results were the same for BT for all except the postcode sectors which span the border of the original Kingston Communications licence area. In these postcode sectors, BT is the original PSTN network provider for some of the premises, and therefore we ought to measure BT as having a positive wholesale share.

7.318 The reason why the original methodology does not show the same results is that the data provided by CPs regarding their wholesale purchases tends to focus on purchases from BT, and appears to omit services bought from other CPs such as KCOM. Also, BT's wholesale purchase data was missing geographic information, and therefore we could not identify those purchases which related to the Hull area.

¹⁰⁷ The exceptions are where a CP uses a passive input, such as dark fibre or MPF (metallic path facility), supplied by a third party to reach the customer site.

7.319 In conclusion, we estimate KCOM's share is at, or very close to, 100% in all of the relevant wholesale symmetric broadband origination markets in the Hull area. That is, there is almost no wholesale competition in the provision of wholesale symmetric broadband origination services in Hull. We consider that this, in and of itself, creates a presumption that KCOM has SMP in each of these relevant markets. On this basis, we consider it is appropriate to present a single consolidated assessment of SMP in the six relevant wholesale markets within the Hull area.

7.320 The six relevant wholesale symmetric broadband origination markets to be considered are:

- low bandwidth TISBO (up to and including 8Mbit/s);
- medium bandwidth TISBO (above 8Mbit/s and up to and including 45Mbit/s);
- high bandwidth TISBO (above 45Mbit/s and up to and including 155Mbit/s);
- very high bandwidth TISBO (622Mbit/s);
- low bandwidth AISBO (up to and including 1Gbit/s); and
- MISBO (and service above 1Gbit/s and services delivered using WDM equipment at end-users' premises at all bandwidths).

7.321 The section begins with a summary of our proposals, before then discussing the same set of SMP criteria we used to assess the wholesale symmetric broadband origination markets outside Hull. The general discussion of how these criteria apply to wholesale symmetric broadband origination, at paragraphs 7.14 to 7.60, is also relevant to our market assessments in Hull.

Proposed market power determinations

7.322 We propose that KCOM has SMP in each of the following wholesale symmetric broadband origination markets in the Hull area, and we do not expect this position to change over the next three years:

- low bandwidth TISBO (up to and including 8Mbit/s);
- medium bandwidth TISBO (above 8Mbit/s and up to and including 45Mbit/s);
- high bandwidth TISBO (above 45Mbit/s and up to and including 155Mbit/s);
- very high bandwidth TISBO (622Mbit/s); and
- low bandwidth AISBO (up to and including 1Gbit/s).

7.323 Our proposals are based on an overall forward-looking analysis of the economic characteristics of these markets having regard to existing market conditions. In our competitive assessments, we have had particular regard to the SMP criteria summarised in Table 74 below in measuring KCOM's power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 74: Summary of proposed SMP determinations for the wholesale symmetric broadband origination markets in Hull

Relevant market	SMP designation in 2007/8 Review	KCOM's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
Wholesale low bandwidth TISBO market (<=8Mbit/s) in the Hull area	KCOM	99%	<ul style="list-style-type: none"> - KCOM's control of infrastructure not easily duplicated - KCOM's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	KCOM
Wholesale medium bandwidth TISBO market (>8Mbit/s, <=45Mbit/s) in the Hull area	KCOM	100%		KCOM
Wholesale high bandwidth TISBO market (>45Mbit/s, <=155Mbit/s) in the Hull area	KCOM	100%		KCOM
Wholesale very high bandwidth TISBO market (622Mbit/s) in the Hull area	No SMP	100%		KCOM
Wholesale low bandwidth AISBO market (<=1Gbit/s) in the Hull area	KCOM	100%		KCOM

7.324 We did not find any MISBO services sold in the Hull area, and consequently propose that no CP has SMP in the MISBO market in the Hull area.

7.325 We now set out our assessments of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessments of the economic characteristics, including by reference to those SMP criteria, in the relevant wholesale symmetric broadband origination markets in the Hull area.

Market share and market share trends

7.326 The data submitted by KCOM for the 2007/8 Review appears to have been incomplete. As a result, we are not able to provide comparisons with the market share findings in the 2007/8 Review, or provide growth figures specifically for Hull. Even if we were able to make such comparisons, it should be noted that the small volumes in Hull might give rise to unexpected results.

7.327 In general, we believe that the trends in demand which are apparent in the UK-wide statistics will be representative of developments in Hull. In this regard, we understand that demand for TI circuits is declining fast, with the most significant falls in demand for higher bandwidth services. Similarly, demand for low bandwidth AISBO services is growing with the fastest rates of growth for relatively higher bandwidths. Across the UK, demand for low bandwidth TISBO services has fallen by around 30%, whereas demand in the medium, high and very high bandwidth TISBO markets has fallen by at least 45%. In contrast, demand for low bandwidth AISBO services has grown by around 80%.

7.328 As discussed at paragraphs 7.314-7.319, we consider that KCOM's market share is either 100%, or very close to 100%, in all of the relevant wholesale markets. The one exception is the MISBO market in which no services have been supplied. We

consider these market shares, in and of themselves, are a very strong indication that KCOM has SMP in each of the markets.

Profitability

7.329 KCOM's regulatory accounts show that its ROCE is exactly 13% in every market in which they are regulated. This suggests that if there are excess profits, they are being taken at the retail level. However, we do not consider that a better understanding of KCOM's profitability would be likely to affect our proposed market power determinations. Our cumulative assessment of the other SMP criteria, in particular our assessment of KCOM's market shares, are sufficient for our SMP assessment.

Control of infrastructure not easily duplicated

7.330 As discussed above, our network reach analysis shows that KCOM is, in effect, the only access network provider in Hull. BT aside, no other CP appears to have network infrastructure within the Hull area. BT has only [3<] flexibility points in the entire area, and from a detailed assessment of its supply, does not appear to provide any business connectivity services from these flexibility points, but instead buys wholesale inputs from KCOM.

7.331 Although Hull is a relatively small area, the issues relating to control of the fixed access network infrastructure are the same as the rest of the UK: the costs associated with replicating the infrastructure are very high relative to the total demand for communications services in the area and largely sunk. As a result, it is very difficult for other CPs to justify these investments. The result is that KCOM gains a significant advantage over its competitors in the areas where it owns the access network infrastructure and we do not consider this will change over the course of the review period of three years.

7.332 To some degree, the costs of building network are offset by high revenues for higher bandwidth TISBO services and for MISBO services. However, we do not have any evidence of CPs making any such investments to date, and so we do not consider that it is likely to happen in the future. Therefore, our view is that KCOM's control of the access network infrastructure in Hull is likely to be a source of SMP in all of the relevant wholesale markets in the Hull area.

Economies of scale and scope

7.333 Given that we consider KCOM has close to 100% market share in all of the markets considered, it is reasonable to conclude that KCOM enjoys greater economies of scale than its competitors. However, as we explained in relation to a number of the relevant markets outside the Hull area, economies of scale within relatively narrow economic markets are not necessarily an important characteristic in an assessment of SMP. What matters most is scope across a broad range of economic markets, and the ability to spread the common costs of passive network infrastructure between a wide range of customers.

7.334 There are much larger companies operating in the UK than KCOM, and a number of these have greater scope. However, KCOM is clearly the largest wholesale provider within the Hull area, and will therefore benefit from more efficient levels of network utilisation than a new entrant. It would take time for any new entrant - regardless of the scale of scope of its operations outside Hull - to achieve the same level of

efficiency as KCOM within Hull. Overall, we consider KCOM's scale and scope are likely to be a source of competitive advantage, and so support our proposed market power determinations in the relevant wholesale markets in the Hull area.

Barriers to entry and expansion

7.335 We consider there are considerable barriers to entry and expansion in the wholesale connectivity markets in Hull. These are caused by:

- the high sunk costs required to build network infrastructure;
- the economies of scale and scope associated with providing services; and
- switching costs.

7.336 The description of these barriers to entry in the general assessment above of the SMP criteria is also relevant to the relevant wholesale markets in Hull. Although barriers to entry are offset to some degree in the markets for higher value services, as already noted, we have no evidence that leads us to consider any CP has overcome these barriers to any sufficient degree, nor do we consider this will change over the course of the review period of three years.

7.337 Our view, therefore, is that barriers to entry and expansion are significant in all the relevant wholesale markets in Hull and will remain so over the course of the review period.

Countervailing buyer power

7.338 Due to the very low volumes in some of the markets in Hull, countervailing buyer power could potentially act as a constraint on KCOM's behaviour. In the medium, high and very high bandwidth TISBO markets, KCOM supplies [3], [3] and [3] circuits respectively. The loss of just one of these circuits would represent a significant proportion of total market demand.

7.339 However, the threat to change supplier must be credible for countervailing buyer power to act as an effective constraint. In theory, a customer could persuade an alternative supplier to enter the market to supply a relatively high value service, or perhaps even self-supply using microwave technology. However, in this regard, the fact that no other CP has provided any of these circuits in the past leads us to consider that the threat is unlikely to be sufficiently credible to alter KCOM's behaviour. If market entry were viable then we would expect this entry to already have occurred and consequently KCOM's wholesale shares to be less than 100%.

7.340 Our view, therefore, is that countervailing that buyer power is unlikely to act as an effective constraint on KCOM's behaviour over the course of the review period of three years.

Prospects for competition

7.341 In general, we believe that the prospects for wholesale competition in the Hull area are poor. It is a relatively small, geographically isolated area, without any great concentration of businesses which might demand leased lines services. KCOM has a significant advantage over potential competitors due to its network infrastructure, and

economies of scope and its high share. As we have already noted, these conditions create significant barriers to entry.

- 7.342 In light of the falling demand for TISBO services, we do not see any realistic prospect of increased competition in any of the wholesale TISBO markets. For AISBO services, the prospect of growing demand would make any OCP network investment more attractive, but the relatively low value of the services means that it is unlikely. We are aware of a number of CPs either providing, or planning to provide, wholesale connectivity services in Hull using fixed wireless technologies. In its response to the CFI, KCOM noted that one MNO met its demand for radio station backhaul in Hull entirely independently of the KCOM network. In addition, we have researched three CPs who are using fixed wireless technologies to provide the connectivity to support retail internet access services in Hull. As discussed in Section 4, we do not consider that leased lines services provided over fixed wireless technologies are in the same market as those provided over a fixed network. In addition, it is likely that the services supporting retail internet access would fall in the wholesale local access market rather than the AISBO market.
- 7.343 Therefore, despite these competitive developments in Hull, we do not consider that prospective competition is likely to provide any meaningful constraint on KCOM's behaviour in any of the wholesale TISBO and AISBO markets in Hull over the course of the review period of three years.
- 7.344 For MISBO services, the high value and prospects for further demand growth imply that competition may be possible. To date, though, there are no MISBO services in the Hull area. Should demand for these services develop during the review period, it is possible that other CPs would be able to justify the investment to reach a site within Hull. However, we consider KCOM would still have a competitive advantage in supplying these.

Overall assessments of economic characteristics

- 7.345 Our proposed market power determinations are based principally on:
- the absence of, or virtually no, alternative fixed network infrastructure in the Hull area;
 - KCOM's share in each of the markets which is at, or very close to, 100%;¹⁰⁸ and
 - the absence of evidence to suggest CPs are likely to enter any of the markets over the course of the review period of three years. As such, we consider the threat of entry is unlikely to be a sufficiently credible threat to constrain KCOM's behaviour.
- 7.346 We did not find any MISBO services sold in the Hull area. We consider that should demand for these services materialise over the course of the review period, KCOM

¹⁰⁸ It is notable that we find no CP to have SMP in the very high bandwidth market in the UK excluding Hull, but find that KCOM has SMP in the equivalent market in Hull. The main reason is that we have no evidence to suggest that any other CP is willing to invest to supply these (or other TISBO services) in Hull. In contrast, in the market in the UK excluding Hull, we find a range of CPs supplying 622Mbit/s TISBO services.

would be in a stronger position than other CPs to provide these services, but we propose that no CP has SMP in the MISBO market in the Hull area.

SMP assessment in the relevant retail markets

7.347 In the following section we set out our SMP assessment, and our proposed market power determinations, in the following relevant retail markets:¹⁰⁹

- the retail low bandwidth traditional interface leased line market in the UK excluding the Hull area;
- the retail low bandwidth traditional interface leased line market in the Hull area; and
- the retail low bandwidth alternative interface leased line market in the Hull area.

7.348 To assess SMP in the relevant retail markets we have relied on the application of the same set of SMP criteria used above in relation to the relevant wholesale symmetric broadband origination markets. However, we also assess the impact of vertical integration. In our view, this approach enable us to undertake a thorough and overall forward-looking analysis of the economic characteristics of each relevant retail market, based on existing market conditions, in order to come to proposed market power determinations.

7.349 We also present our analysis of each market in the same manner, first setting out our proposed market power determination in the relevant retail market, and then providing an assessment of each of the SMP criteria that we consider to be particularly relevant to the markets in question in the following order:

- market share and market share trends;
- profitability;
- control of infrastructure not easily duplicated;
- economies of scale and scope;
- barriers to entry and expansion;
- vertical integration;
- countervailing buyer power; and
- prospects for competition.

7.350 Again, as per our assessment of SMP in the relevant wholesale symmetric broadband origination markets, our proposed market power determinations in the

¹⁰⁹ These relevant retail markets are based on our proposed market definitions and on our assessment of the three criteria test in each market. The three criteria test is discussed below at the end of this Section.

relevant retail markets are based on an overall assessment of these criteria, which taken separately may not necessarily be determinative.

7.351 We also continue to adopt the modified Greenfield approach, which means that we take into account the presence of *ex ante* regulation applied to upstream wholesale input markets, but assume that no *ex ante* regulation applies in the relevant retail market. Therefore, we assume that CPs have access to regulated wholesale digital low bandwidth leased-line terminating and trunk circuits from both BT and KCOM in their respective network areas.

Market for retail low bandwidth TI leased lines in the UK excluding the Hull area

7.352 We propose that BT has SMP in the retail market for low bandwidth TI leased lines in the UK excluding the Hull area, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 75 below in measuring whether BT has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 75: Summary of proposed SMP determination for the retail low bandwidth TI leased lines market (<=8Mbit/s) in the UK excluding the Hull area

SMP designation in 2007/8 Review	Volume growth since 2006/7	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
BT	-30%	68%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	BT

7.353 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.354 Low bandwidth leased lines are used to support a variety of downstream services, such as internet access, VPNs and PSTN voice. In many cases the retail customer buys one of these downstream services rather than a leased line. These uses of leased lines are captured at the wholesale level, and then form part of a downstream service retail market. Similarly, sales of leased lines to MNOs do not form part of the retail leased line market, but are captured at the wholesale level. In the retail leased line market, we are interested in circumstances where a retail customer buys a leased line directly.

- 7.355 Given this distinction, the volume of circuits in the retail leased line market is considerably lower than the equivalent upstream wholesale market.¹¹⁰ Since 2006/07, retail volumes have fallen by just under 30% in the retail low bandwidth TI market, which is slightly less than the decline in the wholesale input market.
- 7.356 Across the market as a whole BT's share of volume is currently 68%, and has fallen from around 80% since 2006. However, competitive conditions appear to vary between analogue, digital services below 2Mbit/s and digital services at 2Mbit/s and above. The shares in these different product segments are shown in Table 76 below. We should note that we do not put much weight on these product segment service shares for the purposes of assessing market power. They show the variation in competitive conditions across the market, but our assessment considers the market as a whole.

Table 76: BT's volume shares in the retail low bandwidth TI leased lines market in the UK excluding the Hull area

Product segment	Volume share 2007	Volume share 2011
Analogue	98%	96%
Digital TI < 2Mbit/s	79%	73%
Digital TI >=2Mbit/s	60%*	45%
All low bandwidth TI	80%	68%

* This figure is for 2Mbit/s circuits only. BT's share of circuits above 2Mbit/s account for only a very small proportion of the market.

Source: CP data, Ofcom analysis

- 7.357 We measure volumes in terms of the number of circuit ends which terminate at customer premises sold by each CP. Sales to other CPs from whom we have collected data are excluded to avoid double counting. Equally, any sales of retail circuits to MNOs are excluded.
- 7.358 Circuits which are sold as part of internet access, VPN or voice services are excluded from the retail market, and therefore should be excluded from our service share counts. However, we were not able to identify these circuits consistently across all CPs due to differences in the data provided. As a result, we consider shares calculated on the basis of all of the circuits which CPs told us they sold at a retail level (less sales to MNOs and other CPs) will provide the most reliable guide as to competitive conditions within the retail market. We have also calculated shares excluding known sales of VPNs and internet access as a sensitivity test. Although the proportions in the product segments vary, BT's share across the market remains at 63%,¹¹¹ which is not significantly different from our initial estimate of 68%, and importantly is over the 50% threshold which gives rise to a presumption of dominance.

¹¹⁰ On a like-for-like basis, the number of retail circuit ends is just over half the number of wholesale circuit ends.

¹¹¹ It should be noted that these factors are specific to retail market share estimates since the wholesale market includes all symmetric broadband origination services regardless of their use in downstream markets.

- 7.359 The market share evidence shows that BT continues to supply a very high proportion of the overall market, with particularly high shares in analogue and sub-2Mbit/s segments. In these segments of the retail market, there appears to be very little competition. However, BT's share of services at 2Mbit/s and above has fallen from 60% to 45%, which suggests that competition for the provision of these services has become more effective.
- 7.360 We are not able to present reliable market shares on a revenue basis. Although we collected this information from CPs, it was not presented in a manner which allowed us to segment the data according to our market boundaries. The differences in volume shares across the three product market segments create the possibility that BT's overall volume share might not be representative of its share of revenue in the market. In order to test this hypothesis, we have re-calculated shares by weighting CP volumes according to the average revenue per circuit for analogue, sub-2Mbit/s and 2Mbit/s services.¹¹² On this basis, BT's share of the market is 61%. We consider this weighted average volume share should be a better proxy for BT's share of value in the market. We note again that this share estimate is very large and over the 50% threshold which gives rise to a presumption of dominance.
- 7.361 Across the market as a whole, BT's share has fallen but remains above the 50% threshold. Within the overall market there appears to have been some increase in competitors' share of the provision of 2Mbit/s services, but there is virtually no competition in the provision of analogue services, and little competitive supply of sub-2Mbit/s circuits. Even at 2Mbit/s, BT's share of 45% remains at a level at which concerns about single dominance normally arise.
- 7.362 It should also be noted that the market is in rapid decline. As a result, the relative changes in CP market shares are not necessarily a reliable indicator of trends in competitiveness. In a market with growing or static demand, movements in market share provide an indication of the intensity of competition. If supply has become less concentrated, then smaller competitors must have been winning business from (or winning new customers at a faster rate than) larger competitors. This would suggest that the market is becoming more competitive, and that future supply would be contested. However, in a market with declining demand, such as the retail TI market, the changes in market share may reflect differences in the rate at which customers of different CPs are leaving the market altogether. Therefore, the fall in BT's market share need not imply that OCPs have won business from BT by offering more competitive deals, but merely that BT has a larger proportion of customers who have been able to switch to AI or perhaps DSL based services.
- 7.363 Overall, our initial conclusion is that the market shares provide strong evidence to suggest that BT is not yet effectively constrained by its competitors, and has SMP in this market. In particular, the shares suggest that BT will have both the incentive and ability to set prices above the competitive level for particular products without fear of losing customers to its competitors.

Profitability

- 7.364 As discussed at paragraphs 7.18-7.19 above, profit levels which are persistently and substantially above a firm's cost of capital are an indicator of market power. Profit

¹¹² These average revenue figures were derived from BT's profitability data as detailed below, and its circuit volumes.

can be assessed in a number of different ways, and return of capital employed (ROCE) is often used in competition economics. In assessing market power in a retail market as distinct from the upstream wholesale input market, we are interested in the profit associated with the activities which occur at the retail level. We do not believe that ROCE is appropriate for these purposes. Much of the fixed capital required to provide telecoms services is associated with upstream wholesale activities, with retailing functions requiring little or no fixed capital. Therefore we consider return on sales (ROS) as our measure of profitability.

- 7.365 ROS is simply the proportion of profit to turnover. Unlike ROCE, there is no theoretical benchmark against which we can compare this measure of profitability. However, as noted in the 2007/8 Review, the precedent from other competition authorities suggests that an appropriate ROS where capital intensity is low might be in the region of 1.5%.¹¹³
- 7.366 BT has provided profitability data associated with the retail sales of its leased line products. These are grouped into three categories: analogue circuits, Kilostream (which includes all digital leased lines below 2Mbit/s) and Megastream (which includes 2Mbit leased lines). This data does not allow us to calculate BT's profitability in the low bandwidth retail TI market in the UK excluding Hull precisely. There are three differences between the data and out market definition:
- i) The Megastream portfolio includes circuits up to 155Mbit/s, whereas the market we are considering only includes circuits up to 8Mbit/s. Whilst the volume of circuits above 8Mbit/s is relatively small, we estimate that these may account for around [X] % of Megastream revenue.
 - ii) BT sells a number of retail leased lines to MNOs. These sales are excluded from our market definition. However, the proportion is now¹¹⁴ very low - less than [X]%.
 - iii) BT also provides a small number of circuits in Hull, which should be excluded. We estimate that these represent around [X] of BT's total sales in this market (by volume).
- 7.367 Therefore, we are comfortable that the profitability figures for analogue services and Kilostream provide an accurate picture of the activity within the market being assessed, but it is possible that the figures for Megastream are not representative.

¹¹³ For further discussion of this point, please see paragraphs 7.57 of the January 2008 consultation.

¹¹⁴ In the 2007/8 Review we noted that 50% of Megastream and 35% of Kilostream circuits were sold to MNOs. We believe that MNOs now buy wholesale products from BT, such as RBS backhaul.

Table 77: Profitability of BT's retail leased line services

Product segment	Year	Return on sales (ROS)	Turnover (£m)	Net profit (£m)
Analogue	2010/11	46%	61.59	28.30
	2009/10	36%	67.78	24.37
	2008/09	17%	66.31	11.47
Digital < 2Mbit/s (Kilostream)	2010/11	16%	39.59	6.48
	2009/10	4%	51.14	1.85
	2008/09	38%	71.23	23.31
Digital >= 2Mbit/s (Megastream)	2010/11	0%	193.88	0.80
	2009/10	6%	265.86	16.09
	2008/09	1%	316.64	1.85
All retail leased lines	2010/11	12%	295.06	35.58
	2009/10	11%	384.78	42.32
	2008/09	8%	454.17	36.63

Source: BT

- 7.368 In aggregate, across the three product sets, BT's profit levels appear to be quite high. The figures show that BT earns relatively high returns on analogue and, to a lesser extent, sub-2Mbit/s services, but makes a zero return on Megastream. In particular, the profit levels for analogue services are substantially above the level we would expect to see in a competitive market.
- 7.369 BT accounts for over 90% of retail supply of analogue services, and there is no regulated upstream wholesale input for these services. These factors all suggest that BT is not constrained by competitors in this part of the retail low bandwidth market.
- 7.370 The figures for Kilostream vary considerably from year to year, but show a return on sales well above the 1.5% level which has been used before as a benchmark by competition authorities. This suggests that BT may not be effectively constrained by competitors in its supply of sub-2Mbit/s services.
- 7.371 For Megastream and Kilostream, OCPs have access to a regulated, and cost-oriented wholesale input in the form of PPCs. The financial data show that, on the face of it, BT is making a loss at the retail level on sales of these services. The market share data also suggest that OCPs have focused more on sales of the relatively higher value 2Mbit/s services in competition with Megastream. Therefore, and despite the concerns we have as to the reliability of the Megastream profitability data, we regard it as consistent with our expectation that BT's profit levels would be lower in this segment of the market.
- 7.372 Overall, we consider the profitability data supports our proposed market power determination. Although there appear to be significant differences in the profitability of analogue, sub-2Mbit and 2Mbit/s services, doubts about the reliability of the latter and the sustained and very substantial profit levels for the large number of customers of analogue and sub-2Mbit/s services suggests that BT is not constrained to price at the competitive level.

Control of infrastructure not easily duplicated

- 7.373 In order to offer retail low bandwidth TI services, a CP needs to provide the upstream wholesale input. This may be purchased through the wholesale market, or a CP could self-provide the relevant network infrastructure. The very high costs associated with building access network infrastructure have been discussed above in relation to the upstream wholesale low bandwidth TISBO market, and in relation to wholesale symmetric broadband origination in general. Our conclusion in the wholesale low bandwidth TISBO market was that BT's control of a ubiquitous access network infrastructure gave it a significant competitive advantage.
- 7.374 Although there is a regulated wholesale input which allows CPs to make use of BT's network infrastructure, there are a number of factors which imply that BT continues to benefit from its extensive network infrastructure in the retail market. First, in order to be able to use PPCs (the regulated wholesale input), a CP must build and operate an SDH network. Then, to achieve an efficient cost base a CP will generally need to establish a large number of points of handover.¹¹⁵ Building this network and level of interconnection requires significant investment. However, this is an investment that a number of CPs have already made.
- 7.375 Secondly, PPCs only allow CPs to provide digital services, and although we believe there is a chain of substitution between analogue and digital services, it means that OCPs can only compete with BT's retail service by buying another retail service from BT.
- 7.376 Overall, we believe that BT's control of an extensive network infrastructure is primarily a competition issue in the upstream wholesale market. The regulatory remedies imposed at that level are designed to address this issue. There have been a number of regulatory interventions since the 2007/8 Review designed to improve the effectiveness of the wholesale remedies. In particular, reductions in Point of Handover charges for PPCs, and the achievement of replicability requirements which are discussed further below in relation to vertical integration and in Section 9 and Annex 9.
- 7.377 However, even with the remedies in place, significant investment by CPs is required to make effective use of the resulting interconnection. Given the declining nature of the market and low average revenues per circuit, and the fact that this makes the market less attractive for CP investment, it is possible that the wholesale remedies will not be fully effective. As a result, and in conjunction with the fact that there is no wholesale access remedy for analogue services, we consider BT will continue to derive a competitive advantage in the retail market from its extensive network infrastructure.

¹¹⁵ Note that unit costs will be a function of, amongst other things, the number of points of handover required and the utilisation of this equipment and of the CP's network. It is possible that a CP could establish an efficient level of utilisation in a small region with relatively low volumes and little network infrastructure. However, across the entire geographic region of the market - the UK excluding Hull - it will not be possible to achieve high levels of efficiency without significant circuit volumes and points of handover.

Economies of scale and scope

7.378 Economies of scale and scope are a significant factor affecting the wholesale input market. However, as discussed above, regulatory remedies imposed in the wholesale market are designed to address these issues, and thereby allow CPs to compete in downstream markets. As noted in paragraph 7.374, cost effective use of the regulated wholesale input to the retail low bandwidth leased line market requires scale and network infrastructure. In general, owning and operating network infrastructure is subject to scope economies due to the high proportion of fixed and common costs. Therefore, CPs with greater scale and scope will generally benefit from lower costs in the retail market.

Barriers to entry and expansion

7.379 In addition to the barriers to entry and expansion discussed in relation to the two previous criteria, CPs may find it difficult to break into the retail leased line market due to switching costs. As discussed at paragraphs 7.46-7.49, the costs of switching wholesale provider are significant: physical changes in the connectivity to a customer site are required. Changes in retail supplier where the underlying wholesale provider stays the same also often require changes in the physical routing of a circuit. This results in a temporary loss of service for the customer. These costs must be borne by both the new supplier and the customer.

7.380 This problem is made worse by the fact that the market is in decline. Both customers and CPs are less willing to invest in TI services when they feel that they should be focusing their efforts on longer-term solutions. In this regard. It is worth noting that BT intends to close the DPCN network in 2018, with the result that all sub-2Mbit/s services and many analogue services will be forced to migrate by this time.

7.381 Our view, therefore, is that barriers to entry and expansion in the retail market mean that BT is unlikely to be constrained effectively by its competitors.

Vertical integration

7.382 In the 2007/8 Review we noted that BT's vertical integration was likely to generate efficiencies that are not available to other CPs, for example, by avoiding transaction costs and interconnection costs. In addition, vertical integration in conjunction with SMP in the upstream wholesale market creates the opportunity for leverage of power into the retail market.

7.383 Remedies in the wholesale market are designed to obviate the damaging effect of SMP. However, the 2007/8 Review noted that remedies would "alleviate, rather than entirely eradicate, the potential for anti-competitive conduct"¹¹⁶ in downstream retail markets.

7.384 The advantages that BT derives from vertical integration have been discussed in the past by Ofcom in relation to replicability. Since the 2007/8 Review, Ofcom has consulted on the question of whether BT's retail leased line services are now replicable. This question and the general issue of replicability are discussed further in Section 9. In their responses to this consultation, some CPs claimed that significant issues still remained. For the purposes of SMP assessment, we note that many

¹¹⁶ Paragraph 7.111, the January 2008 consultation.

aspects of replicability have been achieved in relation to digital services, but as we have noted several times, there is no wholesale input for analogue services.

7.385 Overall, our view is that vertical integration continues to generate a competitive advantage for BT. Wholesale digital services have improved, but the conditions in the market have changed with demand now falling rapidly and expected to continue to decline. In these circumstances it is relatively more difficult for OCPs to justify the investment required to serve new customers. This is an advantage to BT who can focus on retaining its large installed base of customers, and because BT is less likely to need to invest to serve new customers.

Countervailing buyer power

7.386 In relation to countervailing buyer power, we noted in the 2007/8 Review that:

“retail low bandwidth leased lines are a relatively low value product. It is unlikely that a customer could induce new entry into the market simply on the basis of procuring this item from a potential supplier. For similar reasons, options for self-supply that arise in the context of higher bandwidth leased lines are unlikely to be viable. Further, even the largest buyers of leased lines would be small in the context of the overall market and therefore would be unlikely to be individually important to a supplier.”¹¹⁷

7.387 We consider that this analysis still holds, and therefore our view is that countervailing buyer power is unlikely to constrain BT's behaviour in this market.

Prospects for competition

7.388 There will continue to be demand for low bandwidth retail leased lines for some time to come. However, the market is in long term decline, and there is very little prospect of new entry. We do not consider, therefore, that the prospect of increased competitive intensity in the future is likely to act as a constraint on BT's behaviour in this market over the course of the review period of three years.

Overall assessment of economic characteristics

7.389 Despite the presence of remedies to address SMP at the wholesale level,¹¹⁸ we consider the retail market is still affected by the factors which have led us to propose that BT has SMP in the upstream wholesale market:

¹¹⁷ Paragraph 7.130, the January 2008 consultation.

¹¹⁸ BT is currently required to provide a wholesale digital TISBO services on a non-discriminatory and cost oriented basis, and is subject to a charge control. This implies that CPs can provide low bandwidth retail TI leased line services without having to build access network infrastructure. As discussed in our analysis of wholesale low bandwidth TISBO market, the cost of building network infrastructure is one of the primary reasons why competition is not effective in this market. As a result, barriers to entry in the retail market are substantially lower than in the upstream wholesale market. Despite this, BT retains a very high share of the supply of digital services below 2Mbit/s. BT also retains a near monopoly of analogue services for which there is no requirement to provide a wholesale service.

- BT's control of a ubiquitous fixed network infrastructure;
- economies of scale and scope;
- barriers to entry and expansion arising primarily from switching costs; and
- declining demand and relatively low value services.

7.390 As a result, we consider that BT continues to benefit from the fact that it is a vertically integrated CP with, as we propose, SMP in the upstream wholesale market.

7.391 Competitive conditions vary considerably within the market. We estimate that BT's share of the supply of 2Mbit/s and above services is 45%, and it does not appear to make a profit on these services.¹¹⁹ In contrast, BT's profits are very high for sub-2Mbit/s and analogue services and its share of supply is 73% and 96% respectively. In relation to analogue, it is important to note that there is no wholesale product, and therefore the prospects for competition in this segment are more limited than for digital circuits.

7.392 Looking at the market as a whole, BT's share of volume is very high at 68%, which, in and of itself, gives rise to a presumption of dominance in this market. Consequently, taking account of the underlying economic characteristics, and in particular BT's high share in a declining market, we consider that BT has SMP in this market and will continue to do so over the course of the review period of three years.

Market for retail low bandwidth TI leased lines in the Hull area

7.393 We propose that KCOM has SMP in the retail market for low bandwidth TI leased lines in the Hull area, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 78 below in measuring whether KCOM has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 78: Summary of proposed SMP determination for the retail low bandwidth TI leased line market (<=8Mbit/s) in the Hull area

SMP designation in 2007/8 Review	Volume growth since 2006/7	KCOM's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
No SMP	-30%	67%	<ul style="list-style-type: none"> - KCOM's control of infrastructure not easily duplicated - KCOM's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	KCOM

7.394 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall

¹¹⁹ However, we have some concerns about the reliability of the financial data for 2Mbit/s services.

assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

7.395 Due to inconsistencies between the data provided by KCOM in this and the last market review, we are unable to compare market shares or calculate demand growth rates. Therefore, we focus on estimates of current market shares in the following analysis. Table 79 below sets out our estimates of KCOM's share in various product segments of the retail low bandwidth market.

Table 79: KCOM volumes shares in the retail low bandwidth TI leased lines market in the Hull area

Product segment	Volume share 2011
Analogue	84%
Digital TI < 2Mbit/s	36%
Digital TI >=2Mbit/s	65%
All low bandwidth TI	67%

Source: CP data, Ofcom analysis

- 7.396 The shares are calculated using the same assumptions as the analysis of the equivalent retail market outside Hull. That is, we exclude sales of retail services to other CPs, but have not excluded known sales of VPN and internet access services due to inconsistencies in the availability of information to make this exclusion.¹²⁰
- 7.397 Unlike BT, KCOM does not provide wholesale leased line products at cost based charges. KCOM's wholesale product is simply a version of the retail product where one end of the circuit is a designated Hull exchange building.
- 7.398 The key point is that CPs are unlikely to compete for business within Hull. They only use the wholesale service when a customer with a UK-wide footprint of premises happens to require connectivity to Hull in addition to services required in the rest of the UK. Even if a CP did try to compete in the retail market for leased lines within the Hull area, it would likely only provide only a limited constraint on KCOM since the CP would, in effect, be reselling a retail service.
- 7.399 We therefore consider that the calculated retail share of 67% could, if taken at face value, understate KCOM's retail market power. But even KCOM's overall share of 67% is well above the 50% level which creates a presumption of dominance. However, its share in the sub-2Mbit/s segment appears to be considerably lower than the rest of the market. On further investigation, we believe that this is driven by sensitivity to the low volumes in the Hull market and because we have not removed VPN sales from our estimate. If we do remove known sales of VPN and internet access, accepting that this may not be wholly reliable, KCOM's share in this segment increases to 54%. In light of this, and the fact that we have no prior reason to believe that the sub-2Mbit/s segment should be more competitive, we assume that on a

¹²⁰ For more details, see paragraphs 7.357-7.358.

forward looking basis competitive conditions in the sub-2Mbit/s segment are likely to be similar to those in the market as a whole.

7.400 As with the market outside Hull, we are unable to calculate revenue based shares. The value of services in the different segments varies, and so as a proxy for value based shares we have weighted the volumes in each segment according to the average value of services in that segment.¹²¹ On this value-weighted basis, KCOM's share of the market is the same at 67%.

7.401 Overall, we consider that the market share data provides strong evidence that KCOM has SMP in the retail market for low bandwidth TI leased lines in the Hull area.

Profitability

7.402 We do not have any reliable financial data which we can use to calculate KCOM's profitability for retail leased lines sold in the Hull area. However, in light of the cumulative assessment of the other SMP criteria, in particular KCOM's very large market share of 67%, we do not consider an assessment of this criterion would affect our proposed market power determination.

Control of infrastructure not easily duplicated

7.403 As discussed previously, a CP needs to provide a wholesale upstream input in order to offer retail leased lines. This requires either the purchase of a wholesale terminating segment service, or the self-provision of the relevant network infrastructure. The high costs of building network infrastructure are the primary reason why we find SMP in the upstream wholesale market. As a result of SMP in the wholesale market, we require that KCOM provide access to its network in the market for wholesale low bandwidth TISBO in the Hull area.

7.404 Despite the availability of this regulated wholesale service, KCOM has maintained a very high share of the retail market. One of the reasons for this may be that very few CPs have network infrastructure near to Hull. In order to use the regulated terminating segment service from KCOM a CP needs to interconnect in the Hull area, or buy an additional service from KCOM to hand over the traffic remotely.

7.405 From the circuit data we collected from CPs, we believe that most competitors to KCOM opt to have their traffic handed over remotely. The result is that KCOM benefits from the fact that it has both network infrastructure within the Hull area, and to and from Hull. Although it is possible to duplicate the infrastructure to reach Hull, the limited demand for leased lines in the Hull area means that this is unlikely to be financially justifiable for many CPs.

Economies of scale and scope

7.406 Much of the discussion of this criterion in relation to the retail low bandwidth TI leased lines market in the UK excluding the Hull area applies equally to this market. KCOM derives some advantage from economies of scale and scope in this retail market. One example is the cost associated with selling to (including marketing and branding) and managing customers in Hull. Most of the customers supplied by competitors to KCOM are organisations with a national footprint which includes sites

¹²¹ See paragraph 7.360 for further details of the weighting.

within Hull. Truly effective competition within Hull would require that CPs contest the supply of services to local businesses. This would require the establishment of a local sales force and investment in marketing to local businesses. It may be difficult to justify these investments given the small relative size of the market in Hull.

Barriers to entry and expansion

7.407 The discussion of this criterion in relation to the retail low bandwidth TI leased lines market in the UK excluding the Hull area applies equally to this market. This is a declining market with relatively high switching costs. It will therefore be difficult for new or existing entrants to win business from KCOM over the review period. Our view is that barriers to entry and expansion in the retail market will mean that KCOM is unlikely to be constrained effectively by its competitors.

Vertical integration

7.408 We do not have any direct evidence on the effect of KCOM's vertical integration on competition in this market. However, in light of our overall assessment of the other SMP criteria, in particular KCOM's very large market share of 67%, we do not consider an assessment of this criterion would influence our proposed market power determination.

Countervailing buyer power

7.409 As noted in relation to the retail low bandwidth TI leased lines market in the UK excluding the Hull area, buyer power is unlikely to provide an effective constraint due to the low value of the services, the lack of alternative suppliers of wholesale inputs, the high costs of self-supply and the small size of customers relative to the market as a whole.

Prospects for competition

7.410 Given the long term decline in demand for TI circuits, new entry is unlikely. Equally, given the small size of the market, the economies of scale and scope and barriers to switching discussed above, there would appear to be little prospect of a substantial increase in competitive intensity over the course of the review period of three years. We do not consider, therefore, that the prospect of increased competitive intensity is likely to constrain KCOM's behaviour in this market.

Overall assessment of economic characteristics

7.411 In the 2007/8 Review we found that no CP had SMP. To a significant degree, this was based on:

- market share evidence which suggested a relatively low degree of concentration;
- our finding that KCOM was only the second largest provider with a share of 25%; and
- our finding that KCOM's share had fallen significantly since the 2003/04 Review.

- 7.412 We now consider that a significant number of circuits were missing from the KCOM submission to the 2007/8 Review. As a result, its retail (and wholesale) shares were significantly understated, and the shares of other CPs were over-estimated.
- 7.413 Our current share estimate of 67% is very similar to the figure from the 2003/04 Review when we found KCOM to have approximately 76% of the market. Therefore, we now believe that KCOM's share is both high and relatively stable over time. In and of itself, this market share evidence gives rise to a presumption of dominance in this market
- 7.414 This is a small and declining market. Consequently, we consider that there is little prospect of increased competition during this review period. Overall, we conclude that despite the presence of a regulated wholesale input, KCOM is unlikely to be effectively constrained by its competitors in the retail market, and therefore has SMP.

Retail market for low bandwidth AI leased lines in the Hull area

- 7.415 We propose that KCOM has SMP in the retail market for low bandwidth AI leased lines in the Hull area, and we do not expect this position to change over the next three years. Our proposal is based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 80 below in measuring whether KCOM has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 80: Summary of proposed SMP determination for the retail market for low bandwidth AI leased lines (<=1Gbit/s) in the Hull area

SMP designation in 2007/8 Review	KCOM's market share	Results of other criteria applied for SMP assessment	Proposed SMP Designation
Market not reviewed	>75%	<ul style="list-style-type: none"> - KCOM's control of infrastructure not easily duplicated - KCOM's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	KCOM

- 7.416 We now set out our assessment of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessment of the economic characteristics, including by reference to those SMP criteria.

Market share and market share trends

- 7.417 Due to inconsistencies between the data provided by KCOM in this and the last market review, we are unable to compare market shares or calculate demand growth rates. Our market share estimates are also more sensitive to error due to the small volumes in this market.
- 7.418 Our initial estimate of KCOM's share of volume in this market - using the same methodology as our calculations for the retail TI leased line markets - is 98%. However, we have a number of concerns with this estimate, and believe that it is likely to be too high. First, we do not have data from BT regarding its retail sales of Ethernet services. As a result, we have to infer BT's retail sales from its internal use of Openreach wholesale services. This is not appropriate in Hull where we believe

BT is likely to use KCOM as its supplier of wholesale symmetric broadband origination services.

7.419 More generally, the data supplied by KCOM suggests that they sell a small but not insignificant number of AI leased lines to wholesale customers in Hull (including BT). We would assume that a reasonable proportion of these wholesale sales would relate to retail leased line sales by the relevant CPs. However, we do not find a comparable number of such retail circuits in the data supplied by these other CPs.

7.420 There are a number of possible explanations for the discrepancy:

- the circuits may be used to support downstream services other than leased lines, for example, internet access or MNO backhaul, and therefore should not be counted in the retail leased line market;
- we are missing geographic information from the data supplied by OCPs, and therefore do not recognise that a retail circuit has an end in Hull;
- there are a number of duplicate entries in the KCOM data of circuits provided to CPs; and
- some of the wholesale circuits categorised by KCOM as Ethernet, and therefore included in the AI market (for example, sub-2Mbit/s and 2Mbit/s Ethernet circuits), may have been listed as TI leased lines by the CPs in their submissions.

7.421 We have investigated these issues. However, given the inconsistencies in the various datasets, we have resolved to accept a wide range in our share estimate. In effect, we calculate a lower bound for KCOM's retail share by assuming that every sale of a wholesale leased line to a CP results in a retail sale. On this basis, we estimate KCOM's retail volume share to be at least 75%.

7.422 Given that this lower bound is well above the 50% level which creates a presumption of dominance, we do not consider it necessary to undertake further analysis of the shares in this market.

Profitability

7.423 We do not have any reliable financial data which we can use to calculate KCOM's profitability for retail leased lines sold in the Hull area. However, in light of the cumulative assessment of the other SMP criteria, in particular KCOM's very large market share of more than 50%, we do not consider an assessment of this criterion would affect our proposed market power determination.

Control of infrastructure not easily duplicated

7.424 Our discussion of this criterion in relation to the retail low bandwidth TI market in Hull also applies to this market: we consider that KCOM's control of network infrastructure in *and around* the Hull area generates a competitive advantage which is likely to contribute to its ability to act independently of competitors and consumers in the retail market.

Economies of scale and scope

7.425 Our discussion of this criterion in relation to the retail low bandwidth TI market in Hull also applies to this market: we consider that KCOM is likely to benefit from economies of scale and scope in terms of its sales to local businesses, and that this is likely to contribute to its ability to act independently of its competitors in the market as a whole.

Barriers to entry and expansion

7.426 Our initial conclusion is that there are barriers to entry and expansion in the retail low bandwidth AI market in Hull. Although this is a growing market, the total size of the market means that it is unlikely to attract significant investment from alternative suppliers. This implies that KCOM is less likely to be constrained effectively by its competitors over the review period.

Vertical integration

7.427 We do not have evidence on the effect of KCOM's vertical integration on competition in this market. However, in light of the cumulative assessment of the other SMP criteria, in particular KCOM's very large market share of more than 50%, we do not consider an assessment of this criterion would affect our proposed market power determination.

Countervailing buyer power

7.428 Buyer power is unlikely to provide an effective constraint due to the low value of the services, the lack of alternative suppliers of wholesale inputs, the high costs of self-supply and the small size of individual customers relative to the market as a whole.

Prospects for competition

7.429 Despite demand growth for AI services, the small size of the market, economies of scale and scope and barriers to entry and expansion, as discussed above, lead us to consider that a substantial increase in competitive intensity over the course of the review period of three years is unlikely.

7.430 We do not consider, therefore, that the prospect of increased competitive intensity is likely to constrain KCOM's SMP over the course of the review period.

Overall assessment of economic characteristics

7.431 This is a growing market, but one that we consider does not offer sufficient potential for growth over the course of the review period of three years to attract a significant amount of new entry. As in the retail market for low bandwidth TI leased lines in the Hull area, CPs operating in the rest of the UK provide retail services in the Hull area when they have customers with a national footprint of sites with some located in Hull. They do not appear to sell to customers whose connectivity requirements lie entirely within the Hull area.

7.432 We believe that the prospects for competition in this retail market can be improved through better terms and conditions for the regulated wholesale input. This is discussed further in Section 14. However, one of the fundamental obstacles to competition is the small size of the market. In these circumstances, even with an

improved regulated wholesale input, KCOM is unlikely to be effectively constrained by its competitors in the retail market.

7.433 In view of these characteristics and KCOM's market share of at least 75%, which, in and of itself, gives rise to a presumption of dominance, we consider that KCOM has SMP in this market.

Wholesale markets for TI trunk segments

7.434 In the 2007/8 Review, we found BT to have SMP in a single national market for trunk segments. As discussed in Section 6, we now propose two separate markets for the provision of trunk segments:

- a market for regional trunk segments; and
- a market for national trunk segments.

7.435 In the following section we present our assessments of whether any CP has SMP in each of these markets.

7.436 To assess SMP in these relevant wholesale trunk segment markets we have relied on the application of the same set of SMP criteria used above in relation to the relevant wholesale symmetric broadband origination markets. In our view, this approach enable us to undertake a thorough and overall forward-looking analysis of the economic characteristics of each relevant market, based on existing market conditions, in order to come to proposed market power determinations.

7.437 We also present our analysis of each market in the same manner, first setting out our proposed market power determination in the relevant market, and then providing an assessment of each of the SMP criteria that we consider to be particularly relevant to the markets in question in the following order:

- market share and market share trends;
- profitability;
- control of infrastructure not easily duplicated;
- economies of scale and scope;
- barriers to entry and expansion;
- countervailing buyer power; and
- prospects for competition.

7.438 To improve the readability of our analysis, we present our assessment of both trunk segment markets in parallel.

Proposal as to whether to make market power determinations

- 7.439 We propose that BT has SMP in the regional TI trunk segment market. We have taken particular account of BT's large market share of 89% which, in and of itself, indicates BT has SMP in this market.
- 7.440 We propose that no CP has SMP in the national TI trunk segment market.
- 7.441 Our proposals are based on an overall forward-looking analysis of the economic characteristics of that market having regard to existing market conditions. In our competitive assessment, we have had particular regard to the SMP criteria summarised in Table 81 below in measuring whether BT has the power to behave to an appreciable extent independently of its competitors, customers and consumers.

Table 81: Summary of proposals as to whether to make market power determinations in the markets for wholesale national and regional TI trunk segments in the UK

Relevant market	SMP designation in 2007/8 Review	BT's market share	Results of other criteria applied for SMP assessment	Proposed SMP designation
Wholesale national TI trunk segment market in the UK	BT*	49%	<ul style="list-style-type: none"> - Significant amount of alternative infrastructure - BT's economies of scale and scope provide limited benefit - Barriers to entry and switching expected to have limited impact on competition - Effective competition is expected to be maintained 	No SMP
Wholesale regional TI trunk segment market in the UK	BT*	89%	<ul style="list-style-type: none"> - BT's control of infrastructure not easily duplicated - BT's economies of scale and scope - Existence of barriers to entry and expansion - Lack of countervailing buyer power - Lack of prospects for competition 	BT

* This refers to the market power designation in the 2007/8 Review for a single TI trunk segment market including both regional and national segments.

NB Unfortunately, due to a change in methodology, we cannot compare market volumes or share estimates with those from the 2007/8 Review. However, reflecting the decline in the retail TI market, we expect that both TI trunk markets are also in decline.

- 7.442 We now set out our assessments of each SMP criteria, noting that, individually, each criterion is not necessarily determinative. We conclude by setting out our overall assessments of the economic characteristics, including by reference to those SMP criteria, in the two relevant wholesale markets for trunk segments in the UK.

Market share and market share trends

- 7.443 Due to the change in market definition, we are not able to compare volumes and share estimates directly with the 2007/8 Review. However, we expect aggregate volumes will follow the same pattern of falling demand as symmetric broadband origination markets. Therefore, we believe that volume is likely to have fallen in both of the markets by between 30% and 50% since 2006/07. Continuing falls in volume are likely to mean that OCPs have spare capacity in the national trunk market as we discuss below.

7.444 Table 81 above shows our estimates of BT's shares in both the regional trunk market and the national trunk market. A full explanation of the methodology used to calculate these shares is provided in Annex 8. We consider that these share estimates represent an upper bound on BT's share in the two markets for a number of reasons:

- data supplied by OCPs was often missing relevant information which would allow us to identify the trunk element of a circuit, such as location data for the circuit ends;
- perhaps as evidence of this missing data, there was a significant discrepancy between the number of circuit ends supplied by OCPs in wholesale and retail markets, and the number of circuits bought by OCPs from BT; and
- these shares include trunk requirements for analogue circuits even though BT does not supply wholesale analogue trunk products. If these circuits are excluded, BT's share falls to 46% in the national trunk segment market, and to 87% in the regional trunk segment market.

7.445 If all the above factors were allowed for by adjusting the data, BT's share of the national trunk market would be less than 45%. At this level, BT's share does not create a presumption of market power, but neither is it clear that competition will be effective. We also consider it is likely that BT's share of the national trunk market has fallen given that its share of the supply of all trunk segments has fallen.

7.446 In contrast to the national trunk segment market, BT's share of the regional trunk segment market is well above the 50% threshold for the presumption of dominance. Although we consider that BT's share of all trunk segments has fallen, it is likely - given the difference in shares, and the evidence from our assessment of the other SMP criteria - that the fall is driven by changes in the national trunk segment market. Overall, we consider that BT's high share is indicative of impediments to effective competition in this market, and that it provides strong evidence that BT has SMP in this market.

Profitability

7.447 Profits which are significantly and persistently above a firm's cost of capital may indicate that it has SMP. Table 82 below shows the figures published by BT in its regulatory accounts for trunk segments (national and regional combined).

Table 82: BT profitability on sales of wholesale trunk segments

Year	Reported ROCE	Adjusted ROCE	Turnover (£m)	Reported profit (£m)	Adjusted profit (£m)	Mean Capital Employed (£m)
2010/11	22.4%	28.3%	108	47	60	212
2009/10	43.7%	45.3%	164	149	112	247
2008/09	71.3%	68.5%	257	193	185	270
2007/08	66.9%	63.9%	265	190	182	285
2006/07	44.6%	51.0%	256	133	153	300

Source: BT regulatory financial statements, Ofcom analysis

- 7.448 It is clear from the table that BT's return on capital has been well above its cost of capital since the 2007/8 Review. If BT faced effective competition to all of its supply of trunk segments, it is unlikely that these levels of profitability would be sustainable.
- 7.449 It should also be noted that the recent fall in profitability stems, at least in part, from reductions in price forced by regulatory intervention rather than competitive pressure.
- 7.450 We consider that this profitability data provides evidence that competition has not constrained BT's pricing of trunk segments to the competitive level. However, as we do not have disaggregated profitability data, we cannot say whether returns are high in both trunk segment markets.
- 7.451 BT's pricing for wholesale trunk segments is largely uniform, but it does offer discounts on certain routes between major urban areas. All of these routes lie within the national trunk segment market. In addition, national trunk segments account for less than 20% of BT's total supply of trunk segments. We consider these factors suggest that the majority of BT's profits are likely to be derived from the regional trunk segment market.
- 7.452 SMP assessment is a forward-looking exercise. We expect demand for trunk services to fall over the period covered by this review. On national trunk routes where a number of OCPs have infrastructure, the resulting spare capacity will put further pressure on national trunk prices and tend to erode profits in the national trunk market.
- 7.453 Overall, therefore, we consider that the profitability data provides further evidence to support the position that BT has SMP in the market for regional trunk segments. We consider the evidence is consistent with our proposal not to make a market power determination in the national trunk segment market.

Control of infrastructure not easily duplicated

- 7.454 For the purposes of our analysis, we view a retail leased line as consisting of two symmetric broadband origination segments,¹²² and if needed, a trunk segment. In order to supply a trunk segment, a CP needs to provide transmission capacity between the two origination segments. As discussed in the TISBO market assessments above, BT has a very extensive access network infrastructure and supplies a very high proportion of wholesale TISBO services in the UK excluding Hull. As a result, there are two critical elements in the provision of trunk segments:
- facilities to provide long distance transmission capacity; and
 - facilities to connect to points in the BT network where symmetric broadband origination segments can be aggregated and handed over.
- 7.455 The second of these is not required when the symmetric broadband origination segment is self-supplied, and is therefore not required by BT. The result is that BT derives a cost advantage in the provision of trunk segments due to its high share in TI symmetric broadband origination markets, which ultimately derives from its control

¹²² We adopt the terminology of symmetric broadband origination to remain consistent with the other assessments in this Review. However, it should be noted that these origination segments are equivalent to the terminating segments of a Partial Private Circuit (PPC) supplied by BT Wholesale.

of an extensive access network infrastructure. However, as we can see from the market shares, OCPs have been relatively more successfully competing in the market for national trunk segments, and so this benefit need not always be material.

- 7.456 As we explain in section 6, a key distinction between regional and national trunk circuits is that the former may not actually involve use of a core network. Regional trunk circuits may in fact be similar to terminating segments in that they are short-distance circuits connecting a customer premises to the nearest network node, but where these premises and the network node are in different but adjacent TAN areas. In these circumstances, the circuit is regarded as including a trunk segment, but this may be purely notional. National trunk circuits by contrast are longer-distance circuits between urban centres and as such will involve use of core infrastructure. As we explain below, a number of CPs have to a large extent duplicated BT's national trunk infrastructure but, as with the terminating segment markets discussed earlier, this is much less true of regional trunk circuits.
- 7.457 CPs often build their networks in a piecemeal fashion: providing additional transmission links and points of handover as and when required. This can only be justified when there are a sufficient number of symmetric broadband origination segments in an area to support the required investment.
- 7.458 In contrast, BT has a very extensive SDH trunk network to support the large volume of terminating segments that it provides, both internally and to OCPs, throughout the UK. It is unlikely that an OCP would ever reach the scale required to replicate BT's entire trunk network. For one reason, it is likely that they would need to supply at least some of the demand from BT's downstream businesses.
- 7.459 It is important to note that OCPs do not need to replicate BT's entire national trunk network by interconnecting at every possible location in order to compete in the supply of national trunk segments. There are 67 tier one nodes. In theory, if a CP were to interconnect with BT within each area served by these nodes, they would be able to self-provide all of their national trunk segment requirements. That is, they would not need to buy any national trunk segments from BT. Furthermore, national trunk circuits can be routed indirectly via an adjacent tier one node, and so CPs without complete coverage of interconnection in the tier one node areas would still be able to compete to supply services in the national trunk segment market.
- 7.460 In general, we consider that OCPs have been able to replicate a sufficient amount of core network infrastructure to compete with BT in the provision of national trunk segments. As part of our network reach analysis, we collected data from OCPs regarding the extent of their network infrastructure. This shows that many of the CPs have built long distance transmission networks connecting major urban areas in the UK. In addition, several CPs have built up a large number of points of interconnection with the BT network. Three CPs – [X, X and X] – have interconnection in more than 60 of the 67 tier one node areas, and could self-supply virtually all of their trunk national segment requirements. Also, in discussions with one of these CPs, we were told that they only needed to use BT to supply regional trunk segments.
- 7.461 Therefore, we consider that BT is unlikely to derive a material competitive advantage from its network infrastructure in the national trunk segment market.
- 7.462 There is less scope to aggregate traffic on routes in the regional trunk segment market, and it is therefore more difficult for an OCP to justify investment in either the

transmission facilities or additional points of handover. In this market, we consider that BT gains a material competitive advantage from its extensive trunk and access network infrastructure.

Economies of scale and scope

- 7.463 Both regional and national trunk segment markets are characterised by economies of scale. As discussed in the previous section, the provision of national trunk segments requires significant investment in network infrastructure to provide long distance transmission capacity, and for OCPs it is also likely to require investment in facilities to interconnect with BT (i.e. points of handover). Both facilities are subject to economies of scale due to high upfront costs.
- 7.464 Regional trunk circuits may not in fact make use of the core network at all and, in economic terms, they have more in common with symmetric broadband origination. Under the old definition of the trunk market, the use of a core trunk segment in these circuits was notional and did not necessarily reflect the actual routing of the circuit, or the potential for competitive investment in similar circuits.
- 7.465 Defining two trunk markets in this way captures the differences in the extent of economies of scale between regional trunk segments and national trunk segments. This is because “national trunk” routes between major urban centres will tend to be the high volume routes where the potential for aggregation is likely to be relatively high.
- 7.466 By contrast, circuits between adjacent TANs tend to be relatively short-distance circuits enabling a CP to serve a customer site by connecting it to the nearest BT node. Compared to these regional trunk circuits, “national” trunk circuits between non-adjacent TANs are far more likely to employ trunk or core networks.
- 7.467 In the market for national trunk segments, OCPs have been able to reach the level of aggregation necessary to compete with BT, which demonstrates that BT does not have a material competitive advantage due to its scale. In contrast, BT’s share of volume in the market for regional trunk segments suggests that it benefits from a significant scale advantage relative to its competitors.
- 7.468 We consider that economies of scope are a factor potentially affecting competition in both trunk segment markets. Many of the costs of transmission facilities required to provide trunk segments are common to a wide range of services. For example, the duct, fibre, buildings and some of the transmission equipment will be used by almost all downstream services in addition to TI leased lines. As a result, BT potentially benefits from the scope of its operations across the fixed telecoms sector.
- 7.469 We consider that economies of scope are also likely to be present in the national trunk segment market, but we do not consider that they are likely to have a material effect on competition. The reason is that CPs are able to aggregate traffic from a variety of services on national trunk routes, whereas this is not feasible on regional trunk routes. Therefore, scale economies tend to outweigh scope economies in the national trunk segment market.

Barriers to entry and expansion

- 7.470 Barriers to entry are present in both trunk segment markets due to the high sunk costs associated with building a long distance transmission network. However, as we

have already noted, a number of CPs have already built long distance fibre networks connecting major urban areas in the UK.

- 7.471 In addition, there are barriers to entry and expansion resulting from the fixed costs of establishing points of interconnect with BT in different locations. As noted above, three OCPs have already established enough points of interconnect to allow them - in theory - to self-provide almost all of their trunk segment requirements. There may still be incremental costs for these CPs associated with providing additional capacity at the relevant points of handover, but these costs are much less significant than the costs to establish interconnection in the first place. Therefore, we consider that these CPs have overcome the main barriers to entry in both the regional and national trunk segment markets, but that some barriers to expansion may remain.
- 7.472 As discussed above, there is greater potential to aggregate traffic on national trunk routes relative to regional trunk routes. Therefore, it is easier to CPs to justify the costs of providing additional capacity at points of interconnect in the national trunk segment market. Consequently, the barriers to expansion are lower in the national trunk segment market. In addition, we should note that demand for trunk segments is falling, and this implies that capacity is likely to become available at points of interconnect. To the extent that CPs are able to re-use this capacity, there is less of a barrier to expansion in both the regional and the national trunk segment markets.
- 7.473 There are further barrier to entry and expansion in the form of barriers to switching. A change in trunk segment provider may incur significant costs associated with work to re-route circuits to a different point of handover; the provision of additional point of handover capacity and the establishment of systems and processes to transact with a new supplier. In addition, the re-routing of circuits is likely to mean a temporary loss of service for the downstream leased line customer. In a growing market, switching costs are less likely to affect the competitive process. However these are rapidly declining markets in which CPs are less likely to want to invest.
- 7.474 Overall, we consider that barriers to switching, and other barriers to expansion and entry, will mean that competitive conditions are unlikely to change rapidly over the review period of three years. In particular, it is unlikely that competition will provide an effective constraint on BT's behaviour in the regional trunk segment market.
- 7.475 Equally, we consider that OCPs already provide an effective constraint on BT in the market for national trunk segments, and do not expect this to change over the review period of three years. One reason, as noted above, is that falling volumes are likely to mean that OCPs have spare capacity in the national trunk market.

Countervailing buyer power

- 7.476 Demand in the markets for trunk segments is relatively concentrated as it is only bought by CPs with SDH networks. As such, it is possible that BT's behaviour in these markets could be constrained by buyer power.
- 7.477 In order to have buyer power a CP needs to be able to make a credible threat to switch a significant proportion of its demand to an alternative supplier, or to self-supply, within a relatively short period of time. There are various reasons why such changes in supplier are unlikely in the regional trunk segment market:

- first, alternative suppliers need to be present in the appropriate locations and to have sufficient spare capacity to accommodate the new supply. The barriers to expansion discussed above imply that existing CPs would find it difficult to cater for the demand from a large customer. Equally, the barriers to expansion are likely to limit the viability of self-supply; and
- secondly, the falling demand for TI services means that CPs are less likely to be willing to undertake the investments required to change supplier.

7.478 In addition, we note that the largest customer of BT's trunk segments is BT's downstream business. It is extremely unlikely that BT would consider using an alternative supplier for trunk services. This reduces the chance that buyer power will have a material effect on BT's behaviour.

7.479 In conclusion, we consider that CPs are unlikely to have sufficient buyer power to act as an effective constraint on BT in the market for regional trunk segments.

7.480 In contrast, in the national trunk segment market, alternative suppliers have already built extensive trunk networks to reach major urban centres throughout the UK. As noted above, three CPs have invested to interconnect with BT at a sufficient number of sites to give them the opportunity to self-provide almost all of their trunk segment requirements. The falling demand for services in this market implies that these CPs will be left with spare capacity. This creates the possibility that a CP which currently purchases trunk services from BT could switch to an alternative supplier without that alternative supplier having to make significant incremental investments in capacity. We consider that this effect makes the threat to switch supplier more credible, and generates a degree of buyer power in the national trunk segment market.

Prospects for competition

7.481 The threat of potential entry can prevent firms from raising prices above competitive levels. However, given the falling demand for TI services, and relatively high barriers to entry and expansion, we do not believe that competitive intensity is likely to increase over the review period of three years. This applies most clearly to the regional trunk segment market. As such, we do not believe that the threat of enhanced competition will provide a material constraint on BT in this market.

7.482 In the national trunk market, falling demand for trunk services implies that CPs will have spare capacity. We consider that this will allow CPs to supply new customers at a relatively low incremental cost. In addition, the price of some Point of Handover services supplied by BT to CPs was reduced significantly in 2011 following regulatory intervention. This reduces the cost to CPs of interconnecting with BT, and therefore encourages the competitive supply of trunk segments. Overall, we consider these factors mean that competitive intensity in the national trunk segment market will remain at its current level, or potentially increase, over the three year review period.

Overall assessment of economic characteristics

7.483 In the 2007/8 Review we defined a single wholesale TI trunk segment market, in which we found BT to have SMP. However, we noted that there were different competitive conditions within the market with some routes between major urban centres being more competitive than others, though we were unable to identify any which could be considered as a separate market. In this review, rather than considering competitive conditions on individual routes, we have now defined two

separate markets: one for long distance trunk routes (the market for national trunk segments), and another for routes which connect adjacent TAN areas (the market for regional trunk segments).

- 7.484 Due to the change in methodology, we cannot compare market volumes or share estimates with those from the 2007/8 Review. However, given that demand for TI trunk segments is derived from the demand for retail TI leased lines, we can safely assume that demand is falling in line with the trend in this retail market. As such, we do not expect to see any significant investment by OCPs either to support new entry, or to support expansion within these trunk markets.
- 7.485 In light of this, and BT's high share of 89%, we consider that competition is unlikely to provide an effective constraint on BT in the regional trunk market. In contrast, in the national market, BT's share creates neither a presumption of dominance nor gives a clear indication that the market is competitive. Our share estimate of 49% is likely to represent an upper bound, and is much lower than in the regional trunk market. The difference in BT's share between the two markets highlights the extent to which competitors have been able to overcome barriers to entry and expansion in this market.
- 7.486 A number of OCPs have built extensive infrastructure which allows them to supply national trunk segments, and the trend of falling volumes suggests that OCPs are likely to have sufficient capacity to allow them to provide an effective competitive constraint without requiring significant incremental investment. On this basis, we consider that the market for national trunk segments is effectively competitive, and will remain so over the review period of three years.

Question 5: Do you agree with our approach to SMP assessment?

Question 6: Do you agree with our assessment of SMP for the retail low bandwidth TI leased lines market in the UK excluding the Hull area?

Question 7: Do you agree with our assessment of SMP for the wholesale TISBO markets in the UK excluding the Hull area?

Question 8: Do you agree with our assessment of SMP for the wholesale AISBO markets in the UK excluding the Hull area?

Question 9: Do you agree with our assessment of SMP for the wholesale MISBO markets in the UK excluding the Hull area?

Question 10: Do you agree with our assessment of SMP for the wholesale TI regional trunk market and the wholesale TI national trunk markets?

Question 11: Do you agree with our assessment of SMP for the retail low bandwidth TI leased lines market and the retail low bandwidth AI leased lines market in the Hull area?

Question 12: Do you agree with our assessment of SMP for the wholesale TISBO and AISBO markets in the Hull area?

The Three Criteria Test

Introduction

7.487 As set out in the preceding sections, in accordance with our statutory duty to do so, we have identified leased lines markets in the UK in which we propose ex ante regulation may be warranted.¹²³ In carrying out this exercise, we have taken due account of the EC's Recommendation.¹²⁴

7.488 In this sub-section we assess how, in our view, the so-called three criteria test is satisfied for each of the markets we propose to identify as markets in the UK in which ex ante regulation may be warranted,¹²⁵ and which are not included in the EC's Recommendation. However, we would also point out that, consistent with the view we took in the 2007/8 Review, we do not consider passing the three criteria test constitutes a legal requirement for the undertaking of a market review and, where appropriate, the imposition of ex ante regulation.

The EC's Recommendation and the EC's Previous Recommendation¹²⁶

7.489 The EC's Recommendation lists those markets, at a European level, in which the EC consider ex ante regulation may be warranted.

7.490 It is important to note here that it is precisely because we have a duty to identify markets in which ex ante regulation may be warranted *appropriate to our national circumstances*,¹²⁷ that we may identify markets that are not on the EC's Recommendation.

7.491 The EC's Recommendation states:

“The markets listed in the Annex have been identified on the basis of [the] three cumulative criteria. For markets not listed in this Recommendation national regulatory authorities should apply the three-criteria test to the market concerned.”¹²⁸

¹²³ In accordance with section 79 of the Act, implementing Article 15(3) of the Framework Directive. See also Annex 6 which provides more detail.

¹²⁴ In accordance with section 79 of the Act.

¹²⁵ Reference to ex ante regulation should be regarded as reference to SMP remedies. We use the terms interchangeably.

¹²⁶ 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.

¹²⁷ See Article 15(3) of the Framework Directive. Section 79(1)(a) of the Act states that “OFCOM must identify (by reference, in particular, to area and locality) the markets in which in their opinion are the ones which in the circumstances of the United Kingdom are the markets in relation to which it is appropriate to consider whether to make [a market power determination].”

¹²⁸ See Recital 17.

7.492 The markets we have identified in the UK in which we propose ex ante regulation may be warranted and which are not listed in the EC's Recommendation (the Relevant Markets), are:

- the retail market for low bandwidth TI leased lines in the UK excluding the Hull area;
- the wholesale market for TI regional trunk segments in the UK;
- the retail market for low bandwidth TI leased lines in the Hull area; and
- the retail market for low bandwidth AI leased lines in the Hull area.

7.493 In the 2007/8 Review, in light of our market analyses we found that competition was ineffective in two of the Relevant Markets¹²⁹ and we decided it was necessary to impose ex ante regulation to address the competition problems in those markets. Regarding the retail market for the provision of low bandwidth TI leased lines in the Hull area, for the reasons set out in our SMP assessment, our finding of no SMP in this market in the 2007/8 Review was based on a significantly understated market share for KCOM. Our current estimate of KCOM's market share is approximately 67% which is very similar to its market share in the 2003/4 Review, where as a result of our analysis we did impose ex ante regulation on KCOM in this retail market. Consequently, it is important to highlight that:

- the Relevant Markets are all markets in which, prior to this market review, ex ante regulation has existed; and
- in this market review we are assessing whether, on the basis of national circumstances, the Relevant Markets are *still* susceptible to ex ante regulation.

7.494 As a result, we consider in identifying the Relevant Markets:

- we have acted in accordance with our relevant duty under the Act; and
- we are also consistent with the EC's Recommendation.

The three criteria test

7.495 When identifying markets other than those in the EC's Recommendation, we should ensure the following three criteria are cumulatively met for each market:

- i) the presence of high and non-transitory barriers to entry;
- ii) a market structure which does not tend towards effective competition within the relevant time horizon; and

¹²⁹ The retail market for low bandwidth TI leased lines in the UK excluding the Hull area, and the wholesale market for trunk segments in the UK.

- iii) the insufficiency of competition law alone to adequately address the market failure(s) concerned.¹³⁰

Approach to assessing how the three criteria test is satisfied for each of the Relevant Markets

7.496 In assessing how the three criteria test is satisfied for each of the Relevant Markets, we have taken due account of the Explanatory Note to the EC's Recommendation.¹³¹ We have also taken into account the ERG Three Criteria Guidance,¹³² which provides guidance on the burden of proof required for sustaining that a market is a candidate market for ex ante regulation, and on the interaction between the three criteria and SMP.¹³³ We regard the following guidance of particular relevance to our assessment:

- first, “the burden of proof necessary to demonstrate that the three criteria are...met should under no circumstances be higher than the burden of proof required for a finding...of SMP”;
- secondly, “it should be recalled that the first criterion (presence of high and non-transitory barriers to entry) and the second criterion (tendency towards effective competition) are inherently related to the SMP assessment. Therefore, in those cases where the SMP analysis will be undertaken (e.g. for the purposes of regulating a market no longer included in the Recommendation), reference to the SMP analysis should in principle be sufficient to prove that the first and second criterion are also met. The same conclusions should also hold true with regard to the level of detail (data that needs to be supplied) necessary for the passing of the three criteria”;
- thirdly, “the burden of proof for fulfilling the three criteria test and maintaining at national level a market that was included in [the Previous EC Recommendation] but that is no longer included in [the EC's Recommendation]...should be lower than the burden of proof that may be required for defining a market that has never made part of the list of candidate markets retained by the European Commission in its Recommendations”; and
- fourthly, “in order to prove fulfilment of the three criteria test for maintaining regulation on a market listed in [the Previous EC Recommendation] but not in [the EC's Recommendation], in principle it should be sufficient for NRAs to substantiate why the elements invoked by the European Commission in its Explanatory Note to justify withdrawal of a market from the list on the basis of the three criteria are not applicable to the national circumstances, thus leading to the

¹³⁰ See paragraph 2 of the EC's Recommendation.

¹³¹ Explanatory note 2007 (Second Edition), accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services.

¹³² ERG Report on Guidance on the application of the three criteria test, June 2008.

¹³³ See section 4.

conclusion that the situation is closer to that existing under [the Previous EC Recommendation].”¹³⁴

7.497 Taking into account all of the above, we now set out how, in our view, the three criteria are cumulatively satisfied for each of the Relevant Markets.

Retail market for low bandwidth TI leased lines in the UK excluding the Hull area

We consider there are high structural barriers to entry in this market

7.498 In its assessment of dedicated connections and capacity (leased lines), the Explanatory Note to the EC’s Recommendation states that, “[w]ith wholesale regulation in place there should be few barriers to entry into the retail market.”¹³⁵ However, in light of our SMP assessment we consider that in this retail market the barriers to entry are high, in particular due to the very high sunk costs associated with building the required network infrastructure.

7.499 Even though we consider CPs can replicate effectively BT’s retail products, both technically and commercially, for sub 2Mbit/s and 2Mbit/s digital services, we also consider that where CPs seek to rely on regulated wholesale inputs - i.e. PPCs - the use of PPCs nevertheless requires:

- incurring sunk costs in building and operating the necessary SDH network; and
- achieving economies of scale by establishing a sufficient number of points of handover.

7.500 Regarding analogue services in this retail market, in the absence of any wholesale product, where an end-user requires such a service CPs can only compete with BT by either incurring sunk costs in extending their network to the end-user or by purchasing a retail analogue service from BT.

7.501 We consider switching costs also act as a structural barrier to entry. As explained above in our SMP assessment, changes in retail supplier where the underlying wholesale provider stays the same often require changes in the physical routing of a circuit. Not only does this result in a temporary loss of service, but the costs incurred in carrying out these changes must be borne by the new supplier and the customer. Cumulatively, these have the effect to reducing the commercial incentive to switch.

7.502 Finally, and importantly, all these structural barriers are exacerbated by the declining demand in this retail market and the low average revenues per circuit, again with the cumulative effect of reducing the incentive for competitors to incur the costs required for entry into, and expansion in, this market.

¹³⁴ See section 4.

¹³⁵ See section 4.2.3.

We consider the structure of this market does not tend towards effective competition within the relevant time horizon

- 7.503 We do not consider there is clear evidence of dynamics in this retail market which would indicate it will reach the status of effective competition, either over the course of the review period of three years or indeed in the longer term, without ex ante regulation being imposed in this market.¹³⁶
- 7.504 First, as set out in our SMP assessment, even in the presence of SMP remedies imposed at the wholesale level, since the 2007/8 Review BT has retained a very large market share of well over 50% giving rise, in and of itself, to a presumption of dominance.
- 7.505 Secondly, as set out in our SMP assessment, we consider BT will continue to have SMP over the course of the review period of three years. In this respect, even though we consider CPs can replicate effectively BT's retail products, both technically and commercially, for sub 2Mbit/s and 2Mbit/s digital services, as mentioned above the market is in long-term decline. In particular, BT intends to close the DPCN network in 2018 with the result that end-users of sub 2Mbit/s services, and of many analogue services, will be obliged to migrate prior to this date. Taking into account also the high structural barriers to entry and expansion and low service revenues that this market is characterised by, we consider therefore that CPs are unlikely to be able to justify the investment required to provide services for new end-users primarily because there would be a limited and uncertain period in which to recoup that investment.

We consider competition law alone would be inadequate to address the market failure(s) concerned

- 7.506 Our proposal to identify this retail market as one in which ex ante regulation may be warranted follows on from two previous market review - the 2003/4 Review and the 2007/8 Review - which both concluded that competition was ineffective and that SMP remedies were necessary to address the competition problems identified. As set out in our SMP assessment, even in the presence of SMP remedies at the wholesale level, we continue to consider BT has SMP in this market. This is based, in particular, on its very large market share of 68% which, in and of itself, gives rise to a presumption of dominance.
- 7.507 We consider that in the absence of SMP remedies in this market, BT would have the ability and incentive to:
- engage in price and non-price discriminatory practices;
 - cease to provide legacy services prematurely (such as analogue services) in order to migrate customers to more profitable services; and
 - charge excessive prices to end-users to the detriment of those end-users and also with the effect of distorting the choice and encouraging inefficient migration to less suitable services.

¹³⁶ This is consistent with the approach taken in the Explanatory Note to the EC's Recommendation in relation to the application of this second criterion.

7.508 We do not consider competition law alone would adequately address BT's ability and incentive to engage in these practices. We note, in this respect, that both the competition problems set out above and our view that relying in competition law alone would be inadequate reflect the conclusions reached in the 2007/8 Review.

7.509 We consider ex ante regulation as opposed to competition law would be more effective in guaranteeing a timely and effective response in addressing the risk of BT engaging in the practices set out above, in particular for the following reasons:

- the difficulties in the detection and proof of these practices - e.g. in the assessment of excessive pricing scenarios. In this respect, we consider the compliance requirements of an intervention to redress potentially anti-competitive practices would be excessive involving lengthy and data-intensive investigation in relation to each occasion on which such practices are alleged to have taken place;
- the need for timely, efficient and potentially frequent intervention to avoid adverse effects on consumers;
- ex ante regulation would provide clarity to both BT and to the market with regard to the types of practices which would be regarded as compliant and non-compliant which can be achieved through appropriately drafted SMP remedies and, given their intended clarity and transparency, would be less costly to enforce in the event that enforcement was deemed necessary; and
- ex ante regulation allows for the imposition of specific SMP remedies to address the competition problems identified and for the subsequent monitoring of those remedies - e.g. we are also proposing the requirement to publish a reference offer, to not unduly discriminate and to publish quality of service information.

Wholesale market for TI regional trunk segments in the UK

We consider there are high structural barriers to entry in this market

7.510 As set out in our SMP assessment, high structural barriers to entry in this market arise from the sunk costs in the form of very high investments required in order to build:

- network to points in the BT network where symmetric broadband origination can be aggregated and handed over; and
- interconnection and associated infrastructure at those points to enable the handover.

7.511 However, these sunk costs are exacerbated by two related factors:

- the lower potential for realising economies of scale in comparison to the national trunk segments market since, by definition, the traffic that can be aggregated will be limited to the demand supplied by the relevant regional trunk route. This means, as explained in Section 6, regional trunk segments share similar characteristics to terminating segments and consequently we consider CPs are unlikely to be able to aggregate a sufficient amount of traffic to operate as

efficiently as BT on most regional TI trunk routes. Thus, we consider they are unlikely to be able to justify investment in this market; and

- the use of retail TI leased lines, which make use of regional trunk, are in long term decline, which has the effect of further reducing the commercial incentive to invest in entry in this market.

7.512 Additionally, switching costs also constitute a high structural barrier to entry. A change in regional trunk segment provider can incur significant costs associated with work to re-route circuits to a different point of handover and the provision of additional point of handover capacity - such changes would also involve service disruption for the downstream end-user of the leased line. In a growing market, switching costs are less likely to affect the competitive process. However, this market is in long-term decline and any competition is likely to focus on existing circuits rather than new ones - consequently we consider switching costs are likely to present a significant barrier to entry.

We consider the structure of this market does not tend towards effective competition within the relevant time horizon

7.513 We do not consider there is clear evidence of dynamics in this wholesale market which would indicate it will reach the status of effective competition, either over the course of the review period of three years or indeed in the longer term, without ex ante regulation being imposed in this market.¹³⁷

7.514 In this respect we note the Explanatory Note to the EC's Recommendation which states that, "In a number of other Member States, the NRA has found the market for trunk segments of leased lines to be effectively competitive as a number of parallel networks have been established." However, as set out in our SMP assessment, we propose that BT has SMP in this market as a result of, amongst other things, the absence of such parallel networks. Nor do we consider this trend will change over the course of the review period of three years. The retail leased lines markets which make use of regional trunk segments are in long term decline. Consequently, we consider OCPs are unlikely to have either the ability or the incentive to expand to a scale where they can operate as efficiently as BT. In particular, whilst the declining nature of this market means that existing suppliers may have spare network capacity, for the reasons set out above in our assessment of the first criterion and in our SMP assessment, the high structural barriers present in this market act both as a barrier to entry and to expansion such that, we do not consider suppliers would have the ability or incentive to use any resulting spare network capacity to impose a sufficient competitive constraint on BT.¹³⁸

7.515 In light of the above, and taking into account also the following, we do not consider the structure of the market does tends towards effective competition due to:

- the presence of switching costs;

¹³⁷ This is consistent with the approach taken in the Explanatory Note to the EC's Recommendation in relation to the application of this second criterion.

¹³⁸ This takes into account the Explanatory Note to the EC's Recommendation which states, in its assessment of the second criterion, that "there may also be excess capacity in a market that would allow rival firms to expand output very rapidly in response to any price increase, provided that there are no barriers to expansion behind the barriers to entry."

- submissions from stakeholders that they do not have plans to expand their regional TI trunk coverage over the course of the review period of three years; and
- BT's ubiquitous network.

We consider competition law alone would be inadequate to address the market failure(s) concerned

7.516 We consider that in the absence of SMP remedies in this wholesale market, BT would have the ability and incentive to engage in anti-competitive practices, in particular:

- engaging in price and non-price discriminatory practices in the supply of regional TI trunk services to OCPs; and
- charging excessive prices to OCPs.

7.517 We consider these practices would have an adverse effect on the development of competition in the wholesale and retail TI leased lines markets, ultimately to the detriment of consumers.

7.518 In this respect we note again the Explanatory Note to the EC's Recommendation which states that:

“a significant number of routes may continue to be served only by a single operator in particular where the route is thin. This will vary within and between Member States but often new entrants cannot be expected to compete with the established operator across the whole of the territory, individual NRAs may be in a position to demonstrate that trunk segments of leased lines continue to fulfil the three criteria and are susceptible to ex ante regulation. Whilst it might be considered that competition law can address the failure on such thin routes, *it is unrealistic to rely solely on competition law for as long as the number of unduplicated routes in a country remains high, considering the general costing and pricing principles that would have to be applied throughout the network*” (emphasis added).¹³⁹

7.519 We consider ex ante regulation as opposed to competition law would be more effective in guaranteeing a timely and effective response in addressing the risk of BT engaging in potentially anti-competitive practices, in particular for the following reasons:

- the difficulties in the detection and proof of these practices - e.g. in the assessment of excessive pricing scenarios. In this respect, we consider the compliance requirements of an intervention to redress potentially anti-competitive practices would be excessive involving lengthy and data-intensive investigation in relation to each occasion on which such practices are alleged to have taken place. We consider this can be avoided by the proposed imposition of price controls in this wholesale market;

¹³⁹ See section 4.2.3.

- the need for timely, efficient and potentially frequent intervention to avoid adverse effects on the development of competition in this market;
- ex ante regulation would provide clarity to both BT and to the market with regard to the types of practices which would be regarded as compliant and non-compliant which can be achieved through appropriately drafted SMP remedies and, given their intended clarity and transparency, would be less costly to enforce in the event that enforcement was deemed necessary; and
- ex ante regulation allows for the imposition of specific SMP remedies to address the competition problems identified and for the subsequent monitoring of those remedies - e.g. we are also proposing the requirement to publish a reference offer, to not unduly discriminate and to publish quality of service information.

Retail market for low bandwidth TI leased lines in the Hull area

We consider there are high structural barriers to entry in this market

- 7.520 We consider that the sustained absence of retail competition indicates there are high and non-transitory barriers to entry.
- 7.521 The discussion above, in our assessment of the first criterion, of entry barriers in relation to the retail low bandwidth TI market excluding the Hull area applies equally to this market.
- 7.522 In addition, some of OCPs' share of low bandwidth TI retail services in the Hull area is accounted for by cross-border circuits provided to customers with a national footprint of sites which includes some sites located in Hull. Our analysis of the retail low bandwidth TI circuits sold by KCOM to OCPs suggests that the majority of circuits sold span the Hull border.¹⁴⁰ Therefore it is not clear to what extent OCPs compete to sell to customers whose connectivity requirements are entirely within the Hull area. We consider that the small and shrinking market is likely to mean that incentives for OCPs' to compete in this market are limited, as OCPs will face a high cost in developing business in the Hull area relative to available revenues.
- 7.523 We also refer to our SMP assessment in this market which also sets out the high structural barriers to entry we consider exist in this market.

We consider the structure of this market does not tend towards effective competition within the relevant time horizon

- 7.524 We do not consider there is clear evidence of dynamics in this retail market which would indicate it will reach the status of effective competition, either over the course of the review period of three years or indeed in the longer term, without ex ante regulation being imposed in this market.¹⁴¹

¹⁴⁰ This is based on an analysis of approximately 800 retail TI low bandwidth circuits, using the A and B end postcode data to identify whether a circuit is entirely within Hull, or if it has one end outside of Hull.

¹⁴¹ This is consistent with the approach taken in the Explanatory Note to the EC's Recommendation in relation to the application of this second criterion.

- 7.525 Our current market share estimate of 67% shows only a small decline from our estimate in the 2003/4 Review of 76%, suggesting that KCOM's market share is both high and relatively stable over time.¹⁴² As set out in our SMP assessment, we do not consider this will change substantially over the course of the review period of three years. This is supported by the fact that previous wholesale remedies that have existed since the 2003/4 Review have not served to reduce KCOM's market share significantly.
- 7.526 The discussion above, in our assessment of the second criterion, in relation to the retail low bandwidth TI market excluding the Hull area applies equally to this market.
- 7.527 In addition, we note that the market is of a small size, which we consider further reduces the incentive for new entry over the duration of this review.
- 7.528 Finally, we refer to our SMP assessment in this market which, in our view, shows the structure of this market does not tend towards effective competition.

We consider competition law alone would be inadequate to address the market failure(s) concerned

- 7.529 We consider that even with ex ante regulation imposed at the wholesale level, in the absence of ex ante regulation in this retail market KCOM would have the ability and incentive to:
- engage in price and non-price practices that are unduly discriminatory;
 - cease to provide some legacy services in the retail market (such as analogue leased lines) prematurely, in order force customers to migrate to newer and more profitable services; and
 - charge consumers excessive prices in comparison with national UK prices.
- 7.530 We consider ex ante regulation as opposed to competition law would be more effective in guaranteeing a timely and effective response in addressing the risk of KCOM engaging in these practices, in particular for the following reasons:
- ex ante regulation allows for the imposition of specific SMP remedies to address the competition problems identified and for the subsequent monitoring of those remedies - e.g. over the duration of this review we are proposing to proactively review KCOM's published prices to consider whether, by comparison with national UK prices, they are set at a reasonable level and on reasonable terms. We are also proposing the requirement to supply retail TI leased lines, to not unduly discriminate and to publish a reference offer; and
 - ex ante regulation would provide clarity to both KCOM and to the market with regard to the types of practices which would be regarded as compliant and non-compliant which can be achieved through appropriately drafted SMP remedies

¹⁴² As discussed in Section 7, we now consider that our estimates of market shares in the 2007/8 Review, where KCOM was found to have a market share of 25%, were inaccurate, as a significant number of circuits were missing from KCOM's submission.

and, given their intended clarity and transparency, would be less costly to enforce in the event that enforcement was deemed necessary.

Retail market for low bandwidth AI leased lines in the Hull area

We consider there are high structural barriers to entry in this market

7.531 The discussion above, in our assessment of the first criterion, of entry barriers in relation to the retail low bandwidth TI market excluding the Hull area applies equally to this market. The distinguishing factor is that, in contrast to low bandwidth TI services, the low bandwidth AI market is growing. Nevertheless we consider, given the small size of the Hull market, that the potential for growth is not sufficient enough to mitigate the existence of the high structural barriers to entry.¹⁴³ In this respect, we refer to our SMP assessment in this market which also sets out the high structural barriers to entry we consider exist in this market.

We consider the structure of this market does not tend towards effective competition within the relevant time horizon

7.532 We do not consider there is clear evidence of dynamics in this retail market which would indicate it will reach the status of effective competition, either over the course of the review period of three years or indeed in the longer term, without ex ante regulation being imposed in this market.¹⁴⁴

7.533 The discussion above, in our assessment of the second criterion, in relation to the retail low bandwidth TI market excluding Hull applies equally to this market. Again, the distinguishing factor is that this market is growing. However, our market share estimate for KCOM is no lower than 75% and possibly over 90%, with our lower bound estimate in and itself giving rise to a presumption of dominance.

7.534 Secondly, as set out in our SMP assessment, whilst we consider this is a growing market, we do not consider it is a market that offers sufficient potential for growth over the course of the review period of three years to attract a significant amount of new entry. Given the barriers to entry and expansion, KCOM's market share and the small size of this market, we do not consider there is evidence of dynamics in this retail market which would indicate it will reach the status of effective competition even in the longer term, without ex ante regulation being imposed.

We consider competition law alone would be inadequate to address the market failure(s) concerned

7.535 We consider that even with ex ante regulation imposed at the wholesale level, in the absence of ex ante regulation in this retail market KCOM would have the ability and incentive to:

- engage in price and non-price practices that are unduly discriminatory; and

¹⁴³ As with TI services, some of OCPs' share of the retail low bandwidth AI services in the Hull area is accounted for by cross-border circuits provided to customers with a national footprint of sites which includes some sites located in Hull. It is not clear to what extent OCPs compete to sell to customers whose connectivity requirements are entirely within the Hull area.

¹⁴⁴ This is consistent with the approach taken in the Explanatory Note to the EC's Recommendation in relation to the application of this second criterion.

- charge consumers excessive prices in comparison with national UK prices.

7.536 We consider ex ante regulation as opposed to competition law would be more effective in guaranteeing a timely and effective response in addressing the risk of KCOM engaging in these practices, in particular for the following reasons:

- ex ante regulation allows for the imposition of specific SMP remedies to address the competition problems identified and for the subsequent monitoring of those remedies - e.g. over the duration of this review we are proposing to proactively review KCOM's published prices to consider whether, by comparison with national UK prices, they are set at a reasonable level and on reasonable terms. We are also proposing the requirement to supply retail AI leased lines, to not unduly discriminate and to publish a reference offer; and
- ex ante regulation would provide clarity to both KCOM and to the market with regard to the types of practices which would be regarded as compliant and non-compliant which can be achieved through appropriately drafted SMP remedies and, given their intended clarity and transparency, would be less costly to enforce in the event that enforcement was deemed necessary.

Provisional conclusions

7.537 Taking into account all of the above, we consider we have shown how, in our view, the three criteria are cumulatively satisfied for each of the following markets:

- the retail market for low bandwidth TI leased lines in the UK excluding the Hull area;
- the wholesale market for TI regional trunk segments in the UK;
- the retail market for low bandwidth TI leased lines in the Hull area; and
- the retail market for low bandwidth AI leased lines in the Hull area.

