Section 5

Geographic market definition

Introduction

5.1 In this Section we explain our approach to, and conclusions regarding, the geographic scope of the relevant retail and wholesale product markets with the exception of the trunk market.

5.2 In light of responses to the June BCMR Consultation, we issued a separate consultation in November 2012 (the November BCMR Consultation) which included a proposal to include some postcode sectors in Slough in the proposed London area geographic market. In this Section we also discuss stakeholder responses to that Consultation.

5.3 We set out below the proposals we made in the June BCMR Consultation and, where relevant, our proposals in the November BCMR Consultation. We then set out consultation responses and considerations of these responses, and, having considered consultation responses, we set out our conclusions. The geographic market definition assessment for the trunk market is set out in Section 6.

Summary of our conclusions

5.4 Our conclusions on the geographic scope of each relevant product market remain broadly the same as the June BCMR Consultation, and are summarised in the table below. Our conclusions have been reached having considered responses to both the June and November BCMR Consultations, and having taken due account of the SMP Guidelines,[394] the EC's Recommendation,[395] the EC's Explanatory Note[396] and the EC's Notice on market definition.[397] We have also taken into account the ERG Common Position.[398]

5.5 In respect of the November BCMR Consultation regarding certain postcode sectors in Slough, we have decided to include these within the London area geographic market. This has made a relatively small difference to the London area geographic market resulting in the addition of 14 postcode sectors (increasing the total postcode sectors in the London geographic market to 421). The proposal in the June BCMR Consultation was for a London market called the West, East and Central London Area (WECLA). We have defined the new London geographic market as the West,

[394] 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).

[395] 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 the Council on a common regulatory framework for electronic communications networks and services (2007/879/EC).

[396] Explanatory note accompanying 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 the Council on a common regulatory framework for electronic communications networks and services.

[397] Commission notice on the definition of relevant markets for the purposes of Community competition law (97/C 372/03).

[398] ERG common position on geographic aspects of market analysis, October 2008.

East and Central London Area plus the Slough sectors, which we refer to as the WECLA+.

Figure 5.1: Summary of geographic market definition

Product market		Geographic markets		
Retail Traditional Interface and Alternative Interface	Very low bandwidth TI	The UK excluding the Hull area		-
	Low bandwidth TI	-		The Hull area
	Low bandwidth AI	-		The Hull Area
Wholesale Traditional Interface Symmetric Broadband Origination (TISBO)	Low bandwidth (LB TISBO)	The UK excluding the Hull area		The Hull area
	Medium Bandwidth (MB TISBO)	The UK excluding the WECLA+ and the Hull area	The WECLA+	The Hull area
	High bandwidth (HB TISBO)	The UK excluding the WECLA+ and the Hull area	The WECLA+	The Hull area
	Very high bandwidth (VHB TISBO)	The UK excluding the Hull area		The Hull area
Wholesale Alternative Interface Symmetric Broadband Origination (AISBO)	Up to and including 1 Gbit/s (AISBO)	The UK excluding the WECLA+ and the Hull area	The WECLA+	The Hull area
Wholesale Multiple Interface Symmetric Broadband Origination (MISBO)	> 1Gbit/s and WDM	The UK excluding the WECLA+ and the Hull area	The WECLA+	The Hull area

Structure of this Section

5.6 This Section is structured as follows:

- we set out our approach to geographic market definition;
- we set out how we define the relevant geographic markets in the UK excluding the Hull area, for each of the wholesale product markets that we identified in Section 4;
- we set out how we define the relevant geographic market in the UK excluding the Hull area, for retail supply for very low bandwidth TI leased lines;
- we set out how we define separate retail and wholesale geographic markets in the Hull area; and

- finally, we set out our assessment of competitive conditions in city areas outside London and the Hull area and our reasons for not defining separate geographic markets outside of London and the Hull area.

Our approach to geographic market definition

5.7 Our approach to geographic market definition is set out in detail at Annex 3. In summary, having considered consultation responses, our approach remains based on identifying geographic variations in competitive conditions, taking into account the necessary forward-looking perspective of three years over which our market review as whole has been conducted.[399]

5.8 In this respect, geographic areas can comprise a single relevant geographic market to the extent that:

- competitive conditions in these areas are sufficiently homogeneous; and
- the areas can be distinguished from neighbouring areas where the competitive conditions are appreciably different.[400]

5.9 Consistent with the ERG Common Position, we used three main steps to undertake a detailed geographic market definition exercise based on identifying variations in competitive conditions:[401]

- the selection of the basic geographic unit, for example postcodes or exchange areas or administrative areas;
- our judgment on whether an area can be identified with heterogeneous competitive conditions compared to the rest of the country, according to factors such as the number of significant suppliers present, distribution of market shares and prices; and
- the aggregation of areas with similar competitive characteristics in order to define the geographic areas over which to conduct the SMP analysis.

5.10 The criteria we have applied cumulatively to identify geographic variations in competitive conditions of the relevant wholesale product markets are:

- number of suppliers with network in reasonable proximity to business customers; and
- distribution of service shares.[402]

[399] Our approach remains as set out in the June BCMR Consultation and is consistent with the SMP Guidelines, the EC's Recommendation, the EC's Explanatory Note, the EC's Notice on market definition and the ERG Common Position.

[400] See, for example, paragraph 56 of the SMP Guidelines.

[401] Prior to conducting a detailed geographic analysis, the ERG Common Position recommends carrying out a preliminary analysis to determine "whether competitive conditions are such that a national approach to market definition, market analysis and the implications of remedies is justified" (see Executive Summary and Section 2). We consider that a detailed geographic review is appropriate in this case as the competitive conditions are clearly such that a national market is not appropriate for all of the product markets; e.g. in the 2007/8 Review we defined sub national geographic markets.

5.11 Also relevant to the geographic scope of the relevant wholesale product markets is the requirement of contiguity, which we discuss later in this Section.

5.12 The criteria we have applied cumulatively to identify geographic variations in competitive conditions of the relevant retail product markets are:

- distribution of service shares; and
- the nature of demand, in particular the extent to which consumers source their retail leased lines services from multiple suppliers.[403]

5.13 In the June BCMR Consultation we also applied the additional criterion of pricing and price differences for both wholesale and retail geographic market definition. However, in light of our subsequent market analysis, and having considered consultation responses, we have concluded this criterion is not particularly informative in identifying geographic variations in competitive conditions of the relevant product markets, such that its application is not warranted. We explain this later in the Section.

5.14 Consistent with our approach in the June BCMR Consultation, and for the reasons set out at Annex 3, outside the Hull area we proceed directly to our definition of the geographic scope of the wholesale product markets in the absence of defining the geographic scope of the retail markets.[404] BT commented on this and so, before turning to our wholesale geographic market definition, we address these comments as well BT's, and other stakeholders', comments in relation to:

- our choice of geographic unit;
- our view on the unsuitability of supply-side substitution to defining the geographic scope of the relevant product markets; and
- our sequencing of market definition – i.e. defining the relevant product markets first and then defining the geographic scope of those product markets.

Appropriate geographic unit

5.15 When selecting an appropriate geographic unit we need to consider the trade-off between granularity and practicality. For example, building the analysis up from assessments of supply conditions to individual business premises would be impractical and disproportionate in most instances because of the difficulties in obtaining accurate data and conducting the analysis.[405] On the other hand, adopting

[402] The ERG Common Position notes "these are not market shares in the true sense as the precise scope of the market has not yet been defined" (see Section 4.1, footnote 23). We refer to this criterion as the distribution of service shares, however, we apply the criterion in the same way as applied in the ERG Common Position.

[403] This is consistent with the ERG Common Position (see Sections 2 and 4).

[404] As set out below, we have undertaken a geographic market definition for only one retail product market outside Hull – the retail TI very low bandwidth product market. We have identified this retail market as a market in the UK susceptible to ex ante regulation because we consider that the imposition of SMP regulation in the relevant wholesale market would be insufficient to address the lack of effective competition at the retail level.

[405] The sheer number of individual premises made them impractical as a general basis for conducting geographic market analysis. However, it may be practical to consider the competitiveness of supply to some individual sites, such as data centres, where the much smaller numbers make the task manageable. We look at data centres in detail in Annex 6.

too large a geographic area could mask large variations in competitive conditions that a more granular assessment could practicably reveal.

5.16 We considered a number of options in the June BCMR Consultation.[406] Our view was that the most appropriate geographic unit was postcode sectors for the following reasons:

- they are mutually exclusive and less than national;
- the network structure of all relevant operators and the services sold on the market can be mapped onto the geographic units;
- they have clear and stable boundaries; and
- they are small enough that competitive conditions within the sector are likely to be broadly similar in most cases but at the same time large enough that the burden on operators and us, the relevant NRA[407], with regard to data delivery and analysis is reasonable.[408]

5.17 We considered that postcode sectors provide an appropriate trade-off between granularity and practicality. In particular, this option provided a manageable number of units and the data is in most cases available from operators. We also took into account the burden on operators and on us with regard to the associated need for data and related analysis. In our view, the data delivery requirements based on postcode sectors struck the appropriate balance.

Consultation responses

5.18 Level 3 agreed with the use of postcode sectors as the geographic unit. BT broadly supported using postcode sectors, but felt that competitive conditions could vary within a given sector when product bandwidth is taken into account.

5.19 BT submitted a paper by DotEcon[409] which appeared to argue for smaller geographic units. It thought that our network reach methodology (which looks at the average number of large business sites with two or more OCPs within reach – described further below) meant we might miss pockets of competitively served customers unless the geographic unit was sufficiently small.

5.20 UKCTA felt that postcode sectors were not granular enough to assess competitive conditions because these could vary on a building by building basis, and even by floor within a building.

5.21 In its response to the November BCMR Consultation, BT noted that the WECLA was defined with reference to a list of postcode sectors. It noted that postcode sectors can change over time e.g. new sectors may be created to cover part of an existing sector where the number of premises in the sector increases substantially. It thought that the WECLA definition should be future-proofed by defining it as the areas covered by the sectors listed at the date of the Statement.

[406] See paragraphs 5.31 to 5.33 of the June BCMR Consultation.

[407] National regulatory authority.

[408] This is consistent with the ERG Common Position (see Executive Summary and Section 6). We also carried out an analysis of the competitiveness of supply to data centres. This analysis is described at Annex 6.

[409] Referred to as "DotEcon" in the rest of this Section.

Ofcom's considerations of consultation responses

5.22 We gave a good deal of consideration to the appropriate geographic unit in the June BCMR Consultation, and considered the trade-off between the granularity of the unit and practicality. Overall, we remain of the view that postcode sectors strike an appropriate balance between allowing sufficient granularity while also being amenable to a manageable analysis. We accept that competitive conditions may vary within postcode sectors. However, it would not be appropriate or practical to conduct an analysis using smaller geographic units – we have already divided the country into over 10,000 postcode sectors. In this respect we note the ERG Common Position where it states that, "[t]he number of geographic units will depend on the circumstances of the case, however, as experience shows, the number will usually be significant and may even go up to several thousands. Although it would theoretically be possible to make a separate SMP analysis for each of these units, it is likely to be more appropriate and more practical to aggregate units according to the homogeneity of competitive conditions, consistent with the SMP Guidelines".[410]

5.23 A further feature of postcode sectors is that they scale with address density and so, in central city areas, they are significantly smaller than in rural areas. This means using sectors provides greater precision where there are more businesses.

5.24 In addition, for the reasons we explain further below, we do not consider that individual postcode sectors (or small groups of sectors) would be an appropriate candidate for a geographic market area.

5.25 We note BT's point that postcode sectors may change over time. However, our understanding is that changes are relatively infrequent.[411] In addition, the business connectivity market is reviewed every three years and any change to the postcode sectors would be picked up at the next review. While some postcode sectors in the CELA have changed since the 2007/8 Review, we are not aware that this has caused significant problems. We also note that over time businesses can relocate/start up/close down and CPs may build network or enter/leave the market. All these effects can be taken into account at the next review.

How we have assessed competitive conditions and defined geographic markets

Consultation responses

5.26 TalkTalk thought that our approach to defining geographic markets was a pragmatic and reasonable approach in this case. Zen also agreed with our approach.

5.27 DotEcon broadly agreed that our approach of looking at metrics of infrastructure competition was reasonable and was broadly justified by the modified Greenfield assumptions.[412] [413] However, it made some specific comments on the implications of our assumptions.

[410] ERG Common Position, section 3.

[411] For example, between 2008 and 2012 14 postcode sector changes have been made across the UK. Source: http://www.beacon-dodsworth.co.uk/site/support/postcode_changes. Most postcode sector changes are to provide for new developments.

[412] DotEcon response, paragraph 112.

5.28 As part of our reasoning in rejecting supply-side substitution when defining the geographic scope of the relevant product markets, we considered to what extent operators would be able to increase the supply of leased lines over the short term[414] in response to a permanent 5 to 10% price increase, assuming that there is no SMP regulation in place.[415] We noted that supply-side substitution was generally considered to be a weak or non-existent constraint for leased line markets due to the high cost and long lead times associated with deploying new network infrastructure.[416] DotEcon disagreed. It considered that in a scenario with no SMP regulation and a 5 to 10% permanent increase in prices, OCPs would be incentivised to extend their networks.

5.29 We also noted that where providers of leased lines are vertically integrated, there may be weakened incentives to provide wholesale services to rivals as this would deny the wholesale provider the opportunity to compete for the downstream end user.[417] DotEcon disagreed. It considered that there might still be an incentive for wholesale transactions between CPs for efficiency reasons (i.e. the vertically integrated CP benefits from selling a wholesale product to another CP who can serve a customer more cheaply than it). DotEcon considered that even if CPs were vertically integrated there could be a role for integrators and resellers to piece together services from different CPs and provide 'value added' services. It understood there are players active at various points in the value chain for business connectivity service currently who are not vertically integrated.

5.30 BT noted that we had proceeded directly to defining the geographic scope of the wholesale markets without first defining the geographic scope of the retail markets. It felt that this was not appropriate for two reasons. It said:[418]

> "First, the distinction between the retail and wholesale for this market is at best tenuous based solely on the rights to purchase services on regulated terms for interconnection and not on the position of the purchaser in the value chain. Second, in practice Ofcom has not really separated the two as implicitly the analysis of geographic markets is focussed on small sites".

5.31 We understand BT to be arguing that it is not appropriate to distinguish between retail and wholesale services because either type of service may be bought by both CPs and business users (final customers). For example, a CP may not distinguish between other CPs and final customers in this way when selling leased line products, but may sell the same service to both. Equally, CPs may purchase an ostensibly "retail" service. BT also considered that our analysis gave a disproportionate weight to smaller businesses typically buying lower bandwidth services.

5.32 DotEcon argued that we had not given due consideration to the interaction between geography and product definition. It argued that the behaviour of customers and

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[413] Under the modified Greenfield approach we conduct our market definition exercise under the assumption that there is no SMP regulation in place in the market being considered but taking account of SMP regulation which exists in markets that are upstream.

[414] i.e. over the course of around 12 months.

[415] See Annex 3 for a description of demand- and supply-side substitution and their relevance to market definition.

[416] See Annex 7 of the June BCMR Consultation. See also Annex 3 to this Statement.

[417] See Annex 7 to the June BCMR Consultation. See also Annex 3 to this Statement.

[418] BT response, page 139 paragraph 20.

substitution possibilities might vary by locality and hence product definition might vary depending on location (i.e. the connectivity choices available to a customer might vary by location and consequently purchasing behaviour might differ). It argued that we should not rely on sequencing product market definition before geographic market definition, and we could have assessed interactions between the two later in the market delineation exercise.

Ofcom's considerations of consultation responses

Application of modified Greenfield approach – incentives to extend network

5.33 DotEcon disagreed with our assumption that in the absence of SMP regulation, in most cases, OCPs would not be willing to extend their networks by more than a short distance in response to a 5 to 10% price increase. DotEcon did not make reference to the fact that, under the hypothetical monopolist test, the response to the price increase should typically occur within a reasonable timeframe and, for the purposes of assessing the impact of supply-side substitutability, should mean suppliers do not incur significant additional costs in order to offer profitably the services in question.[419]

5.34 We recognise that in this hypothetical situation, absent regulation and in the face of a permanent 5 to 10% price increase, vertically integrated OCPs may be prepared to build somewhat further to reach customers. We note here that some OCPs did build network before BT was required to make PPCs available on regulated terms. However, if regulated inputs were not available, entry would be very difficult except in areas where an OCP has actually built its own network, because the OCP would need use its own infrastructure to provide the complete circuit. The availability of regulated products means an OCP can use these where it has gaps (which potentially significantly increases the number of customers it can serve).

5.35 The high costs associated with deploying new infrastructure and the economies of scale and scope available to the incumbent compared to OCPs, lead us to consider that, absent SMP regulation, in most cases, it would be only economic for an OCP to extend its network to a limited extent within a reasonable timeframe in response to 5 to 10% permanent increase in price.[420]

Application of modified Greenfield approach – incentives to provide merchant services

5.36 DotEcon argued that we should not assume the merchant market would be largely absent in the absence of SMP regulation. We remain of the view that a vertically integrated operator may face weaker incentives to provide wholesale leased lines to rivals because it would deny the vertically integrated provider the opportunity of serving the end user itself. In reaching our view that, in the absence of SMP regulation at the wholesale level, the wholesale merchant market would be sufficiently weak as to have an insignificant impact on our assessment of the competitive provision of leased lines at the retail level, we consider it relevant to take into account the limited voluntary sale of wholesale products to third parties by BT before it was required to do so in the PPC decisions in 2001.

[419] See, in this respect, paragraph 52 of the SMP Guidelines.

[420] We also refer to the EC's Notice on market definition, in particular paragraph 23 where it states: "[w]hen supply-side substitutability would entail the need to adjust significantly existing tangible and intangible assets, additional investments, strategic decisions or time delays, it will not be considered at the stage of market definition."

Interaction between retail and wholesale geographic market definition

5.37 BT thought the distinction between the retail and the wholesale markets was tenuous and based solely on rights to purchase services on regulated terms and not on the position of the purchaser in the value chain. We disagree with this view. Our approach to market definition for the purposes of identifying those markets in the UK that are susceptible to ex ante regulation – starting with the definition of retail markets – follows the approach set out in the EC's Recommendation and the EC's Explanatory Note. Importantly, the distinction between retail and wholesale markets reflects our market analysis which has shown the existence of both markets.

5.38 BT thought it was not appropriate to define the geographic scope of the wholesale market without first defining the geographic scope of the retail market. We set out in Annex 7 of the June BCMR Consultation why we do not think it is necessary for the retail geographic market definition to inform the analysis of the wholesale markets.[421] Under the modified Greenfield approach we first define retail product and geographic markets in the absence of regulation (i.e. we assume there is no wholesale regulation). Effectively this means we are assessing the situation where competition is between vertically integrated operators, and the geographic pattern of retail competition in this situation would come to resemble the pattern of competition in the wholesale markets.[422] But in any case it is the latter, the pattern of competition at the wholesale level, which is relevant, and this depends primarily on the extent of competing infrastructure.

Interaction of product and geographical market definition

5.39 DotEcon argued that we had not given due consideration to the interaction between geography and product definition e.g. that customer behaviour and choices might vary by locality, so we should revisit the product definition once we have defined the geographic markets.

5.40 Our sequenced approach – i.e. defining product markets then geographic markets – follows the approach set out in the EC's Market Definition Notice, the EC's Explanatory Note and the SMP Guidelines. Further, our market analysis[423] has shown that the product markets we define do not consist of products that differ dependent on the geographic area in which they are provided. Instead, our market analysis has shown that for certain product markets, the competitive conditions for the supply and demand of the relevant products are not homogeneous throughout the UK such that separate geographic markets – albeit for the same relevant products – are warranted. [424]

Wholesale geographic market definition – UK excluding Hull

Summary

5.41 In the June BCMR Consultation, we proposed to define a separate geographic market in the London area (the WECLA) for some product markets where we found

[421] See also Annex 3 to this Statement.

[422] In the absence of regulation the network used to provide the service will be deployed either directly to where the end-user is located or in sufficient proximity to where there is end-user demand.

[423] i.e. our product and geographic market analysis.

[424] See, for example, the discussion of the AI market in the WECLA+ in Section 3. Also, in principle, we can vary remedies within a market to reflect any differences in competitive conditions found.

evidence that the competitive conditions in the WECLA were sufficiently different relative to the rest of the UK (excluding Hull). Having considered consultation responses, our conclusions on the wholesale geographic leased lines markets are summarised in Figure 5.2 below.

5.42 The only substantive change relative to the June BCMR Consultation is the addition of some postcode sectors in Slough to the London area market.

Figure 5.2: Wholesale geographic market definition

Product market		Separate geographic market in London area?	Separate geographic market in Hull area?
Wholesale TISBO	Low bandwidth	No	Yes
	Medium bandwidth	Yes	Yes
	High bandwidth	Yes	Yes
	Very high bandwidth	No	Yes
Wholesale AISBO	Up to and including 1 Gbit/s	Yes	Yes
Wholesale MISBO	Greater than 1Gbit/s and WDM	Yes	Yes

Approach to wholesale geographic market definition

5.43 In the June BCMR Consultation, we proposed to follow the methodology for defining wholesale geographic leased line markets which we developed in the 2007/8 Review.

5.44 First, we assessed whether there was alternative infrastructure to BT that could support the provision of terminating segments. For the reasons set out below, we then applied the requirement of contiguity when aggregating postcode sectors where there was alternative infrastructure available.

5.45 Then we assessed BT's service shares and reviewed BT's pricing policies in those geographic areas. The cumulative application of these criteria enabled us to identify those geographic areas in which the conditions of both actual and potential competition were, in our view, sufficiently homogeneous and sufficiently distinct from those in neighbouring areas for them to be regarded as separate geographic markets.

5.46 As noted above, in defining the geographic scope of the relevant wholesale product markets, we adopted a forward-looking perspective of three years, taking into account, amongst other things, the expected timing of the next market review.[425]

[425] See, in this respect, paragraph 20 of the SMP Guidelines.

Overview of the alternative infrastructure supporting the provision of terminating segments

Network reach analysis

5.47 The impact of alternative infrastructure is particularly relevant to competition in wholesale markets. This is because an operator wishing to compete with BT in wholesale leased line markets would require its own infrastructure (or negotiated access to another operator's) to do so. We consider the existence of rival infrastructure to BT is a necessary (but not sufficient) condition for effective competition to occur.

5.48 The purpose of the network reach analysis is to identify geographic areas where there is alternative infrastructure to BT. The network reach analysis is inherently forward looking because it indicates the potential for competition rather than the actual competition which is shown in the subsequent assessment of service shares.

5.49 Our metric for measuring network reach estimates the average number of operators in a postcode sector with a flexibility point within 200 meters of a business site. A flexibility point is a point on an existing network where a CP, in accordance with its current network planning practice, can add new fibre in order to connect it to end-users. Flexibility points may, for example, be buildings where fibre terminates on an Optical Distribution Frame or underground chambers where the fibre can be accessed, or where ducts meet at a junction.

5.50 The network reach analysis is the same for each product market because operators can provide leased lines services in all of the relevant product markets from each of the flexibility points. Where network is present, it can in principle be used to supply circuits of any capacity. The results, therefore, of our network reach analysis apply equally to all of the relevant product markets.

5.51 In practical terms our approach involved a number of different steps as set out below:

i) the flexibility points for each OCP (thus excluding BT) were plotted on a map;

ii) the site locations of businesses with 250 or more employees (across the entire business, not the individual site) were also plotted on the map;

iii) a buffer area of 200m was drawn around the location of each business site; and

iv) the number of different operators with flexibility points within the 200m buffer area around each business site (counting each operator only once) was calculated.

5.52 This gave the number of OCPs from which each business site could seek supply, given the 200m buffer assumption. We then averaged this value across all the business sites within a postcode sector. [426]

5.53 We set out below the reasons for parameters used in carrying out the steps outlined above, starting first with the business size parameter.

[426] We carried out separate analysis of network reach in relation to MNO base station sites, BT local exchanges used for LLU backhaul and for data centres.

Businesses with 250 or more employees

5.54 We used the Experian Business Database to identify the location of large businesses in the UK. We used these large businesses as a proxy for the geographic pattern of potential and actual, demand for leased lines. Our consumer survey (carried out by Jigsaw research) indicated that, in general, it is larger sized businesses who consume business connectivity so we refined the Experian database by selecting only those businesses employing 250 or more employees UK-wide (equating to around 224,000 sites). We considered that this filter enabled the network reach analysis to be computationally more manageable, which was desirable. At the same time, we expected the pattern of locations of small and larger firms to be broadly similar, which implied that this filtering should not systematically bias the network reach analysis.

Presence of other operators' networks

5.55 In the 2007/8 Review, we took the view that, on average, the presence of two or more operators (in addition to BT) within reach of the business site was a reasonable basis for distinguishing between areas where there was some potential for competition and those where the minimum conditions for effective competition were unlikely to be met. Our analysis showed that the sectors where two or more competing operators were able to serve customers were highly correlated with the sectors where BT had a low service share in the central London area. We considered that this threshold remained appropriate for this review. [427]

5.56 In the light of this, we distinguished between those postcode sectors where, on average, BT and two or more other operators are within reach of the business sites and those postcode sectors where, on average, only one other operator is within reach or BT is the only operator. We referred to the former as 'high network reach' (HNR) sectors and the latter as 'low network reach' sectors. As in the 2007/8 Review, we have cross checked the network reach analysis against the information on BT's service share for each product market (see discussion of service shares below).

200m buffer assumption

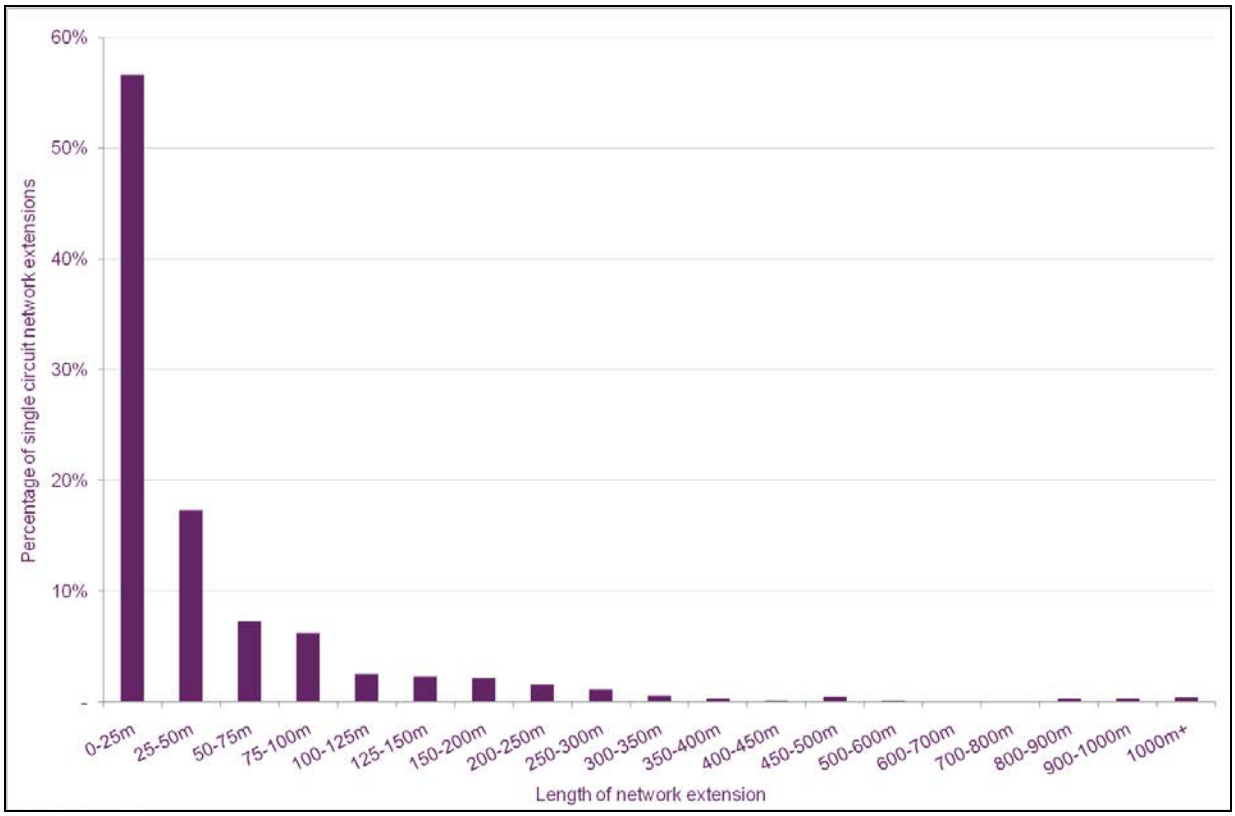
5.57 In the June BCMR Consultation, we noted that we had not received evidence to suggest that economic build distances had changed materially since the 2007/8 Review, and therefore our starting point was that 200m remained the appropriate buffer assumption.

5.58 To supplement our analysis for the June BCMR Consultation, we requested information on the distance which CPs have actually built in order to install leased lines for business customers over the last three years (the data related to single circuit network extensions). The data showed that there was a large variation in the actual dig distance with, in some cases distances of over 1 km being dug.[428] This was, however, rather unusual (see Figure 5.3 below), and the typical distance was much shorter, with the median value at 22m and the average at 65m.

[427] The 'BT+2' assumption attracted no comment in the Call for Inputs. We also noted that in its response to Ofcom's March 2010 Wholesale Broadband Access market review consultation, BT referred to academic work showing that the largest benefits to competition come with the addition of the third firm in a market, with subsequent entrants having a smaller impact. For our response to BT, see the second WBA market review consultation at: http://stakeholders.ofcom.org.uk/binaries/consultations/wholesale-broadband-markets/summary/WBA_condoc.pdf, especially paragraph 3.33.

[428] This appeared to have occurred only to a very limited extent, since out of circa 3000 network extensions (for leased lines) surveyed, only 12 are of 1km+ and a further 27 are of a length between 500m and 1km.

Figure 5.3: The distribution of build distance in OCPs network extensions over the past three years (extensions to customer site in order to supply leased lines)



Source: Operators/Ofcom

5.59 In the June BCMR Consultation, we considered the maximum distance which an OCP would be likely to extend its network to serve a business customer in the absence of regulation in the relevant market. Therefore, we considered it appropriate for our assumed economic build distance to be some way above the observed mean for two main reasons:

i) We noted that observed build distances are likely to have been affected by the availability of regulated wholesale products from BT. It is possible that operators would be prepared to dig further in some cases than they actually dug in practice if such products were not available as an alternative to investment in their own infrastructure.

ii) In most cases, the actual distance which an operator needs to dig to reach a customer will be less than the maximum, simply because some businesses will inevitably be located less than the maximum distance from a flexibility point.

5.60 However, we considered the build distance assumption[429] should also be below the longest actual distance dug. The longest distances dug may well reflect special factors such as particularly high value contracts[430] and in our view it would not be appropriate to assume that the longest distance actually dug is a good estimator of the distance that CPs are generally potentially prepared to dig. In our judgement, a build distance of 200m, which was above the mean and encompassed 94.5% of

[429] We have clarified our use of the term build distance at paragraphs 5.137 to 5.144 below.

[430] In the case of data centres, where we are aware that contracts are likely to be large, we considered a longer buffer distance (see Annex 6).

actual lengths of network extensions, but was below the maximum actual distance dug, was reasonable.

5.61 As in the 2007/8 Review, we also observed that the build distance of 200m produced outcomes which were supported by the results of the service share analysis in higher bandwidth markets.[431] The service share analysis indicated the extent of actual competition whilst the extent of potential competition was represented by the network reach analysis.

5.62 We noted that the build distance decision is made on a case by case basis and will likely vary by individual contract as a higher margin contract can support a bigger investment. In light of this we performed some sensitivity tests using longer buffer distances for data centres (see Annex 6, subsequent to the June BCMR Consultation we have also looked at a longer buffer distance for MISBO – see below).

Contiguity

5.63 In the June BCMR Consultation, consistent with our approach in the 2007/8 Review, having identified postcode sectors with high network reach we imposed the requirement of contiguity.

5.64 We noted that the contiguity requirement reflects the fact that competition in wholesale provision of leased lines is based on investment in infrastructure, rather than the use of BT's network. We considered that for an operator to be able to compete in an unregulated leased line geographic market it must have, or be able to obtain access to, infrastructure at both ends of the leased line and also between the two end points.

5.65 We concluded that grouping isolated postcode sectors in a single market would not reflect the economic characteristics of the wholesale provision of leased lines. Instead we grouped together neighbouring postcode sectors which we identified as HNR. This provided us with a geographic area throughout which, on average, leased line users had a choice of at least two OCPs, in addition to BT.

5.66 As noted above, in light of responses to the June BCMR Consultation, we subsequently consulted on including some postcode sectors in Slough in the London area geographic market. The Slough sectors are separated from the WECLA by a single sector with low network reach – thus are not strictly contiguous. We set out in the November BCMR Consultation why we did not consider a lack of strict contiguity to be inappropriate for the specific circumstances in this case (see Annex 9 paragraphs A9.4 to A9.12). Aside from this exceptional case, we remain of the view that geographic markets should comprise contiguous postcode sectors.

Results of the updated network reach analysis

5.67 For the June BCMR Consultation, we repeated the network reach analysis carried out in the 2007/8 Review using the latest data on business and network locations. We used this to review the boundary of the CELA defined in the 2007/8 Review. In addition, we carried out a similar analysis for other large city areas where there was reason to believe that there could be significant infrastructure competition. We also

[431] As a further robustness check, we performed some general sensitivity test by varying the build distance parameter. As expected, by varying this parameter by an increment of 50m, we obtained some changes in results, however importantly the broad pattern of variations in competitive conditions (i.e. between London and the rest of the UK) remained broadly unaltered.

assessed the proximity of competing networks to MNO base stations, the BT local exchanges used by LLU operators, and data centres.

5.68 Subsequent to the June BCMR Consultation, we have done a further detailed analysis of the data underpinning the network reach analysis which resulted in some small corrections. We have also identified some additional OCP network which was not included in the analysis undertaken for the June BCMR Consultation that we have now included (see also paragraph 5.117 below). The overall impact of these changes is relatively small.[432] In terms of the results, the only significant difference relative to the June BCMR Consultation is the network reach map for MNO sites in the London area (discussed at paragraph 5.195). In the Figures below we present the updated information and, for comparison, that shown in the June BCMR Consultation. We discuss the changes relative to the June BCMR Consultation.

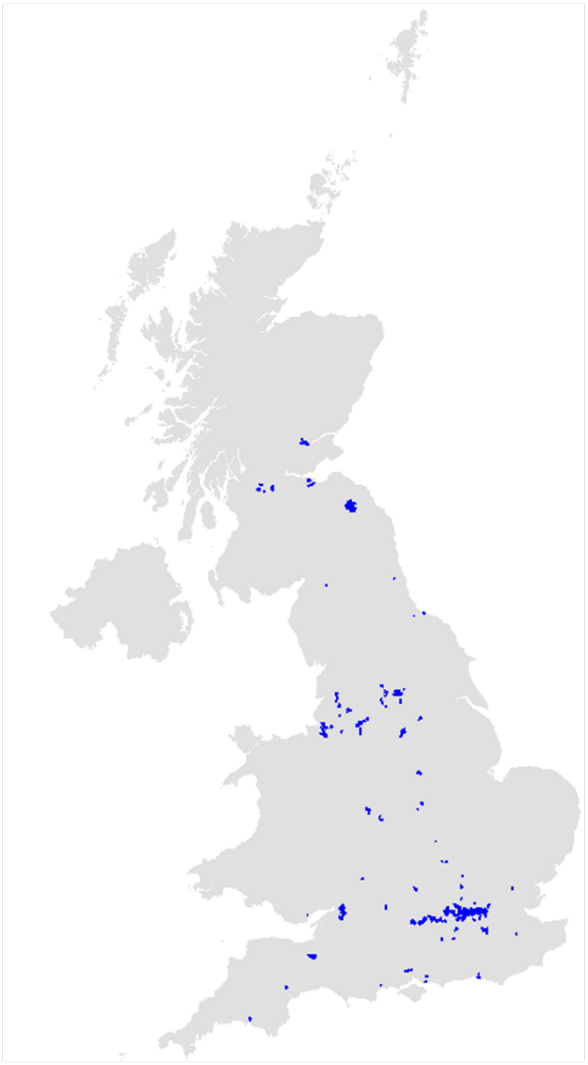
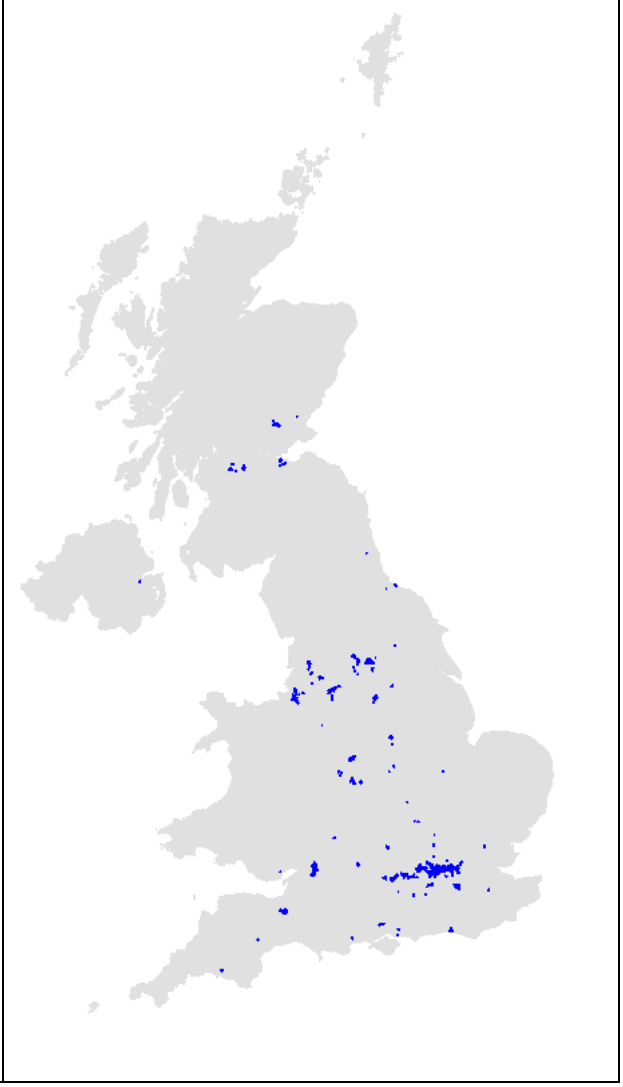
5.69 We also present the results for the WECLA and the WECLA+ (which includes some sectors in Slough) separately.

Results of the updated network reach analysis at the national level

5.70 The high network reach areas throughout the UK (for a buffer distance of 200m) are shown in Figure 5.4 below.

[432] The impact of these inclusions on our subsequent SMP assessments in the relevant markets is also relatively small.

Figure 5.4: Distribution of areas with high network reach – UK

June	Statement
	

Key: HNR postcode sectors are in blue.
Source: Operators/Ofcom

5.71 Of the 10,043 postcode sectors throughout the UK, our revised network reach analysis shows that 822 (8.2%) are HNR.[433] Around half of these postcode sectors are located in London (within the M25) and Slough. The rest are sparsely and disjointedly distributed across different areas, mostly located in other urban areas. We consider these latter postcode sectors in our analysis of competitive conditions in city areas outside London and Hull.[434] The network reach indicator continues to point to the London area as a key area for the geographic market analysis.

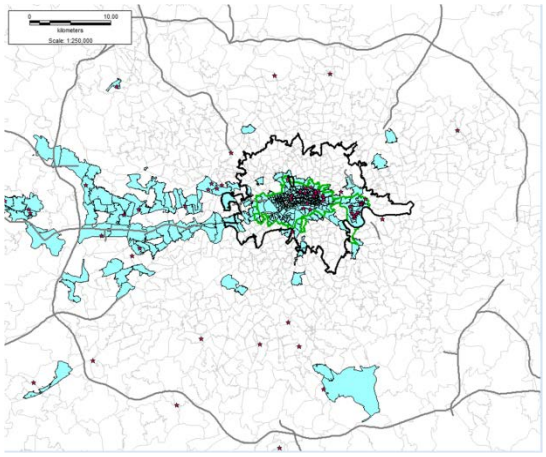
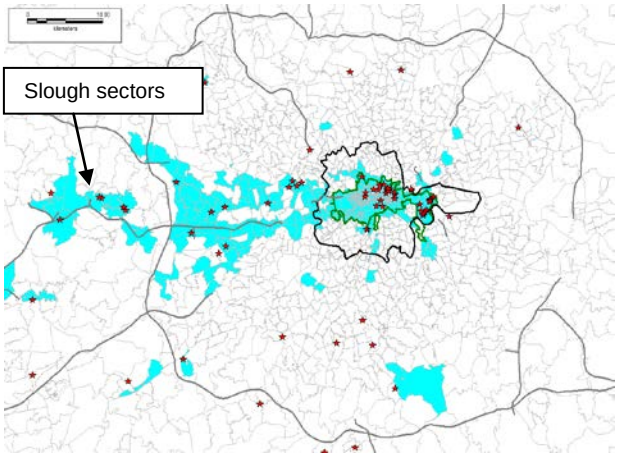
[433] These figures are only slightly changed relative to the June BCMR Consultation where we found that 753 postcode sectors were HNR, and around half were in the London area.

[434] See paragraphs 5.415 to 5.430. We have not defined additional distinct geographic markets in these areas.

A reference area for the analysis of the London area: the WECLA+

5.72 Figure 5.5 below shows the postcode sectors in the London area with HNR. The sectors with HNR are largely the same as those identified in the June BCMR Consultation.

Figure 5.5: Distribution of areas with high network reach - London area

June	Statement
	

Key: HNR postcode sectors are in blue, motorways in grey, the London Metro area outlined in black and the 2007/8 CELA outlined in green, data centre locations are displayed as stars.
Source: Operators/Ofcom

5.73 The Figure above displays (in green) the boundary of CELA, which is the area that was defined as a separate geographic market for some TISBO products in the 2007/8 Review. It also displays (in black) the boundary of the London Metro area which BT refers to in its network management and pricing practice and which pools together the catchment areas of a set of Access Service Nodes/Local Exchanges broadly located in and around central London.[435]

5.74 This closer look at London shows a pattern of alternative infrastructure presence which expands westwards beyond the CELA boundary. This reflects the area over which rival CPs have built extensive networks along and between the A4/M4 and the A40.

5.75 In the June BCMR Consultation, we considered the set of contiguous postcode sectors extending west from the CELA as a reference area to assist the geographic wholesale market definition, and labelled this area as the WECLA.[436] The updated network reach analysis has resulted in some additional sectors within and at the edge of the WECLA showing as HNR and hence the total number of sectors in the contiguous area has increased from 387 to 407.[437] [438]

[435] Openreach has offered on a limited basis some AISBO products at a discount within the London Metro and some other urban areas.

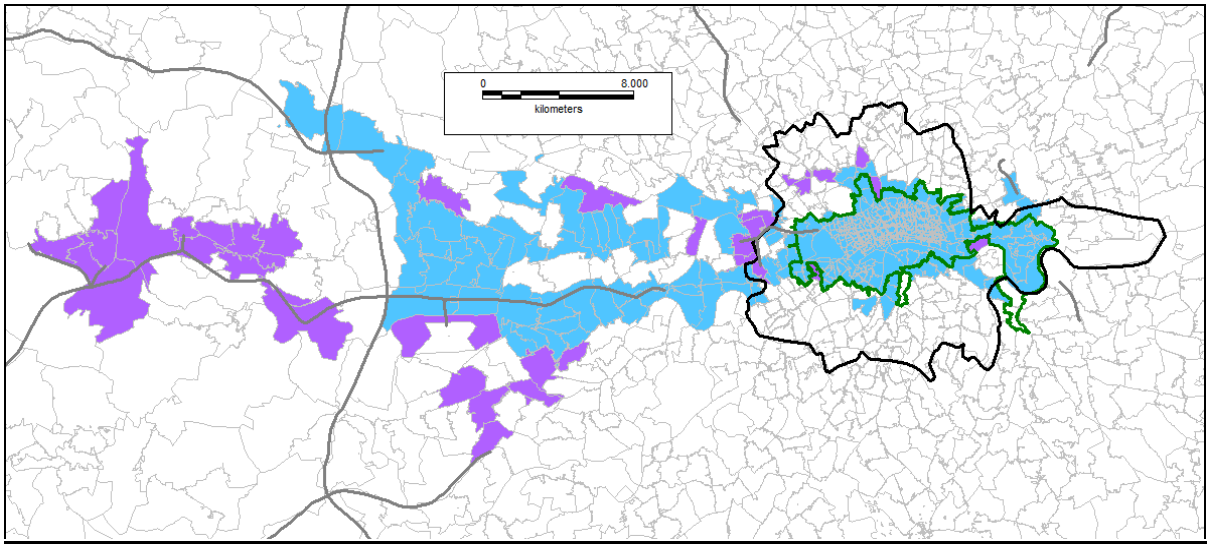
[436] A list of the postcode sectors which constituted the WECLA is included at Annex 14 to the June BCMR Consultation.

[437] These additional sectors (not included in the WECLA at the time of the June BCMR Consultation) contain 720 large business sites (around 7% of the WECLA total) and 823 AISBO ends (around 3% of the WECLA total).

5.76 As discussed further below, having considered responses to the November BCMR Consultation, we have also decided to include some sectors in Slough in the London area geographic market (labelled above). These sectors are separated from the WECLA by a single postcode sector with low network reach. Adding the Slough sectors makes a relatively small difference to the London geographic area[439] and brings the total number of sectors in the WECLA plus Slough sectors (referred to as WECLA+) to 421. While 3.0% of the UK business sites considered are located within the CELA, the WECLA+ accounts for 4.8% of business sites. [440]

5.77 In line with the approach followed in the 2007/8 Review, we included within the WECLA (and subsequently the WECLA+) some postcode sectors which, although not meeting the strict network reach criterion, are entirely surrounded by areas in the WECLA which are included on the basis of the network reach test. Specifically, this corresponds to 16 postcode sectors. Twelve of these sectors are very small (with an area of 100m^2) and contain no large business sites. Two sectors correspond to gardens and contain no large business sites. The remaining two sectors contain a relatively small number of large business sites (a maximum of 8 sites) and contain flexibility points of at least two OCPs. Given the low materiality of these postcode sectors we consider it appropriate to include them in the WECLA+. The WECLA+ geographic area is illustrated in the figure below.

Figure 5.6: WECLA+ geographic market



Key: Sectors in the June BCMR WECLA are in blue, additional sectors added to form the WECLA+ are in purple, motorways in grey, the London Metro area outlined in black and the 2007/8 CELA outlined in green.
Source: Operators/Ofcom

[438] We have excluded two postcode sectors (SW99 0 and E8 9) which were included in the list of WECLA sectors at the time of the June BCMR Consultation but are not contiguous to the WECLA. These sectors are relatively small (less than 100m^2) and contain no large business sites.

[439] To give an idea of materiality, the number of AISBO ends in the Slough sectors is 1135, which compares to 26794 across the WECLA. The Slough sectors account for 680 Experian large business sites compared to 10135 in the WECLA.

[440] We consider that the increase in coverage is likely to reflect the better quality of the flexibility point data that has been provided by CPs to Ofcom over the course of this market review, as well as network expansion since the last review.

The geographic coverage of alternative operators' infrastructure in London

5.78 We compared the extent of rival infrastructure to BT in the WECLA to the position in the rest of the UK. We calculated the coverage of each operator in terms of:

i) the percentage of large businesses within reach;[441] and

ii) the percentage of sectors where the OCP has a flexibility point.

5.79 We have done this for the WECLA and WECLA+ (Figure 5.7) and the UK as a whole (Figure 5.8). We have included the figures presented in the June BCMR Consultation for comparison. Note we have included two new OCPs in our revised network reach analysis.

Figure 5.7: Coverage of each OCP (thus excluding BT) by number of business sites and by postcode sectors for the WECLA and WECLA+

Communications provider[442]	WECLA - June		WECLA - Statement		WECLA+ - Statement	
	Bus	Sectors	Bus	Sectors	Bus	Sectors
[✂] Operator 1	90%	99%	92%	94%	91%	94%
[✂] Operator 2	80%	96%	79%	88%	76%	87%
[✂] Operator 3	-	-	64%	75%	60%	72%
[✂] Operator 4	2%	8%	61%	62%	58%	62%
[✂] Operator 5	47%	74%	49%	51%	47%	52%
[✂] Operator 6	44%	76%	44%	53%	43%	53%
[✂] Operator 7	3%	10%	37%	37%	36%	37%
[✂] Operator 8	31%	50%	32%	36%	37%	38%
[✂] Operator 9	13%	37%	13%	19%	14%	22%
[✂] Operator 10	13%	32%	13%	11%	13%	11%
[✂] Operator 11	4%	7%	5%	6%	9%	9%
[✂] Operator 12	2%	5%	2%	2%	2%	2%
[✂] Operator 13	0%	1%	0%	1%	0%	1%
[✂] Operator 14	0%	2%	0%	1%	0%	1%
[✂] Operator 15	0%	1%	0%	0%	0%	0%
[✂] Operator 16	-	-	0%	0%	0%	0%

Source: Operators/Ofcom

[441] By 'within reach' we mean the OCP has a flexibility point within a 200m buffer of the business site.

[442] Note the number assigned to each operator (Operator 1, Operator 2 etc.) may differ from that in the June BCMR Consultation.

Figure 5.8: Coverage of each OCP (thus excluding BT) by number of business sites and by postcode sectors UK-wide

Communications provider	UK – June		UK - Statement	
	Bus	Sectors	Bus	Sectors
[✂] Operator 1	32%	43%	36%	50%
[✂] Operator 8	23%	42%	25%	46%
[✂] Operator 11	7%	9%	8%	10%
[✂] Operator 6	6%	13%	6%	14%
[✂] Operator 5	5%	10%	5%	12%
[✂] Operator 2	3%	5%	5%	7%
[✂] Operator 4	1%	2%	4%	4%
[✂] Operator 7	2%	5%	4%	9%
[✂] Operator 3	-	-	3%	3%
[✂] Operator 9	2%	7%	2%	10%
[✂] Operator 10	2%	3%	2%	3%
[✂] Operator 13	0%	0%	0%	0%
[✂] Operator 12	0%	0%	0%	0%
[✂] Operator 16	-	-	0%	1%
[✂] Operator 15	0%	0%	0%	0%
[✂] Operator 14	0%	0%	0%	0%

Source: Operators/Ofcom

5.80 In light of the re-analysis, the coverage figures for some operators have changed relative to the June BCMR Consultation. However, the overall picture remains similar. Two operators have significant coverage of the WECLA/WECLA+. Two operators are within reach of around 60% of large businesses, with two others within reach of over 40%. This pattern is markedly different from that seen in the UK as a whole, which signals potential heterogeneous competitive conditions between these geographic areas, with the London area being potentially more competitive than the rest of the UK.

5.81 On the basis of this evidence, we consider that there are operators able to provide services to businesses throughout the WECLA+ without needing to access wholesale products from other operators (either BT or other alternative operators), and other operators that are able to cover large parts of the WECLA+. The fact that there are operators present with very significant coverage of the WECLA+ means that, even if there were barriers to interconnection in this area, the market could still be effectively competitive.

5.82 We have also looked at the number of OCPs within reach of each individual large business site. This helps us to identify whether there are large businesses who lack alternative suppliers to BT (e.g. while OCP coverage across the area might be good as a whole, there could be some business sites which have poor OCP coverage). The results are presented in Figure 5.9 below.

Figure 5.9: Cumulative distribution of OCPs within reach (200m) of business sites

	UK-wide		The London area		
# of OCPs within reach	June	Statement	The WECLA - June	The WECLA - Statement	The WECLA +
0+	100%	100%	100%	100%	100%
1+	52%	53%	95%	99%	99%
2+	22%	24%	92%	96%	95%
3+	9%	10%	75%	87%	86%
4+	4%	6%	40%	77%	74%
5+	1%	4%	17%	61%	58%
6+	0%	2%	5%	42%	39%
7+	0%	1%	2%	23%	22%
8+	0%	0%	1%	8%	8%
9+	0%	0%	0%	3%	3%
10+	0%	0%	0%	2%	2%

Source: Operators/Ofcom

5.83 The Figure shows that across the whole UK only 24% of large business sites have two or more OCPs within reach (that is, within the 200m distance discussed above) and almost half of business sites are not within reach of any OCP network. By contrast in the WECLA+ almost all (95%) of sites are within reach of two or more OCPs, and a sizeable majority are within reach of four OCPs.

Alternative operators' infrastructure coverage of MNO, LLU and data centre sites in London

5.84 In the June BCMR Consultation, we recognised that there may be some sites where there is demand for leased lines which may not have been included in the sample of sites from the Experian dataset (e.g. because they are not office locations or because the company owning the site may employ fewer than 250 staff), and some user types that are important buyers of leased lines where we should check directly the pattern of rival infrastructure to BT. We analysed three sets of sites of this kind:

- MNO sites such as mobile base stations where leased lines are purchased;
- BT local exchanges, where CPs provide broadband on the basis of local loop unbundling (referred to as LLU sites); and
- data centre sites.

5.85 For each of these three categories, we performed a supplementary network reach analysis in order to test the broad validity of the results obtained with the main network reach analysis. We concluded that the geographic pattern of availability of alternative infrastructure for MNO base station sites, LLU sites and data centre locations in the WECLA were sufficiently similar to those at large business sites in the WECLA. We present the full analysis for MNO and LLU sites (including the WECLA+) below. In light of consultation responses, we have done a further detailed analysis of data centres which is included in Annex 6 (the network reach information for data centres is included in this Annex).

Consultation responses in relation to our network reach analysis

5.86 In this sub-section, we summarise stakeholders comments on the network reach analysis and provide our response. We include responses to the June BCMR Consultation and the November BCMR Consultation where relevant. The sub-section is structured as follows:

- consultation responses on network reach analysis:
  - coverage of OCP networks
  - use of Experian large businesses
  - presence of two OCPs as an indicator of potential competition
  - 200m buffer assumption
  - other comments
- Ofcom's considerations of consultation responses on network reach analysis:
  - overarching comments
  - coverage of OCP networks
  - use of Experian large businesses
  - presence of two OCPs as an indicator of potential competition
  - 200m buffer assumption
  - other comments
- contiguity requirement (stakeholder comments and our response)
- MNO and LLU sites (stakeholder comments, our further analysis and response)[443]

Consultation responses on network reach analysis

Coverage of OCP networks

5.87 BT argued that we have generally understated the coverage of OCPs' networks. In particular, it noted that we acknowledged that we may underestimate Virgin flexibility points.[444] BT noted that relatively few sectors were found to be HNR outside the WECLA and this was inconsistent with it having a relatively low service share of 30-40% in some of those sectors. BT thought it could identify sectors in Manchester and to the west and south of the WECLA which should be HNR.

5.88 In response to the June and November BCMR Consultations, BT suggested that the sectors on the fringes of the WECLA should be examined in more depth. BT specifically mentioned UB10 9, UB4 8, UB4 9, TW14 0, TW14 8, TW14 9, TW15 3, TW15 2 and SL9 8 where it thought it had a low service share which it felt was

[443] Stakeholder comments on data centres are included in Annex 6.

[444] See footnote 59 to paragraph 7.111 of the June BCMR Consultation.

inconsistent with the sectors being low network reach. It suggested this might mean that we lack complete information on OCP networks. It suggested that these sectors should be included in the WECLA if BT's service share was low.

5.89 In response to the November BCMR Consultation, BT felt that Heathrow airport should not be in an area of low network reach given its understanding of OCP network in the area. It also noted that the operator of the airport owns communications infrastructure at Heathrow which may be used by additional CPs to provide services to customers.

5.90 BT thought that we had omitted some companies that have relevant infrastructure from the network reach analysis – in particular intermediaries that purchase dark fibre and compete in the wholesale market. Analysys Mason (in its report for BT) thought that we had missed dark fibre capacity outside the WECLA.

5.91 BT noted that our figures suggested that the area of high network reach in Leeds had increased substantially relative to the 2007/8 Review but it was not aware of any new OCP network build in the area. It also noted that there are some sectors included in the CELA that no longer meet the network reach test and are not included in the WECLA. It suggested this meant the methodology was not robust over time and accuracy of the analysis was questionable.

Use of Experian large businesses

5.92 BT believed that the Experian large business dataset was not representative of the underlying population of end users for leased lines. It believed our analysis was distorted because the Experian dataset included some sites which do not constitute potential demand for leased lines and would also give a disproportionate importance to smaller businesses typically buying lower bandwidth services which are less likely to be attractive to OCPs. In particular, BT thought that the Experian measure of large business would include a disproportionate number of retail sites e.g. drinks and food outlets, automotive services etc which do not constitute actual or potential demand for leased lines. It thought the divergence between what we use as a representative customer and real demand will increase with increasing service value e.g. it believed it inappropriate to use 220,000 large business sites to represent the 1-2,000 sites requiring MISBO services. It noted that Manchester has around 1,500 large business sites but BT only sells MISBO services to [✂] sites in the area.

5.93 BT thought that we ought to check how representative the Experian large business dataset was for each of the product markets using information on actual sites using leased lines. It thought a large discrepancy between the distribution of actual sites using a given leased line product and the Experian dataset would indicate that the geographic markets based on Experian large businesses were not applicable for the particular product market.

5.94 BT also noted that, for the network reach assessment, business sites are plotted as a point on the map in the postcode where they are located when in fact they could be larger. BT thought this might underestimate the number of OCP flexibility points within reach of business site. It highlighted sector M17 8 containing the Trafford shopping mall in Manchester as an example of this, where the postcode location of the retail outlets puts them at the centre of the Mall, slightly over 200m from the perimeter road where it believed there were two OCP networks. It thought that the retail skew of the Experian business sites used in the network reach analysis would mean this single location dominated the overall result for the sector contributing to the sector being low network reach.

5.95 Level 3 and Exponential-e thought that using businesses with at least 250 employees would fail to capture a substantial number of leased line users. Exponential-e considered that a large proportion of its customers had less than 250 employees. It thought that the larger part of its addressable market had business premises located in areas that do not have an economic alternative to BT infrastructure. Level 3 thought that we should carry out an analysis of actual demand for leased lines (possibly in just a selection of areas).

Presence of two OCPs as an indicator of potential competition

5.96 Level 3 and Colt questioned whether the presence of 2 OCPs (on average) within reach of large businesses within a postcode sector was a good indicator of competitive conditions. Both argued that this supposed a willingness for OCPs to supply wholesale services to their competitors at that location. Colt thought this was incorrect as there is a lack of interconnectivity between OCPs. In its response to the November BCMR Consultation Level 3 thought it may be the case that the two OCPs are active solely in the residential/small-medium enterprise (SME) market in the same area and hence will not materially affect the supply of services to large enterprises.

5.97 BT was broadly content with the principle of BT plus two or more OCPs present as a primary indicator for delineating competition conditions.

200m build assumption

5.98 Level 3, Colt, Virgin, UKCTA, CWW, Exponential-e, and Geo argued that the build assumption was too long, and it was not appropriate to pick a build distance so far above the average actual build distance (65m) as indicated by information collected by CPs.

5.99 Colt and Geo considered that upfront costs associated with building 200m would generally be higher than the revenues achieved over the required payback period. Exponential-e and Colt argued that new build of duct was rare, Exponential-e thought that new build would only be undertaken to support high value MISBO services. Exponential-e further noted that its experience of trying to get an alternative provider to BT for 10 or 100 Mbit/s circuits rarely resulted in an OCP digging into a business premise without substantial excess constructions charges, which were not economic for a typical sale. It thought the only time that an OCP solution including network build would occur was when the customer was willing to pay more to obtain provider diversity.

5.100 UKCTA argued that we have not factored in relevant matters such as bandwidth of service, value of contract and potential for additional business which might affect the build decision. Geo noted that construction costs were higher in London relative to the rest of the country. UKCTA thought that we had not placed sufficient weight on natural obstacles that CPs might face when connecting to customers. Some other CPs also commented that we have assumed a straight line dig which is unrealistic, particularly in urban areas.

5.101 CWW noted that we have not provided evidence that, absent regulated inputs, CPs would dig further than they do currently. Exponential-e and Geo also disagreed that OCPs would be prepared to dig further if regulated products were not available. Geo thought that even if build distances did increase in the absence of regulated products this would have to be compensated by higher retail prices which would not help to achieve the objective of affordable high bandwidth services for end users.

Exponential-e thought the significant amount of capital required to even partially replicate BT's duct network would be beyond the amount an OCP could obtain in the capital market.

5.102 Level 3 noted that BT recovers its dig costs from CP customers via excess construction charges which removed BT's investment risk. It did not think that build distances of 500m for industrial estates and retail parks and 200m for shopping centres and financial and business districts could be correct considering the competitive conditions that prevail in the current market. It thought that a maximum build distance of 100m would be more appropriate for urban areas. Geo thought that a 200m build distance for financial and business districts would only be viable for major financial institutions or very large/profitable businesses. Geo was interested to know the impact of a 50m or 80m build distance.

5.103 BT was supportive of the use of flexibility points and the 200m rule in generality. However, it felt that this might understate the ability of OCPs to provide service to many customers given that they typically pre-build their duct network. BT considered that duct access can extend beyond the street cabinet and OCPs can extend to a new site using a short final drop from the duct network even if there is no obvious flexibility point. It noted that the spacing of flexibility points varied according to network design and expected customer demand, and that in some networks there are no obvious flexibility points.

5.104 BT commented specifically on a low network reach sector to the west of Heathrow (SL3 0) containing a small industrial business park where Virgin had only two street cabinets but comprehensive duct network extending across the area. BT thought this showed that the combination of the 200m build assumption and reliance of data relating to the location of flexibility points could lead to the true competitive coverage being underestimated. It suggested that we use the actual duct network when performing the network reach analysis or use flexibility points with a longer build distance assumption.

5.105 BT, Analysys Mason and DotEcon thought that OCPs would be willing to dig further to serve high value customers, which was particularly relevant for MISBO services. DotEcon thought that our analysis should place greater weight on large/high value businesses and we should look at clusters of customers because it may be more economical to build further for a group of customers.

Other comments

5.106 DotEcon thought that our methodology meant we might miss competitively served customers unless the geographic unit was sufficiently small (i.e. a postcode sector could be low network reach overall, but within the sector there might be competitively served sites which would be high network reach if the analysis was conducted using smaller areas). It also argued that a postcode sector with one large competitively served business may have low network reach because some small and low spending businesses are not competitively served. It thought this was incorrect as almost all spend on business connectivity in the sector would be subject to competitive supply.

5.107 As noted above, we included in the WECLA some postcode sectors which were low network reach but entirely surrounded by HNR sectors. Colt and CWW disagreed with the inclusion of these sectors in the WECLA. Colt thought that it was inadequate to justify the inclusion of these sectors on the basis that alternative infrastructure passes though the sectors. It noted that creating a breakout point to serve nearby locations requires significant time and investment.

5.108 In response to the November BCMR Consultation, Level 3 requested greater clarity on the relevance of the percentage of sectors covered by each OCP (e.g. shown in Figure 5.7 above).

Ofcom's considerations of consultation responses on network reach analysis

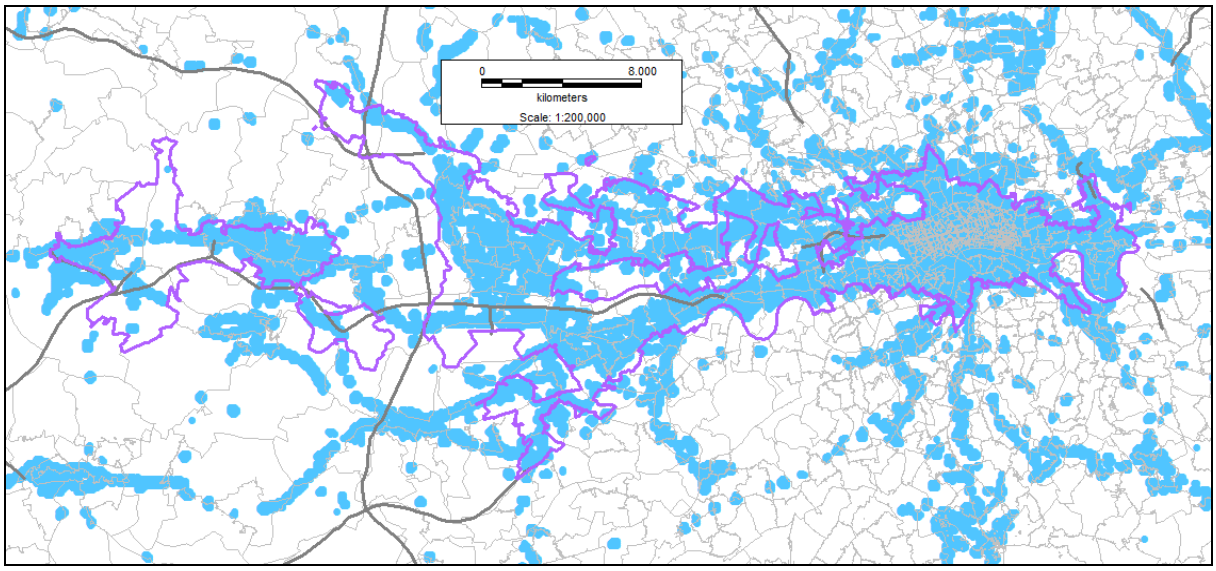
Overarching comments

5.109 It is important to remember that the network reach metric is designed to distinguish between postcode sectors that are potentially competitively served and those where the minimum conditions for effective competition are unlikely to apply.

5.110 We have done a 'sense check' on our network reach results without using data on the locations of businesses or postcode sectors. We placed a 100m by 100m grid of points across the London area and identified those points on the grid for which there are two or more OCPs' flexibility points within 200m. Figure 5.10 below shows that the area over which two or more OCPs have flexibility points within 200m broadly corresponds to the area of HNR defined as the WECLA+.

5.111 This reassures us that our network reach assessment is not systematically failing to identify areas where two or more OCPs could potentially provide a service, or indeed picking up substantial areas where two or more OCPs could not provide a service.

Figure 5.10: London area showing HNR points on a 100m grid



Key: Blue points indicate two or more OCP flexibility points within 200m. The WECLA+ is outlined in purple.
Source: Operators/Ofcom

Coverage of OCP network

Extent of OCP network

5.112 BT thought we had understated the extent of OCP networks. We have considered the information BT provided on OCP network in its response and compared it against the information we had gathered from OCPs. Subsequently, we have followed up

with some OCPs to check that our information on their networks is accurate (see also Annex 5).

5.113 In the June BCMR Consultation, we recognised certain limitations in the dataset provided by Virgin that may have meant that we had underestimated the extent of Virgin's network. Since the June BCMR Consultation, we have had further discussions with Virgin in order to gain a better understanding of its access network, the dataset it supplied and its network extension practice.

5.114 Virgin has explained to us that the dataset of flexibility points that it provided relate to a subset of street cabinets in its network. These cabinets are served by fibre and the fibre joints associated with them function as flexibility points (i.e. it will access these joints to provide new leased line services). However, Virgin has not been able to supply location information for a further set of fibre joints in its network which also function as flexibility points for leased line services.

5.115 In light of this we conducted a sensitivity test with a much larger dataset containing the locations of all of the street cabinets in Virgin's network. Since many of these street cabinets relate to Virgin's cable TV network and are either not served by fibre or do not function as flexibility points for business services, this dataset is likely to significantly overstate the extent of Virgin's network for the supply of leased line services. This sensitivity analysis showed that 48 additional HNR postcode sectors would be added to the WECLA+ if all Virgin's street cabinets were treated as flexibility points. However, these sectors (mainly on the fringes of the WECLA+) contain relatively few leased line customers (for example, the additional sectors contained only around 1% of total AISBO ends in the UK). Given that this sensitivity test overstates Virgin's presence in these sectors we do not regard it as appropriate to add them to the WECLA+, but the exercise is useful in confirming that our methodology is unlikely to have significantly underestimated the degree of rival infrastructure competition faced by BT in the London area.

5.116 We also looked at the impact of using the wider set of Virgin network points in three other major cities (Birmingham, Manchester and Leeds). In all cases the additional sectors added to the HNR area were not sufficient to make any of the markets material in size.[445] 23 sectors were added to the contiguous area of HNR in Leeds, 22 in Birmingham and 9 in Manchester. Even taking the expanded area of HNR the number of AISBO ends in each city is only around 1% of total AISBO ends across the UK. This reassured us that the impact on the network reach analysis was marginal even taking an exaggerated view of Virgin's network presence.

5.117 With respect to the other OCP networks, our further work has shown the information used for the June BCMR Consultation was sufficiently accurate. In a number of cases BT argued that we had omitted network which in fact was already captured by our information, or which was part of the national backbone network (i.e. trunk/core network), where OCPs do not have flexibility points to provide customer connections (and could not provide such a facility without incurring significant costs). In the few cases where we did identify missing network (specifically this related to [✂ , ✂ , ✂ and ✂]) we have included this network in our analysis.[446] This has resulted in 11 additional HNR sectors being added to the London area geographic market (and two additional HNR sectors were added to the contiguous

[445] See also discussion of the materiality of these cities in relation to leased line markets at paragraphs 5.424 to 5.430.

[446] Two of these OCPs are newly added to the network reach analysis, for the other two OCPs we identified additional network not included in the June BCMR Consultation analysis.

areas in each of Birmingham and Manchester). This has not had a material impact on our assessment.

5.118 We have checked OCP network in the sectors covering Heathrow airport. Terminal 5 is in a HNR sector which is included in the WECLA+. Terminals 1-4 are in sector TW6 1 which is low network reach. BT thought that Level 3 and Virgin had network running across the site. We have further investigated the availability of network in TW6 1 and confirmed it is low network reach. [✂]

5.119 BT thought that BAA owned infrastructure at Heathrow which could be used by additional CPs. We have therefore sought information from CPs about whether they are using this infrastructure to serve customers which might be beyond the reach of their own networks at Heathrow. The evidence that we have available suggests that they do not do so to any significant extent.

5.120 We had specifically considered the impact of dark fibre for the June BCMR Consultation. We identified the major providers of dark fibre across the UK and investigated the areas their networks covered. This revealed that the most extensive dark fibre coverage was in the WECLA, with relatively limited provision elsewhere. As we had already identified the WECLA as a candidate for a separate geographic market, we considered that the inclusion of dark fibre was unlikely to affect our analysis. We discuss dark fibre in Section 7.

BT low service share in areas with low network reach

5.121 BT noted that in some sectors with low network reach it had a relatively low service share. We consider that this is compatible with our analysis, for example, it could be due to a single OCP winning a large customer in a particular area, or due to an area having a small numbers of customers (where if a CP won only a few contracts, that might be sufficient to record a sizeable service share).

5.122 We have looked at the nine postcode sectors on the edge of the WECLA (UB10 9, UB4 8, UB4 9, TW14 0, TW14 8, TW14 9, TW15 3, TW15 2 and SL9 8) where BT questioned our finding that the sectors were low network reach, and suggested we took a closer look at competitive conditions. One of the sectors (TW14 8) was HNR at the time of the June BCMR Consultation but not included in the WECLA because it was not contiguous to it. As a result of the additional OCP network identified since the June BCMR Consultation it is now contiguous to the area of HNR and thus included in the WECLA+. We have confirmed that the remaining 8 sectors are low network reach. For these sectors we cross checked the network reach analysis using information provided by CPs on the actual provision of AISBO services in these sectors. In five of the sectors only one OCP (plus BT) actually provide AISBO services.

Methodology over time

5.123 BT suggested that the network reach analysis was not consistent over time. We have employed the same methodology in the 2007/8 Review and 2012 BCMR and our approach is consistent. We did collect new information for the 2012 BCMR and worked with CPs to improve the accuracy of the information we used. This has resulted in some changes to the extent of the OCP networks recorded relative to the 2007/8 Review (and is a significant reason for the extension of the CELA to the WECLA+). The increased area of HNR in Leeds is because we have better

information on OCP networks relative to the last review, which has improved the accuracy of our assessment.[447]

Experian large business dataset

5.124 A number of CPs criticised the use of Experian large businesses as a proxy for leased line customers in the network reach methodology, and some suggested that we ought to do an assessment based on actual leased lines customers.

5.125 Our metric uses business sites with 250 or more employees across the UK (large businesses) as a proxy for leased line demand. We recognise that, in fact, some smaller businesses use leased lines and many large businesses (or their individual sites) do not. However, in most cases we believe that actual current and future[448] leased line demand will be reasonably well correlated with the locations of the Experian sites and that it remains an appropriate metric to use. If we just looked at the locations of actual leased line customers we would fail to capture potential demand for example new users of leased lines. In addition, as a cross check we conducted a separate network reach assessment for particular types of sites that are known to be particularly important purchasers of leased line services (MNO, LLU operators and data centre sites) in the June BCMR Consultation (see paragraphs 5.190 to 5.205 below and Annex 6).

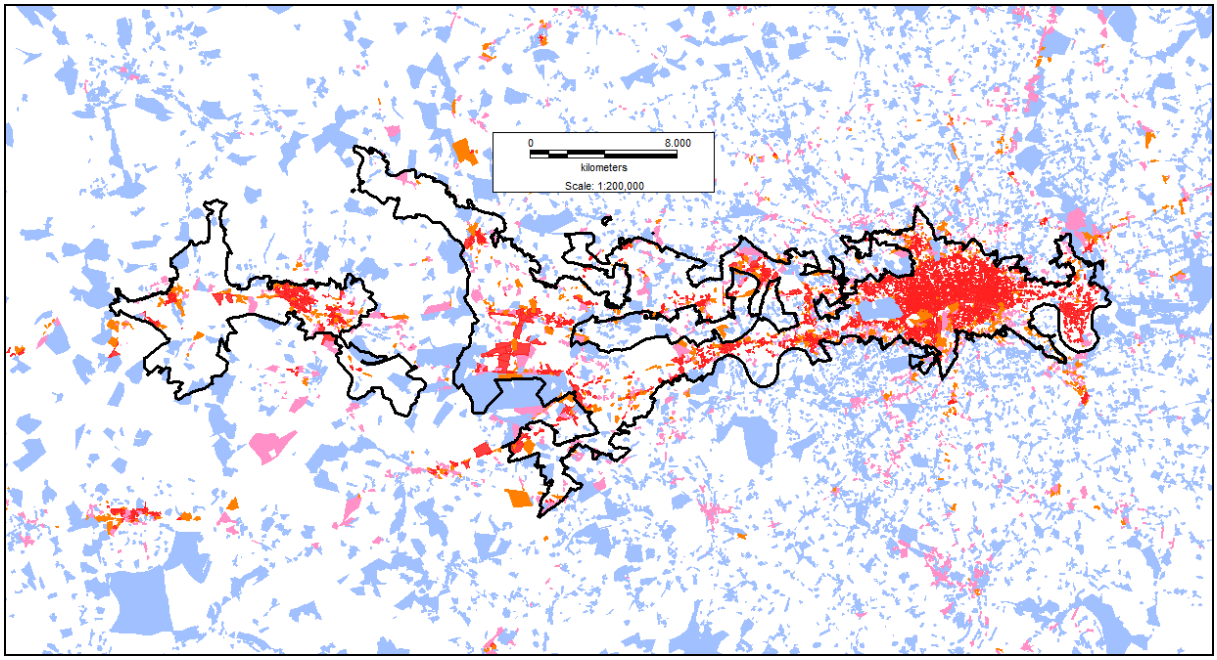
5.126 As an additional cross check, we have performed a further analysis to see how using actual leased line customers would affect our results. We took the full postcode location of each leased line customer end[449] (across all bandwidths as provided to us by CPs, including BT) and calculated the number of OCPs within reach of it i.e. within a 200m buffer zone. Figure 5.11 below shows the number of OCPs within reach of the leased line customer ends in each postcode for the WECLA+ and the surrounding area. BT also commented that the Experian dataset was not representative of higher bandwidth customers. We also performed a separate analysis just looking at MISBO customer locations which is discussed at paragraphs 5.309 to 5.312.

[447] BT noted that some sectors were included in the CELA but not in the WECLA. This corresponds to three sectors – SE11 4, SE8 3 and SE8 4. We have checked that these sectors are low network reach based on the latest data. There could be a number of reasons for this, for example, changes in the Experian Large business dataset or some OCPs no longer leasing physical infrastructure in areas where they do not have customers.

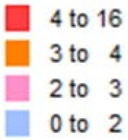
[448] It is important to bear in mind that we use large business sites not only as a proxy for actual demand for leased lines, but also potential future demand.

[449] Each leased line end was mapped to approximately the centre of the postcode in which it is located. This was the most precise we could be in identifying the customer location as we do not have, for example, the eastings and northings necessary to pinpoint the exact location. We excluded network ends.

Figure 5.11: Network reach for each postcode using customer ends – London area



Source: Operators/Ofcom
Key: WECLA+ outlined in black, average number of OCPs within reach coloured as follows:



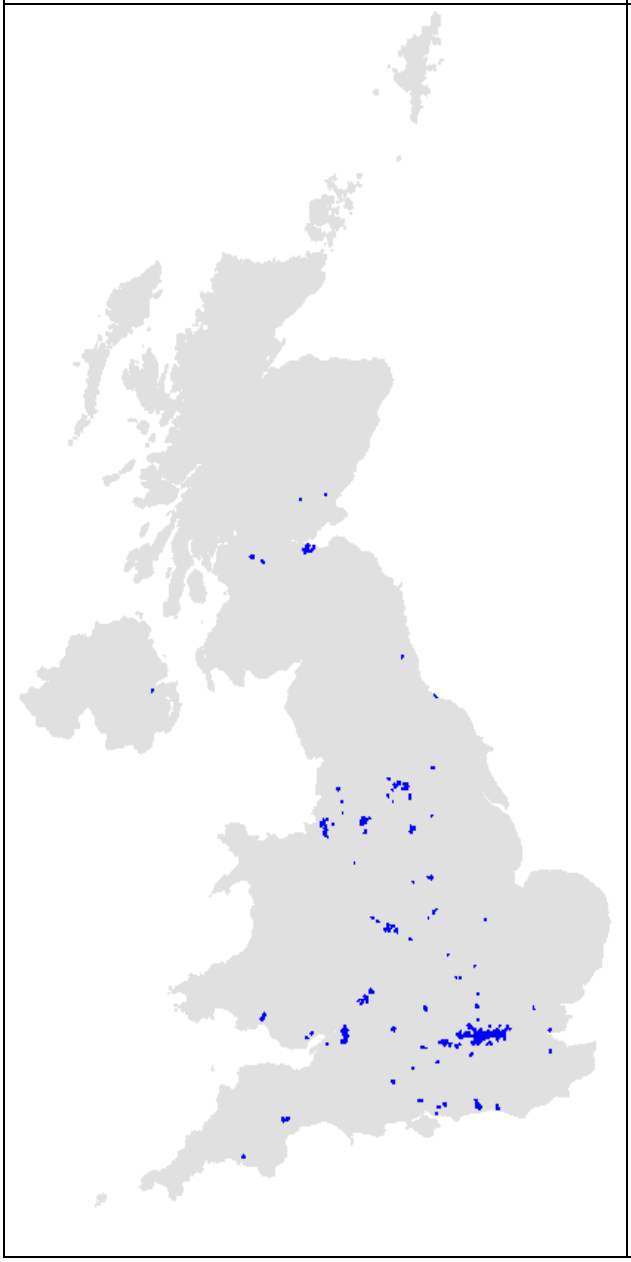
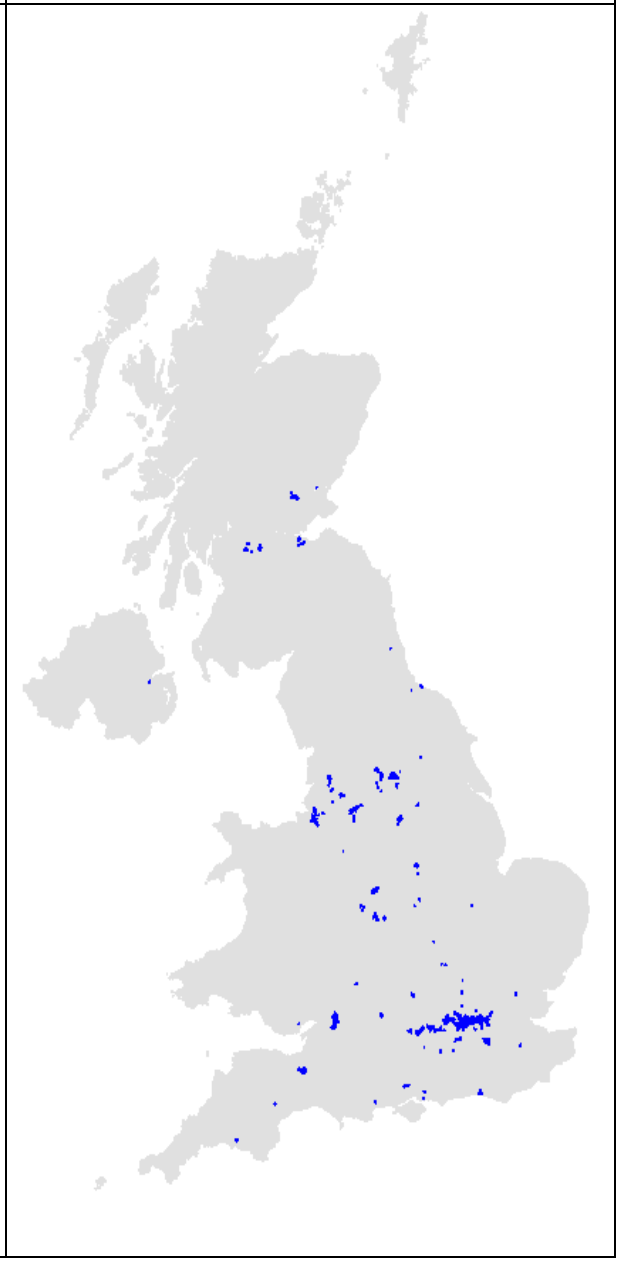
5.127 The first point to note is the 'patchwork' of coloured postcodes on the map. The white areas are postcodes with no leased line customers; using actual leased line customers to inform the network reach assessment clearly does not provide a useful basis for classifying these sectors. However, the Figure does show that most postcodes with two or more OCPs within reach of customer ends are in the WECLA+ area, and that there are relatively few postcode sectors within the WECLA+ area that have fewer than two OCPs, which is broadly supportive of our network reach analysis based on large business sites.

5.128 We also performed a network reach analysis using leased line customers with postcode sectors as the geographic unit (in this case a sector is high network reach if the leased line customers in it are within reach of at least two OCPs on average). Figure 5.12 below compares the HNR sectors for the UK using:

i) customer ends; and

ii) Experian large business sites.

Figure 5.12: HNR sectors using i) customer ends and ii) large business sites

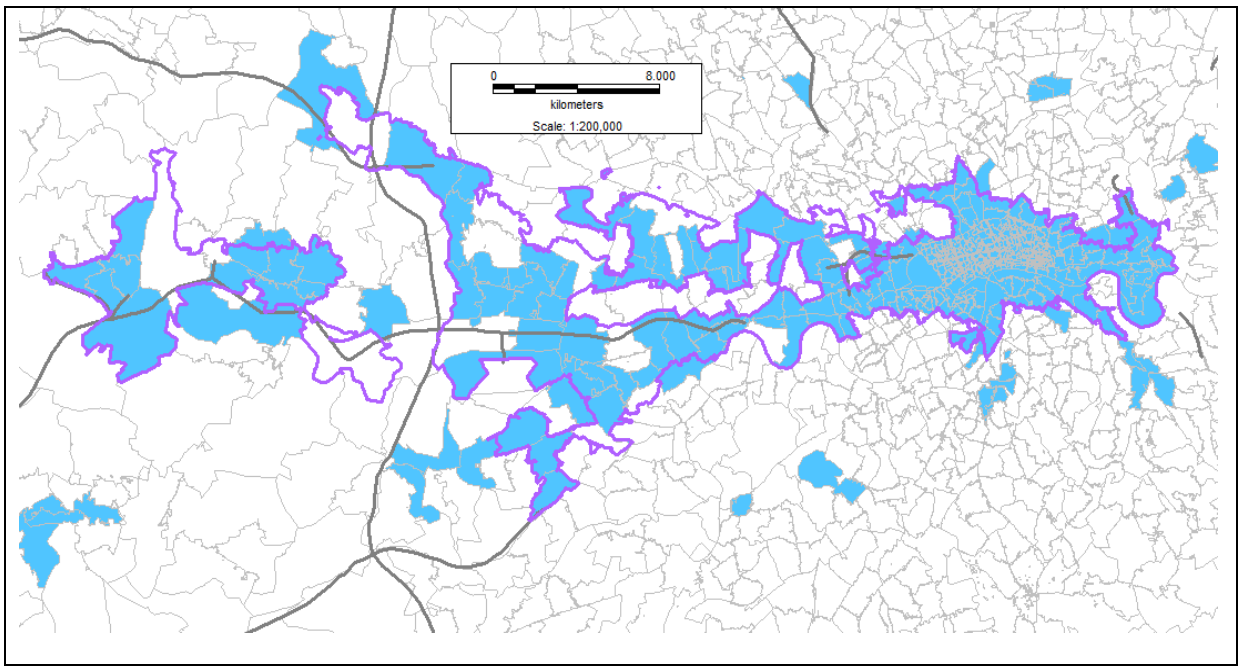
Customer ends	Large business sites (same as Figure 5.4 above)
	

Key: HNR sectors are in blue.
Source: Operators/Ofcom

5.129 Across the UK, the network reach analysis is broadly similar for large business sites and customer ends. 825 sectors are HNR using customer ends compared to 822 using large business sites. The Figures above show the HNR sectors are located in similar areas.

5.130 Figure 5.13 below presents the HNR sectors using customer ends for the London area, the WECLA+ outline is also illustrated on the map.

Figure 5.13: HNR sectors using customer ends, London area



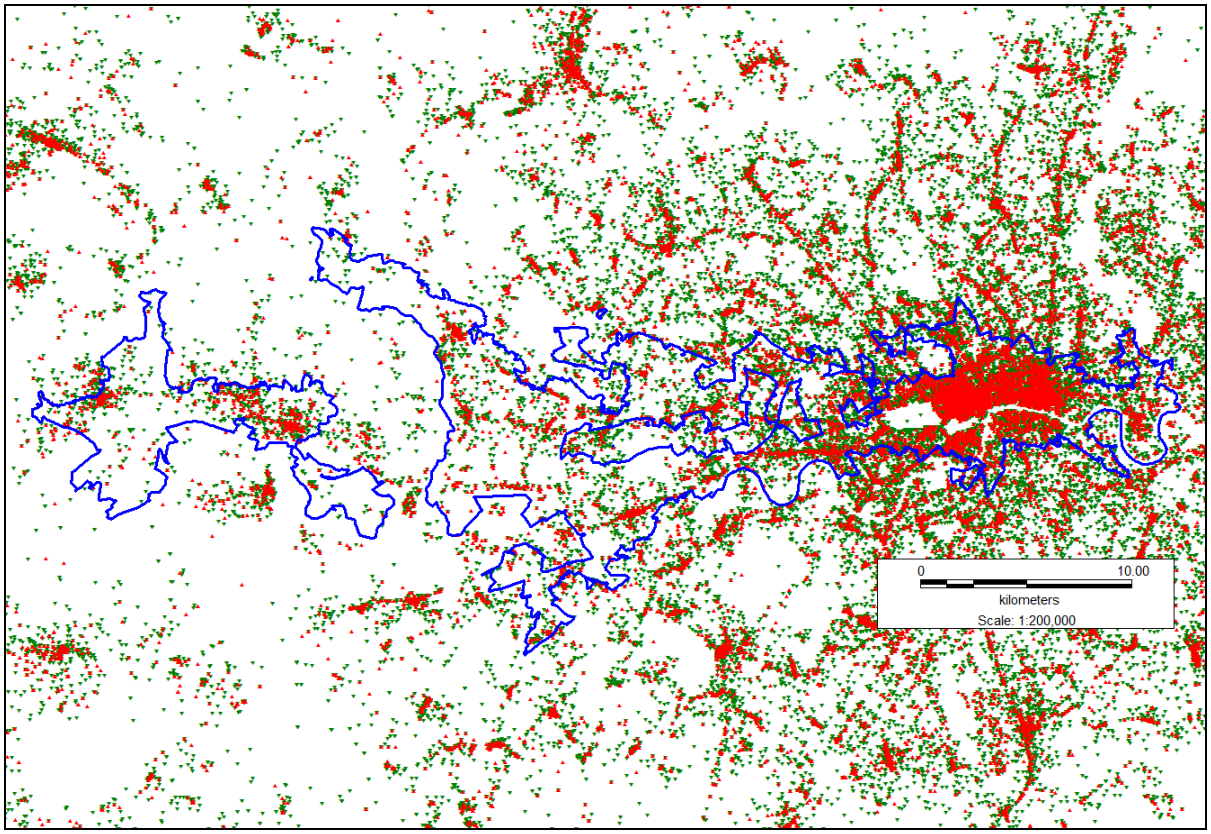
Key: HNR sectors using customer ends are in blue. The WECLA+ is outlined in purple.
Source: Operators/Ofcom

5.131 In the London area, the HNR sectors using customer ends broadly correspond to the WECLA+ area – particularly for central and eastern London. In total there are 18 sectors included in the WECLA+ which are HNR based on large business sites which are not HNR using customer ends. The Figure also illustrates that there are some sectors around the periphery of the WECLA+ which are HNR based on customer ends but low network reach based on large business sites. However, in general there is a reasonable degree of overlap between the two approaches and we consider that network reach based on customer ends broadly supports the findings of the network reach based on large business sites. Using a metric based on large business sites better captures the degree to which new demand in a postcode sector is potentially competitively served (see paragraph 5.125 above).

5.132 We have done a further check to test that using large business sites as a proxy for leased line customers would not bias the results e.g. if a substantial number of smaller businesses also use leased lines. In the Figure below we have plotted the location of large businesses (250 or more employees) and smaller ones (11-249 employees) based on the Experian dataset for the WECLA area. The Figure shows that larger and smaller businesses are generally located in similar areas. Based on the pattern of actual locations of small and large businesses we consider it unlikely that using large businesses (and omitting smaller ones) in our network reach assessment will substantially bias the analysis.[450]

[450] As a further step we undertook a number of statistical tests to measure the relationship between the number of businesses with 11 to 249 employees and the number of businesses with 250+ employees in a postcode sector. We calculated the Pearson's correlation (0.77) and Spearman's correlation (0.86). These results are consistent with a strong positive relationship between the number of large and smaller businesses in a postcode sector.

Figure 5.14: Locations of smaller and large businesses, London area



Key: red dot = business site with 250+ employees, green dot = business site with 11 to 249 employees, WECLA+ outlined in blue.
Source: Experian data/Ofcom

5.133 BT noted that the Experian business sites are treated as a point on a map when they could actually occupy a larger area. We recognised that businesses occupy an area larger than a point in the June BCMR Consultation.[451] We noted that, by using a buffer distance longer than the actual average build distance reported by OCPs, we would reduce the likelihood that a business site would appear to have no network within the buffer when in fact the boundary of the business is within reach (we discuss the buffer distance further below). In addition, our analysis suggests that 200m is an appropriate assumption.[452]

5.134 BT noted specifically sector M17 8 containing the Trafford shopping mall in Manchester. It thought the postcode location of the retail outlets put them at the centre of the Mall, slightly over 200m from the perimeter road where it believed there were two OCP networks. It thought that the large number of retail sites at the location would skew results of the network reach analysis (contributing to it having low network reach). As noted above, we have conducted a network reach analysis using leased line customers in place of Experian business sites. Under this approach sector M17 8 is still low network reach.

[451] See footnote 43 to paragraph 5.98 of the June BCMR Consultation

[452] See paragraphs 5.105 to 5.108 of the June BCMR Consultation.

Presence of two OCPs as an indicator of potential competition

5.135 Level 3 and Colt questioned whether the presence of 2 OCPs (on average) within reach of large businesses within a postcode sector was a good indicator of competitive conditions. Level 3 and Colt's main concern related to whether OCPs were willing/able to provide wholesale services to each other (i.e. the existence of a merchant market). We discussed the merchant market for each product market in the June BCMR Consultation (see also further below in this Section). We considered that the extent of merchant market activity in the WECLA was such that limitations on individual operators' coverage would not warrant a revision of the proposed definition of the WECLA geographic market.

5.136 Level 3 thought there may be instances where two OCPs are active solely in the residential/SME market in the same area and hence will not materially affect the supply of services to large enterprises but would still result in our analysis showing the locality to be HNR. We agree that the degree of local competition may depend on which suppliers are active in the area. This is one reason why we do not regard a finding that a locality is HNR in itself sufficient to conclude that the sector is competitive. In any case, we believe the OCPs in our network reach analysis to be active in leased line markets.

200m buffer assumption

5.137 A number of CPs commented that our 200m buffer assumption did not reflect actual build they undertook to connect customers, stating that they would typically build shorter distances. We used the term 'build distance' in the June BCMR Consultation as a convenient shorthand, however, we realise it may have led to some misunderstanding because CPs interpreted it to mean the length an OCP would actually be prepared to dig i.e. new construction. In light of this confusion, we have changed the term to 'buffer assumption' which is a more accurate description. We explain below that the 200m buffer assumption does not require that the actual dig an OCP would be prepared to undertake to connect a customer should be 200m in all cases.

Network reach should be based on actual duct network

5.138 We conducted our network reach analysis using flexibility points because they are the points from which CPs will usually extend their networks and because this provides us with a manageable number of OCP network locations. BT suggested that in some network designs there are no obvious flexibility points. In our experience, this only applies in a very limited number of cases and OCPs are generally able to identify and supply us with flexibility point locations.

5.139 We recognise, as noted by BT, that duct access may extend closer to the customer than the flexibility point, and it may be possible for an OCP to connect a customer from a location deeper in the network (e.g. a footway box or chamber) and closer to the customer than the flexibility point. For example, an OCP might have a flexibility point located 200m (as the crow flies) from a business, but have duct running closer to the business with a chamber, say, 50m away. This means to connect the customer the OCP would only need to dig 50m, from the chamber to the customer site, and could then run fibre from the chamber through the existing duct in order to connect the customer. While the CP would incur additional costs in this process, those costs will in many cases be less than building new duct for 200m. This is one reason why it is appropriate to use a buffer assumption like 200m which is substantially longer than

the average actual build distance (65m) reported by CPs and also longer than the distance that some CPs have said that they would be prepared to build.

5.140 With respect to the specific example BT quoted in sector SL3 0, which has low network reach despite containing Virgin duct, this is not because we have failed to adequately capture Virgin network in our analysis. It is actually low network reach because only one OCP is within reach of most large business sites in the sector – as set out above our methodology requires on average two OCPs to be within reach of the large businesses in a sector for it to be HNR.

Impact of removing regulation

5.141 Following the modified Greenfield approach, we are trying to estimate the area (in relation to a flexibility point) in which an OCP would be prepared to provide a service in the absence of regulation. In the absence of regulated products provided by BT an OCP may be prepared extend its network somewhat further to reach customers – which is a further reason why it is appropriate for the buffer assumption to be greater than the actual dig distances. Exponential-e disagreed with this point, and CWW noted that we have not provided evidence that absent regulated inputs CPs would dig further. We consider that while it would be difficult to provide definitive evidence to support this assumption given that it represents a hypothetical scenario, it is a reasonable approach for us to adopt, because some CPs may currently use regulated inputs from BT for longer distance connections. However, we do not rely on the "build distance" in a competitive market being markedly longer than at present because competitive prices should be broadly similar to BT's cost-based regulated charges (i.e. CPs would not have a significantly greater (price) incentive to build further than currently). More generally, the availability of regulated services which a CP can combine with its own network is a major facilitator of competitive investment.

5.142 As a cross check to our analysis we have looked at the impact of shortening the buffer assumption. Shortening the buffer assumption to 150m would have a relatively modest impact on the postcode sectors included in the WECLA+ – the number of postcode sectors meeting our high network reach criteria would fall by 43 (i.e. 11%).This provides some comfort that even if our 200m assumption is "too long", the practical impact is unlikely to be large.

Build distance depends on value of contract and other factors

5.143 We recognise, as noted by a number of stakeholders, that the distance a CP will be willing to build to reach a new customer site will vary according to the value of the business, and could also be affected by factors such as potential for additional business. In this respect, we also recognise that for high value customers OCPs may be prepared to build further so the appropriate buffer distance could be higher. In light of this, we have looked specifically at a longer buffer assumption for MISBO customers below. We also looked specifically at varying the buffer assumption for data centres (see Annex 6).

5.144 To address stakeholder comments we have varied the buffer distance for these specific categories of customer. Equally though, and consistent with the general approach to geographic market definition advocated by the ERG Common Position,[453] it would not be practical to vary the buffer distance on a case by case basis for each business site. This would cause a huge workload for us and it would also be arbitrary to some extent with regard to determining the appropriate buffer

[453] See, in this respect, ERG Common Position Section 3.

distance for each business site. Moreover, we can capture variations in competitive conditions between relevant markets in our analysis of service shares.

Other comments

DotEcon critique[454]

5.145 DotEcon argued that the network reach methodology might miss competitively served businesses. It thought this might arise due to a combination of the geographic unit (i.e. postcode sector) being too large and because the number of OCPs within reach of businesses was averaged across the postcode sector. It thought that this approach would understate the actual number of businesses with two or more OCPs within reach unless a sufficiently small geographic unit is used.

5.146 We calculate the network reach metric for over 10,000 postcode sectors. Our methodology calculates an average network reach across all the business sites in the postcode sector, so it is possible that some business sites which are within 200m of flexibility points of two competing networks are in low network reach sectors. This 'averaging' also means it is possible that some business sites which are more than 200m away from flexibility points of two competing networks are included in HNR sectors. However, we believe our approach provides a reasonable view of the sectors that are potentially competitive. We also note that sectors are smaller where businesses are concentrated which provides a degree of what DotEcon called "adaptive meshing".[455]

5.147 DotEcon claims to, "demonstrate the sensitivity of Ofcom's approach to the choice of geographical unit of analysis".[456] However, this claim is based on a model which DotEcon itself describes as "stylised" and "illustrative" and no evidence is provided of the actual empirical significance of the effect which DotEcon identifies. In our 'sense check' we placed a 100m by 100m grid of points across the London area and identified those points for which there are two or more OCPs' flexibility points within 200m (Figure 5.10). This showed that the significant areas where two or more OCPs were within reach broadly corresponded to the HNR areas defined as the WECLA+, and any contention that the area should be significantly larger is not supported.

5.148 If we used a smaller geographic unit (such as six digit postcodes) we would be less likely to include businesses which are within 200m of two competing networks in low network reach areas and vice versa. However, a more granular approach would be less practical to implement and we do not believe it would significantly improve our analysis. DotEcon's suggestion that the dimensions of the geographic unit might need to be "significantly smaller than the build distance" raises immediate doubts about its practicality for general use.

5.149 We therefore consider that our network reach methodology provides a proportionate way to identify the main variations in competitive conditions. Our objective is not to identify individual business sites within 200m of two or more networks. Our analysis seeks to identify geographic areas where competitive conditions are similar (by aggregating contiguous HNR sectors). As the markets we define are, by design,

[454] DotEcon also made some comments in relation to the use of service shares in the geographic analysis. These points are discussed at paragraphs 5.219 to 5.222 and 5.227 to 5.231.

[455] A point noted by DotEcon in its response (paragraph 131).

[456] DotEcon report, paragraph 121.

significantly larger than an individual postcode sector, the effect of greater granularity at the measurement stage is likely to be limited in any case.

Inclusion of some postcode sectors which are low network reach

5.150 Colt and CWW disagreed with our inclusion of a limited number of postcode sectors with low network reach in the WECLA. As explained in the June BCMR Consultation, we only included low network reach postcodes which were entirely surrounded by HNR sectors and before including the sectors in the WECLA we investigated each separately. As discussed in paragraph 5.77, twelve of these sectors are very small (with an area of 100m^2) and contain no large business sites. Two sectors correspond to gardens and contain no large business sites. The remaining 2 sectors have a small number of large businesses and contain flexibility points for at least two OCPs. We can confirm that these sectors do contain OCP flexibility points – i.e. it is not necessary to create additional breakout points as suggested by Colt.

5.151 We remain of the view that, given their geographic location and their low materiality, it is appropriate to include these postcode sectors in the WECLA+.

Relevance of percentage of sectors covered by each OCP

5.152 Level 3 requested greater clarity on the relevance of the percentage of sectors covered by each OCP (e.g. shown in Figure 5.7 above). This information is provided to give an idea of the geographic extent of the network of each OCP.

Contiguity requirement

Consultation responses

5.153 BT considered that our imposition of a contiguity requirement when aggregating HNR postcode sectors was too strong and unreasonably limited the scope of deregulation, particularly outside London. It thought that we applied the contiguity requirement because we were concerned that OCPs needed to be present at both ends of a circuit to be viable competitors, and we had imposed it to reduce the chance that we deregulate areas where competition is not effective. BT considered this was invalid because the postcode boundary was not of significance to OCPs network investment decisions, and OCPs could connect together disparate local access networks without having contiguous network in between e.g. using the merchant market. It thought that the contiguity requirement would underestimate competition for higher bandwidths.

5.154 DotEcon noted that a CP might serve significant clusters of high value customers in different urban areas and trunk services could be used to connect the disparate areas. It thought that CPs could gain synergies and economies of scope from targeting business customers in major urban areas, and not offering services in the areas in between was unlikely to be a significant disadvantage if the target customers were not located in those areas. It further noted that there are likely to be economies of scope in marketing services to corporate customers present in these areas; these scope economies do not require geographical contiguity of the service offer, only that the service is offered in a sufficient number of locations where target customers are located.

5.155 BT and DotEcon considered that we should apply ‘logical contiguity’ where all postcode sectors with high network reach could be considered together or, alternatively, BT suggested that areas of high network reach outside the WECLA

could be added together and defined as a 'Rest of the UK Metropolitan Areas' geographic market.

5.156 BT suggested that we look at OCP pricing in areas of HNR because this would show that OCPs treat all such areas as 'on-net'.

5.157 In its response to the November BCMR Consultation, BT noted that we had relaxed the strict contiguity requirement in proposing that the Slough sectors were included in the London area geographic market (the Slough sectors were separated from the WECLA by a single postcode sector). BT restated its view that requiring physical contiguity was not justified and noted that the point made by DotEcon summarised at paragraph 5.154 above encapsulates its view. It felt that the reasons we put forward for including the non-contiguous Slough sectors in a WECLA+ market (noted at paragraph 5.175 below) also applied to other metropolitan areas not contiguous with the WECLA. In particular BT thought that:

- Multiple networks link the major UK business centres.
- The number of retail Ethernet circuits connecting the two areas (which we used as evidence of economic linkages between the Slough sectors and the WECLA) might not be a good measure of economic linkages between them due to a bias towards shorter circuits, with longer circuits being supplied using VPN-type solutions with short access tails. It thought that we should look at alternative measures such as the locations of industries that are major users of business connectivity. It noted that London and Manchester are the two largest creative industry clusters in Europe and Leeds is the UK's second largest centre (outside London) for business, financial and legal services.
- BT questioned whether it was necessary to require economic linkages between areas to consider them as part of the same geographic market.
- The lack of intrinsic economic significance of the postcode sector boundary for business connectivity applies universally.
- It noted that there were HNR sectors in other cities which BT thought could potentially form a single geographic market or a number of separate regional markets. It noted that a number of these cities contained more leased line services than the Slough sectors.

Ofcom's considerations of consultation responses

5.158 Consistent with the ERG Common Position,[457] the first step we have to determine in our analysis of the geographic scope of the relevant product markets based on homogeneity of competitive conditions, is whether there exists evidence of local geographic markets or whether there is evidence which suggests a national market exists. To determine this, as explained above, we have chosen postcode sectors as the appropriate geographic unit with which to define the geographic scope of the relevant product markets.

5.159 Having chosen postcode sectors as the appropriate geographic unit, this has presented us with over 10,000 geographic units. As noted in the ERG Common Position:

[457] See Section 2 of the ERG Common Position.

> *"[w]ith a large number of small areas...there is likely to be a continuum of competitive conditions and therefore it will usually be difficult to draw a clear line between "more" or "less" competitive areas. One approach would be to evaluate competitive conditions in each geographic unit on its own and classify the area accordingly. However, this would cause a huge workload for [us, the NRA] and also is likely to be arbitrary to some extent. A more practical and appropriate approach is to define clear and unambiguous criteria according to which the geographic units are grouped. In this regard, it is important for NRAs to bear in mind the purpose of market definition which...is not an end in itself but a means to undertake an analysis of competitive conditions, for the purposes of determining whether ex ante regulation is required or not."*[458]

5.160 The criteria we have decided are most relevant for determining which geographic units should be aggregated and which, consistent with the ERG Common Position, we have applied cumulatively are:

- presence of OCPs' network (i.e. our network reach analysis); and
- assessment of BT's service shares.

5.161 We also impose the requirement of contiguity as part of our assessment of the presence of OCPs' network when identifying local geographic markets. This reflects the point, as noted in the ERG Common Position[459] and the June BCMR Consultation, that investment decisions in leased line markets are often incremental to current network build.[460] Further, as noted in the June BCMR Consultation, for an operator to be able to compete across the geographic scope of an unregulated market it must have, or be able to obtain wholesale access to, infrastructure at both ends of the leased line and also any segments in between the two ends. This means we would expect to observe greater potential for wholesale competition where there is evidence of a number of OCPs' infrastructure. In addition, we would expect competitive conditions at the wholesale level to be sufficiently similar in the geographic area across which the incremental extension of OCPs' network has taken place, reflecting the localised demand and supply conditions for leased lines. The natural consequence of this is that the geographic area across which the incremental extension of OCPs' network has taken place will be made up of HNR sectors adjacent to each other. Then, if competitive market areas tend to be contiguous because of the way leased line networks are created by incremental investment, requiring the markets we define to obey a contiguity rule will mean that they are likely to correspond more closely to the true competitive local market area.

5.162 For circuits which start and end within the contiguous area, an OCP has a greater ability to provide the complete circuit (using either its own network or the merchant market) without recourse to BT inputs. This affects competitive conditions because the ability to use its own infrastructure affects an OCP's underlying costs of providing

[458] See Section 4.2 of the ERG Common Position. As the ERG Common Position also notes, "[i]f areas where conditions of competition are sufficiently homogeneous are integrated into a single market, the result of the market analysis (and the imposition of remedies) is the same as if each area had been considered individually" (see Section 2).

[459] See Section 3.

[460] i.e. CPs extend outwards from their established networks into the surrounding area. This means it matters whether an OCP already has network in an area which it can extend to reach a new customer/serve a new location.

the service. Once investment in infrastructure has been made, the costs of the CPs' duct will be sunk and the forward-looking costs of using it will be low, whilst many of its other costs will also be fixed in the short run. BT's charges for wholesale inputs, on the other hand, allow it to recover fixed and sunk costs and these then form part of the OCP's variable costs when it buys a network service from BT. By using its own infrastructure, the OCP will also benefit from any efficiency gains it is able to make, relative to BT. It is also likely that an OCP will be able to provide the circuit using the local access/metro network without the need for trunk. See further discussion at paragraph 5.177 below.

5.163 If terminating segment provision is characterised by economies of scale and scope, then the extent of the latter are likely to depend on the extent to which a CP can use a single local duct network to provide multiple services to multiple customers i.e. its ability to reduce unit costs by sharing duct (only the final drop being customer-specific). It will clearly not be possible for TISBO services in Birmingham to share duct with services delivered in London for example. This suggests that costs and competitive conditions may be determined by local scale to a significant extent.

5.164 CPs are unlikely to invest in creating an access network in a city area just to serve a single postcode sector – they will want to serve a wider local area to benefit from the available economies of scale and scope, and this suggests that competitive conditions will be determined over a wider area than a single postcode sector. This means the overall scale of the local market will affect relative costs, and competition is more likely to be sustainable in markets which are large enough for more than one CP to operate at a reasonably efficient scale. [461] A larger local market is also more likely to be able to support an active merchant market. We discuss the scale of the local markets outside London further at paragraphs 5.424 to 5.430. We find that the size of the markets in the cities outside London is an order of magnitude smaller.

5.165 Our cumulative analysis of network reach and service shares shows that, across the contiguous HNR sectors in the London area, competitive conditions are sufficiently homogeneous and can be distinguished from neighbouring areas where the competitive conditions are appreciably distinct. Further, in our judgement this area is of sufficient size to define as a separate local market.

5.166 In practice, the only other groups of contiguous HNR postcode sectors are those located in other major urban centres. We selected Birmingham, Manchester and Leeds as primary candidates for sub-national markets outside of London (these cities are discussed further at paragraphs 5.424 to 5.430).

'Logical contiguity'

5.167 BT and DotEcon suggested that we apply logical contiguity (i.e. aggregating sectors with HNR across different metropolitan areas). The implicit assumption in BT's proposal is that competitive conditions in HNR sectors in different metropolitan areas are likely to be similar. On the basis of our analysis, we do not consider that this is the case. We have looked at the competitive conditions in the contiguous HNR areas in each of Birmingham, Manchester and Leeds. Because these are HNR areas, by definition, we expect most large business sites to be within reach of at least two OCPs. However, the London area has a substantially greater depth of rival

[461] See, in this respect, Section 4.1 of the ERG Common Position where it states, "Generally, differences in competition intensity are mainly a consequence of differences in barriers to entry with new entrants going first in the areas with the lowest barriers. In communications markets, barriers to entry are usually related to economies of scale and sunk costs".

infrastructure. For example, 58% of large business sites in the WECLA+ area have at least 5 OCPs within reach. The corresponding figures for the contiguous HNR areas in Birmingham, Manchester and Leeds are 28%, 44% and 25% respectively.

5.168 Our analysis also shows actual competitive conditions vary. Figure 5.15 below shows BT's service share for the contiguous HNR sectors in each city for the wholesale product markets where we have defined a separate WECLA+ market.

Figure 5.15: BT Service shares for major cities

Product market	WECLA+	HNR Birmingham	HNR Manchester	HNR Leeds
MB TISBO	13%	31%	71%	46%
HB TISBO	8%	60%	62%	82%
AISBO	51%	58%	79%	65%
MISBO	24%	39%	96%	39%

Source: Operators/Ofcom

5.169 The services shares for MB TISBO, HB TISBO and MISBO for the cities outside London need to be interpreted cautiously because the number of ends is small. However, in all cases BT's service share in the WECLA+ is lower than the other cities. Further, between the cities competitive conditions vary widely.

5.170 The geographic area we have defined as the WECLA+ is characterised by a high density of rival network meaning greater potential and actual competition relative to the other cities we have looked at. In practice, this means that competitive conditions in HNR sectors in and around London (which are part of a large swathe of rival infrastructure to BT) call for a separate analysis from Manchester, Birmingham or Leeds (where rival infrastructure is present only in a much smaller area).

5.171 While we do not agree with BT's suggestion for 'logical contiguity' (for the reasons set out above – i.e. competitive conditions are determined locally and determined by local scale) – we have looked at BT's service share were we to consider the contiguous HNR sectors in Leeds, Manchester and Birmingham in aggregate and compared them to the rest of the UK (excluding the WECLA+ and Hull), as set out in Figure 5.16 below:

Figure 5.16: BT Service shares for major cities combined

Product market	HNR Birmingham, Manchester and Leeds combined	Rest of UK excluding WECLA+ and Hull
MB TISBO	47%	77%
HB TISBO	72%	51%
AISBO	69%	74%
MISBO	69%	57%

Source: Operators/Ofcom

5.172 The Figure shows for HB TISBO and MISBO BT's service share in the three cities combined is higher than the rest of the UK (excluding the WECLA+ and Hull). For AISBO BT's service shares are similar in the three cities combined and the rest of the UK (excluding the WECLA+ and Hull). This does not support defining a separate 'rest of the UK metropolitan areas' market. While BT's service share for MB TISBO is lower for the three cities than the rest of the UK (excluding the WECLA+ and Hull),

the number of circuits in the combined market is small (representing 2% of total MB TISBO ends in the UK, which compares to 33% in the WECLA+).

Economies of scope from serving customers in different urban areas

5.173 DotEcon argued that CPs could gain economies of scope from serving customers in different urban areas without the requirement for geographical contiguity. However, this argument would relate to competition at the retail level and is not directly relevant to the importance of contiguity to competition in the wholesale markets (which is the level at which we apply the contiguity requirement).

Relaxing strict contiguity in the case of the Slough sectors

5.174 We recognised in the November BCMR Consultation that the case of the Slough sectors is unusual because there is only a single postcode sector separating the Slough sectors from the WECLA, and linkages between the Slough sectors and the WECLA appear to be strong. In this situation, our view was that, if other evidence suggests that competitive conditions across the Slough sectors and the WECLA are broadly similar, applying strict contiguity as the only reason for not combining the two would result in placing too much weight on this requirement.[462]

5.175 While not strictly contiguous, the Slough sectors are separated from the WECLA by a single postcode sector which gave us greater confidence that they are subject to sufficiently similar competitive conditions. There were a number of other considerations we took into account when proposing that the lack of strict contiguity should not be a barrier to including the Slough sectors in the WECLA+ market:[463]

- the number of competing networks with their own network infrastructure running between the Slough sectors and the WECLA;
- the economic linkages across the Slough sectors and the WECLA;
- the specific geographic features of the single postcode sector with low network reach between the Slough sectors and the WECLA;
- the lack of any intrinsic economic significance that the postcode sector boundary per se has for the provision of business connectivity; and
- the HNR observed in the Slough sectors.

5.176 BT thought that some of these criteria applied to other metropolitan areas – we discuss each in turn.

OCP networks connect metropolitan areas

5.177 We note that OCP trunk network infrastructure links other major centres to London. The economic characteristics of trunk circuit provision differ compared to those of TISBO or AISBO circuits.[464] Competitive conditions in terminating segment markets are determined by local factors. In addition, the economies of scale and scope associated with the access network infrastructure required to supply terminating

[462] See paragraph 2.21 of the November BCMR Consultation.

[463] See also the discussion at Annex 9 to this Statement, in particular paragraphs A9.4 to A9.12.

[464] As explained further in Section 6.

segments are determined locally. The presence, or otherwise, of trunk networks connecting urban areas has almost no bearing on these local competitive conditions. There could be effective competition in the supply of trunk services to a particular urban area without there being any competitive supply of terminating segments in that urban area.[465] Equally, the supply of terminating segments might be competitive in an urban area without competition in the supply of trunk services to that area.[466]

5.178 In any event, the evidence suggests that competitive conditions differ between metropolitan areas (e.g. BT's service shares vary widely).

Economic linkages

5.179 BT questioned whether it was necessary to require economic linkages between areas included in the same geographic market. It also thought that retail Ethernet circuits were not a reliable indicator of economic linkages between areas because such circuits tend to be short. It suggested alternative measures of economic linkages (e.g. Manchester and Leeds being centres for creative and financial/legal businesses respectively).

5.180 We considered that economic linkages were relevant in the case of the Slough sectors given the close proximity to the WECLA and the other factors mentioned in paragraph 5.175 above. The proportion of retail Ethernet circuits connecting the Slough sectors with the WECLA was one of a number of pieces of evidence which we considered to be relevant when assessing whether the Slough sectors should be included in the London area geographic market (e.g. we also separately assessed competitive conditions in the Slough sectors).

5.181 We recognise that there are many ways in which economic linkages could be measured. However, we do not think that the alternative measures of linkages proposed by BT would be superior, in this context, to measures which focus directly on business connectivity. We agree that local specialisation in particular industries may have some relevance to explaining local variations in demand for leased lines so, for example, areas where firms in the financial services sector are located may have higher demand for some leased line products. This does not by itself capture variations in competitiveness or the extent of linkages.

5.182 In general, the demand for connectivity is far greater in London relative to other cities. For example, in 2012 there was more office space in Central London than the other large cities combined (e.g. 12,566 square meters in total across Birmingham, Nottingham, Manchester, Reading, Newcastle, Sheffield, Leeds, Liverpool, Brighton, Bristol and Bradford compared to 12,831 square meters in the City of London, Westminster and Tower Hamlets alone; and 20,963 square meters in Inner London).[467] Further London is an international hub for telecoms traffic, so there is additional demand for connectivity which is independent of the rest of the UK.

5.183 BT suggested that longer links required between other cities and the WECLA are more likely to be made by VPNs, so measuring the end to end retail Ethernet circuits was not a reliable measure of economic linkages. This is consistent with a view that

[465] See, in this respect, our subsequent definition of the market for national trunk segments in which we also conclude, as a result of our SMP assessment, that no operator has SMP and that the market is effectively competitive.

[466] See, in this respect, our subsequent definition of the market for regional trunk segments in which we also conclude, as a result of our SMP assessment, that BT has SMP.

[467] Source http://www.voa.gov.uk/corporate/statisticalReleases/120517_CRLFloorspace.html, Table 3.3.

end to end retail leased lines and VPNs are substitutes (at least for longer distance links). Our view (as discussed in Section 4) is that VPNs generally meet a different set of needs to an end to end leased line, rather than being close substitutes, and for this reason we do not include the two in the same product market. This view is more consistent with the number of leased lines reflecting the general level of demand for connectivity of all kinds.

5.184 Overall, we do not find BT's alternative suggestions for measures of economic linkages persuasive evidence that the competitive conditions in these urban areas are similar (to each other or the WECLA+).

Postcode sector boundary does not have economic significance

5.185 We recognise that postcode sector boundaries do not have any intrinsic economic significance for the provision of business connectivity services. In the light of this, the fact that there is only one sector, and a short distance, between the Slough sectors and the WECLA leads us to the view that applying strict contiguity as the only reason for not combining the two would result in placing too much weight on this requirement, in these circumstances. Other than in this special case, we believe the contiguity requirement is appropriate.

HNR areas in other cities and scale of leased line provision

5.186 BT noted that there are HNR sectors in other areas of the country and thought we should consider defining these areas as a single geographic markets or a number of separate metropolitan markets. BT also noted that the number of leased lines provided in these areas was often larger than in those in the Slough sectors. We consider below whether these areas are sufficiently material to form separate geographic markets (see paragraphs 5.424 to 5.430). For the reasons set out above, we do not consider it is appropriate to aggregate HNR sectors from disparate areas into a single geographic market. As noted above, the competitive conditions in the distinct city areas are different.

5.187 Given that Slough is only part of the WECLA+ area, its materiality on its own is of limited significance. However, the WECLA+ as a whole is an order of magnitude larger than those other areas.

OCP pricing in HNR areas

5.188 BT suggested that we look at OCP pricing in areas of high network reach because this would show that OCPs treat all such areas as 'on-net'. Our discussions with OCPs have suggested that leased lines are priced on an individual basis depending on a number of factors e.g. customer location and proximity of network. Thus it may be the case that the on-net and off-net prices differ. However, on-net prices are not uniform - even in an area where an OCP has network, the price will depend on how close the network is to the customer site and any additional connection costs, as well as the extent of local competition. Given that on-net prices and competitive conditions vary according to locality (for the reasons set out above), it is not possible to conclude that competitive conditions are homogenous in on-net areas.

5.189 Further, an exercise of the type proposed by BT would be a significant undertaking. There would be no guarantee that it would yield informative results, and be less likely that even informative results would prove determinative in the matter of market definition, given the potential significance of other factors. Given the small size of the

other markets concerned, our view is that it would be disproportionate to conduct such an exercise.

MNO and LLU sites

Consultation responses

5.190 BT thought that MNO and LLU sites were competitively served outside the WECLA:

- With respect to MNO sites BT referred to Figure 33 in the June BCMR Consultation (included below) which showed the postcode sectors with high network reach in the London area. It argued that this showed there were significant HNR areas outside the WECLA. It thought this meant the network reach analysis produced using the Experian dataset of business sites was not representative of MNO sites. It thought that Virgin was a strong competitor in mobile backhaul and again noted its view that we have understated Virgin's network.

- BT believed that we have not analysed LLU sites adequately, in particular we did not present the extent of competition for LLU sites outside the WECLA.

5.191 EE/MBNL felt that the network reach methodology was not appropriate for leased lines used to provide national backhaul services from mobile base station sites. It noted that while there could be many OCPs within reach of a mobile base station site, for many relevant mobile sites only BT's network would have the necessary dedicated fibre or copper capacity to provide the necessary national backhaul service to the core network. It noted that a small number of other operators could provide this service in certain areas, but only BT had ubiquity across the country. Geo also commented that it may not make sense for MNOs to have multiple suppliers of bandwidth because, to some extent, they require consistency of supply.

5.192 EE/MBNL predicted that the network reach analysis would make less sense in the future with the move towards a greater number of small cell sites. It thought that the greater number of small mobile cell sites would incorrectly lead to a further expansion of the London area geographic market to most urban areas in the UK. [468]

5.193 Geo thought that the 200m build assumption was inappropriate for mobile cell sites which serve a relatively small number of users but require high bandwidth for providing data services.

Ofcom's considerations of consultation responses

MNO sites

5.194 We note BT's comment that the Experian business sites might not be representative for MNOs sites. This is why we undertook a separate network reach assessment for MNO sites where we identified HNR sectors for the population of sites where MNOs purchase leased lines.[469]

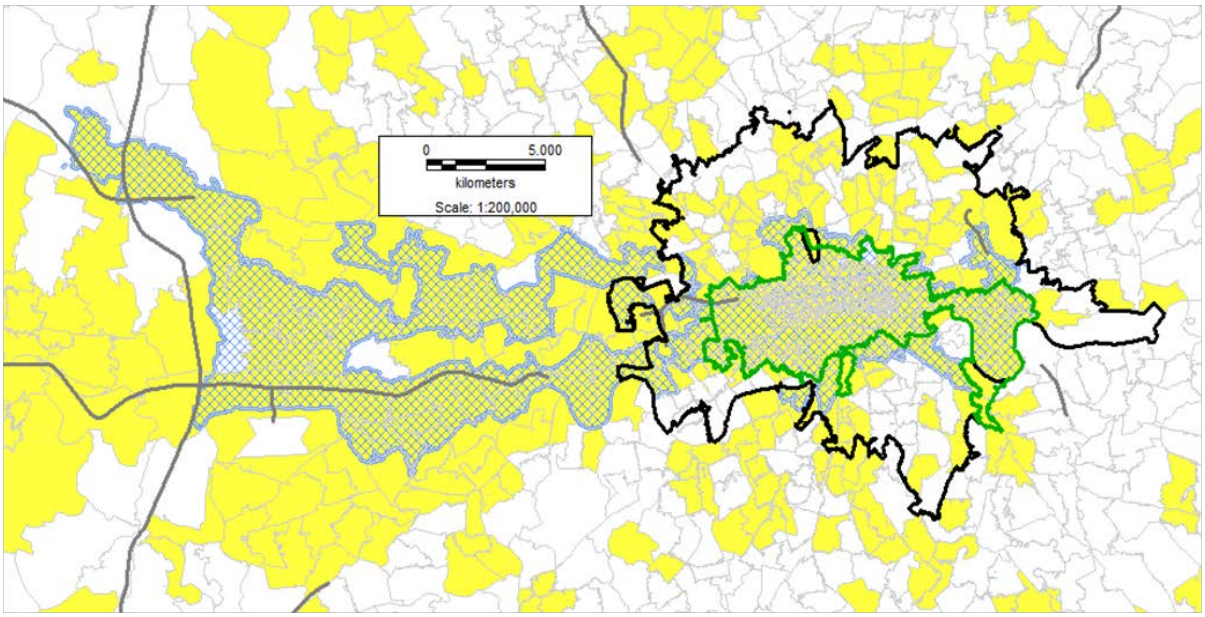
[468] EE/MBNL also commented on extending the CELA to form the WECLA – these comments are discussed at paragraphs 5.377 to 5.400 below.

[469] We did not include sites where MNOs exclusively self supply the terminating segments serving the mobile network point. These sites were excluded because, as discussed in the assessment of the wholesale product market definition in Section 4, we considered that, where MNOs supply fixed links themselves using microwave, MNOs are unlikely to consider leased lines from CPs as an effective substitute at the margin.

5.195 The network reach map for MNO sites presented in the June BCMR Consultation was incorrect (sectors were highlighted as having high network reach where, on average, there was one OCP within reach of the mobile sites in the sector instead of two). The corrected figure is presented below (along with the incorrect version). This shows that there are fewer postcode sectors with high network reach than previously thought. However, it remains the case that for the majority of sectors in the WECLA+, MNOs have, on average, two or more OCPs within reach.

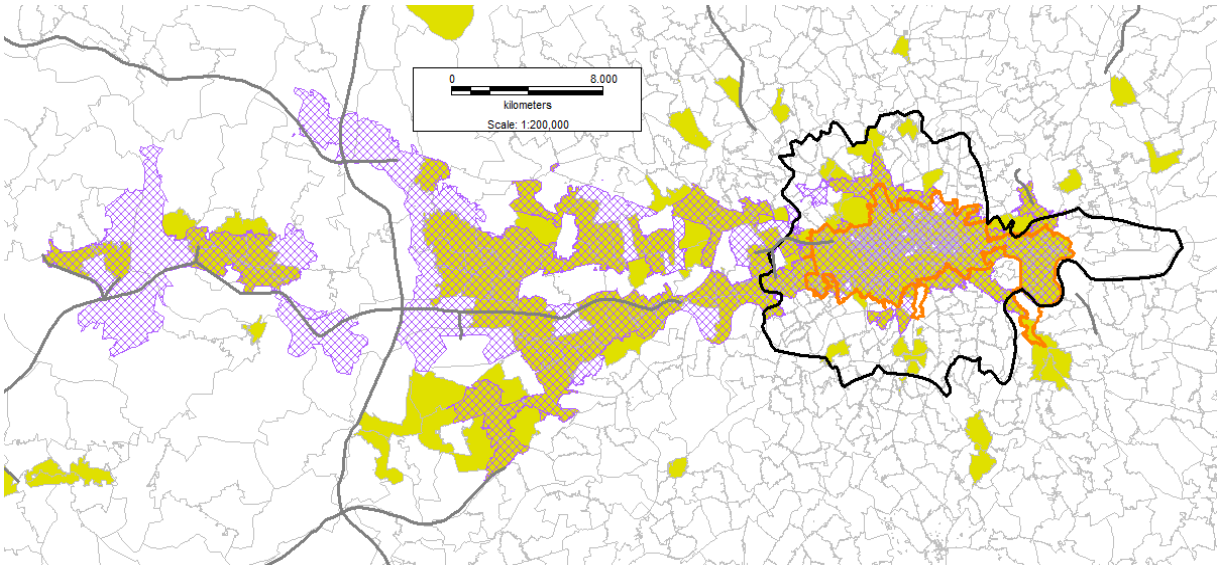
Figure 5.17: Distribution of areas with high network reach to MNO sites – London

June - incorrect



Key: high network reach areas (for MNOs sites) are in yellow, motorways in grey, the CELA outline in green and the WECLA (June BCMR Consultation) is blue hatched.

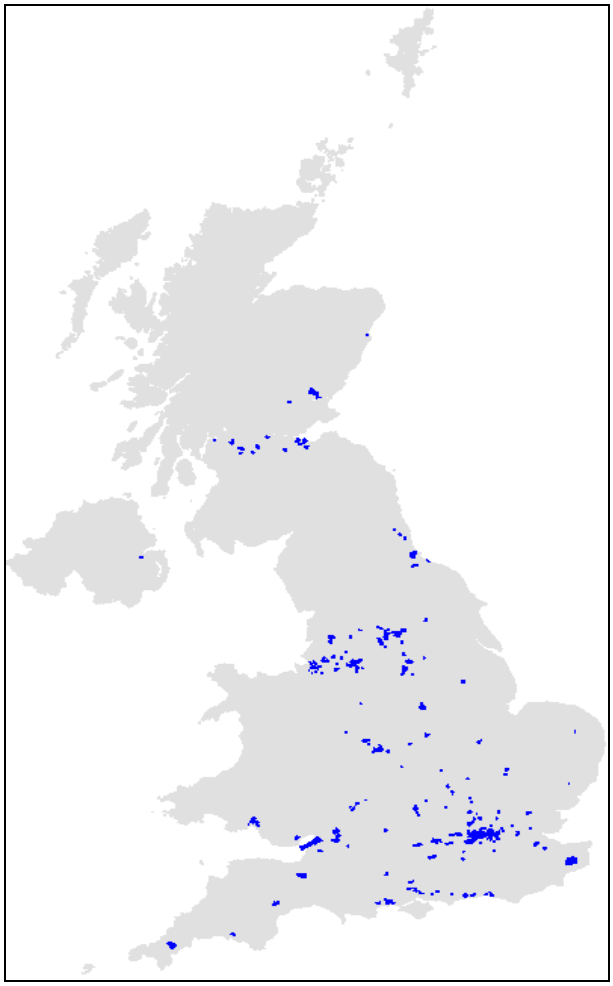
Statement – corrected



Key: HNR sectors (for MNOs sites) are in yellow, motorways in grey, the CELA outline in orange and the WECLA+ is purple hatched.
Source: Operators/Ofcom

5.196 Of the 421 postcode sectors in the WECLA+, the vast majority (353) are HNR with respect to mobile sites. Of the 9622 sectors across the rest of the UK only a small minority (547 equating to 6%) are HNR with respect to mobile sites. As shown in Figure 5.18 below, these sectors are distributed across the country and we do not consider there are significant areas of HNR which we could define as separate markets outside the WECLA+.

Figure 5.18: HNR sectors for MNO sites - UK



Key: HNR sectors are in blue.
Source: Operators/Ofcom

5.197 The Figure below shows the cumulative distribution of OCPs within 200m of mobile sites across the WECLA, the WECLA+ and UK-wide. It shows that 92% of mobile sites in the WECLA+ have 2 or more OCPs within reach (and the majority have four or more), compared to 20% for the UK as a whole. This indicates that the level of alternative operator coverage of mobile sites is significantly higher in the WECLA+ compared to the UK as a whole.

Figure 5.19: Cumulative distribution of OCPs within 200m reach of mobile sites

# of OCPs within reach	UK-wide	WECLA	WECLA+
0+	100%	100%	100%
1+	45%	98%	98%
2+	20%	93%	92%
3+	10%	85%	84%
4+	7%	74%	72%
5+	5%	60%	58%
6+	3%	44%	43%
7+	2%	25%	24%
8+	1%	9%	9%
9+	0%	4%	3%
10+	0%	2%	2%

Source: Operators/Ofcom

5.198 We also note that the proportion of mobile sites (92%) and Experian large business sites (95%) with 2 or more OCPs within reach is similar. This suggests that the geographic pattern of availability of alternative infrastructure at MNO sites and large business sites is broadly similar in the WECLA+.

5.199 BT also noted that Virgin is a competitor in the supply of mobile backhaul and we have understated Virgin's network. As discussed above, we have run scenarios to assess the possible impact of understating Virgin's network and we do not consider this will make a significant difference to the sectors which are HNR such that we would revise our geographic markets.

5.200 EE/MBNL felt that the network reach methodology was not appropriate for leased lines used to provide national backhaul services from mobile base station sites because only BT's network would have the necessary dedicated fibre or copper capacity to provide the necessary national backhaul service to the core network. Geo commented that MNOs may require consistency of supply.

5.201 We recognise that MNOs may have particular requirements, however, we have set out in Section 4 why we do not think that mobile backhaul should be defined as a separate product market. With respect to geographic market definition, we note that:

- most mobile sites are currently served by LB TISBO where we have defined a national market (excluding Hull) in any case; and
- the network reach for MNO sites is clearly different in the WECLA+ compared to the UK as a whole.

5.202 Geo suggested that the 200m buffer assumption was inappropriate for mobile cell sites. Geo did not offer an explanation for its disagreement and it is not clear whether it is arguing for a longer or shorter build distance for mobile sites. The economic build distance is primarily a function of the revenues that can be obtained from serving a customer and the costs incurred from doing so. It is not clear why these factors should differ for leased lines used for MNO backhaul.

LLU sites

5.203 BT thought that we had not adequately analysed competition for LLU sites outside the WECLA. We have conducted an analysis of OCP coverage for LLU sites both in the WECLA/WECLA+ and across the UK as a whole. The results are presented in the Figure below.

Figure 5.20: Cumulative distribution of OCPs within 200m reach of LLU sites

# of OCPs within reach	UK wide	WECLA	WECLA+
0+	100%	100%	100%
1+	23%	98%	98%
2+	8%	96%	96%
3+	3%	83%	84%
4+	1%	65%	65%
5+	1%	48%	47%
6+	0%	38%	37%
7+	0%	27%	27%
8+	0%	10%	12%
9+	0%	4%	4%
10+	0%	4%	4%

Source: Operators/Ofcom

5.204 The results highlight the difference in OCP coverage for the WECLA+ and the rest of the UK. In the WECLA+ 96% of LLU sites have at least 2 OCPs within reach, this is similar to the result using the large business sites (95%). By contrast across the rest of the UK only 8% of LLU sites are within 200m of two or more OCPs. This suggests that competitive conditions for LLU sites are different in the WECLA+ relative to the rest of the UK. In addition, the pattern of availability of alternative infrastructure is broadly similar for LLU sites and large business sites.

Conclusion – MNO and LLU sites

5.205 Our further analysis shows that alternative infrastructure coverage of MNO and LLU sites is more extensive in the WECLA+ relative to the rest of the UK, consistent with our network reach assessment for large business sites. We present further analysis for data centres at Annex 6 where we also find substantial alternative infrastructure coverage for data centres in the WECLA+. Therefore we think it is appropriate to consider the WECLA+ as a reference area for the purpose of identifying separate geographic markets.

Overview of BT pricing policies across the markets for terminating segments

5.206 At the time of the June BCMR Consultation, BT sold some TISBO circuits with a pricing schedule which provided a discount (for some elements) where the circuits were supplied in the Central London Zone (CLZ).

5.207 BT had introduced, to a limited extent, geographic variations in its wholesale pricing of some AISBO products. In particular, for a short period from 1 April 2011 to 30 September 2011, the connection (but not rentals) of the 1 Gbit/s EAD products had been offered at a discount in the London, Birmingham and Manchester metro

areas.[470] At that time no geographic variations of prices were implemented by BT for EAD 10Mbit/s and 100Mbit/s products. Connection discounts[471] were introduced for EAD and WES/WEES in London only for a time-limited period from 29 October 2009 to 29 April 2010.[472] At the same time, BT sold EBD products on the basis of geographic price banding, which BT claimed reflects the geographic variations in the costs of delivering EBD.[473] The transient nature of the EAD 1 Gbit/s connection offer and the cost variations driven nature of the EBD price banding led us to consider that geographic variations in the AISBO pricing observed were not clear evidence of a difference in competitive conditions.[474] Nonetheless, we noted that, on those occasions where BT has offered geographic price variations, London had always been part of such schemes.

5.208 We noted that we had limited price information on MISBO products, which were not subject to any SMP regulation. BT did not publish a list price for most of these products, which were instead priced on application according to the customer's individual requirements. MISBO products entail a degree of customisation which could add complexity to the straightforward comparison of prices across different areas. We did not observe any price information that could shed light on geographic variations in BT's prices for MISBO.

5.209 Finally, we noted some reasons why the pricing patterns displayed in these markets were not sufficiently reliable as an indicator for the purpose of establishing heterogeneity in competitive conditions:

- In several of the terminating segments markets, pricing is subject to the effect of regulatory measures in place.[475] That is, the prices observed in the markets where BT is regulated provide a limited indication as to what BT's pricing behaviour would be absent regulation; and

[470] See http://www.openreach.co.uk/orpg/home/products/pricing/notificationDetails.do?data=ThQLPOgdo8c%2FpcQlNXj7BVoAzMfOCIw%2B7d4ELMHNgDfnrGmim0RwRmiv87kY3FWmlmbMkfEWV9Hg%0AS5od5xPk5mMrG2JXeytL6pFJZpTLM42nMTEF%2BKjWmexJt5mYlgMVVCBTHUk%2FAkGGPXhiPyurwQ%3D%3D

[471] The offer related to excess construction charges.

[472] See http://www.openreach.co.uk/orpg/home/products/pricing/notificationDetails.do?data=ThQLPOgdo8c%2FpcQlNXj7BVoAzMfOCIw%2B7d4ELMHNgDd1ODVjsAkNz5cm6H%2Fmog9hlUMnOMCW73qQ%0AavWQtU4AOwhjTQtjRt%2BSE27em00a34l3BJXcbD9DuAEky1i0vsqg and http://www.openreach.co.uk/orpg/home/products/pricing/notificationDetails.do?data=ThQLPOgdo8c%2FpcQlNXj7BVoAzMfOCIw%2B7d4ELMHNgDdFb%2FaOtME1wX1b%2B2HEx8%2FHlUMnOMCW73qQ%0AavWQtU4AOwhjTQtjRt%2BSE27em00a34l3BJXcbD9DuAEky1i0vsqg

[473] BT has clarified to us that EBD is priced on the basis of three price bands, reflecting cost differences driven by different levels of network utilisation in urban, suburban and rural geo-types. Each EBD-enabled serving exchange is allocated a price band (A-C) based on the demographics of that node (volumes of business or residential premises driving broadband or voice traffic etc.). The price charged for a circuit is based on the serving exchange price band only. The principle is that a high demand node will drive higher levels of utilisation on its network, better efficiency and therefore low unit costs and as a result a lower rental price (with connection charge not varying by band). This is also reflected in BT's response (pp. 23-24) to the 2008 Leased Lines Charge Control consultation: http://stakeholders.ofcom.org.uk/binaries/consultations/llcc/responses/BT1.pdf

[474] See, in this respect, the ERG Common Position Section 4.1 which notes "differences in prices could also reflect differences in underlying costs. Therefore, where geographic differences in prices are observed, NRAs should investigate whether they only reflect differences in costs or (also) differences in competitive conditions".

[475] The markets for certain TISBO circuits (covering all circuits of bandwidths up to 155Mbit/s) are currently subject to charge control.

- We have some information on variation of costs by geography, although this information is only partial. As stated in the Explanatory note to the EC Recommendation on relevant markets[476], the existence of price variations does not necessarily imply variations in competitive conditions, absent an understanding of geographic variations in costs.[477] In our view, the information we have on costs suggests that geographic variations in pricing, which are currently largely limited to the CLZ, may at least in part reflect cost variations. However, the information on costs is incomplete, which suggests caution in its interpretation.

Consultation responses

5.210 BT broadly concurred with our conclusions that its pricing is not informative to the identification of geographic markets.

Ofcom's considerations of consultation responses

5.211 Our concerns as set out in the June BCMR Consultation with regard to the weight to attach to BT's pricing policies remain. We also note the ERG Common Position, to which we had regard in the June BCMR Consultation, where it states that "[i]f prices vary by geographic location, this does not necessarily mean that the definition of the precise geographic market boundary should automatically follow the price differentiation of the incumbent. The drawbacks of such an approach would be that the incumbent operator could deliberately influence the precise definition of the geographic market boundary and/or the price differentiation might change over time with the incumbent's policy. It therefore appears more appropriate to investigate the reasons for the price differentiation, which are likely to be found in the other criteria mentioned above (barriers to entry, number of operators, market shares) and apply those accordingly."[478] We consider that applying our network reach and service shares criteria – which in doing so takes into account the barriers to entry, number of operators and market shares criteria referred to in the ERG Common Position[479] – are sufficient to enable us to define the geographic scope of the relevant product markets on the basis of homogeneity of competitive conditions. Consequently, we do not rely on BT's pricing policies in reaching our conclusions on geographic market definition.

Overview of service shares across the markets for terminating segments

5.212 In the June BCMR Consultation, we set out the average of BT's service shares in the two reference areas we identified on the basis of our network reach assessment: the UK (excluding the WECLA and Hull) and the WECLA. Consistent with the ERG Common Position[480] we considered, where possible, how competitive conditions had evolved over time. We sought to identify differences and similarities in competitive conditions between the areas.

[476] See Section 2.4.

[477] See also the ERG Common Position, Section 4.1. It is worth noting that an unregulated profit-maximising monopolist would set different prices in different areas, where there were geographic variations in marginal costs.

[478] ERG Common Position, Section 4.1.

[479] See also Annex 3 for further discussion on how we take into account barriers to entry, number of operators and market shares in defining the geographic scope of the relevant wholesale product markets. In this respect, and as noted in Annex 3, we refer to market shares as the distribution of service shares, however we apply that criterion in the same way as applied in the ERG Common Position.

[480] ERG Common Position, Section 4.1.

5.213 Using the ERG classification,[481] we thought that BT's share of the low bandwidth TISBO market was 'high and stable or declining slowly' both inside and outside the WECLA, suggesting a national market.

5.214 Outside the WECLA, we thought BT's service shares for the medium and high bandwidth TISBO, and MISBO markets were 'high and stable or declining slowly'. Within the WECLA, we thought that these markets were more appropriately placed in the 'low and stable or declining' category. We also thought that AISBO outside the WECLA was 'high and stable or declining slowly', but within the WECLA was closer to 'low and stable or declining'. This suggested separate geographic markets for the WECLA and the rest of the UK (excluding the WECLA and Hull) for these product markets.

5.215 Finally, BT's share of the very high bandwidth TISBO market was everywhere 'low and stable or declining', supporting the definition of a national market.

5.216 For each product market we reviewed BT's service shares in the reference areas. We also set out the following reasons why we did not rely on services shares in individual postcode sectors alone:

- Firstly, the absence of clear economic significance to the postcode sector boundary in the wholesale provision of terminating segments reduced the weight which could be reasonably attached to service shares in individual postcode sectors. Instead, the postcode sector was used as a building block from which to construct geographic markets.

- Secondly, a characteristic of wholesale leased line markets which led us to place less weight on service shares in individual postcode sectors was the fact that rivals to BT may obtain a high service share if they win one particularly large contract, or if only a small number of connections are recorded for the postcode sector (in many postcode sectors there are no leased line sales recorded in many product markets).

Consultation responses

5.217 BT, Level 3 and UKCTA were concerned that our service share estimates were not reliable. Level 3 and Exponential-e thought the significant reduction in BT's AISBO service share relative to the 2007/8 Review was unlikely. UKCTA thought that generally BT's service shares had not reduced since the 2007/8 Review.

5.218 UKCTA was concerned that BT and OCPs had used a different methodology for counting circuits which resulted in an underestimate of BT's service shares.

5.219 DotEcon argued that using service shares to cross check the WECLA boundary was flawed. It thought that we compared service shares inside and outside the WECLA, and where we found a significant difference we used this as evidence to confirm the geographic market boundary. DotEcon argued that this approach was biased towards us defining the competitive area boundary too narrowly because the number of circuits outside the WECLA is much larger than those inside it so it is difficult to identify when competitive sectors are mistakenly included as part of the larger uncompetitive market.

[481] ERG Common Position, Section 4.1.

5.220 DotEcon noted that we had not looked at the gradient of the service shares at the boundary of the geographic area to confirm that the boundary was correct i.e. trying to find where the market share changes most rapidly.

5.221 DotEcon also noted (as discussed above) that where postcode sectors have few leased line customers 'bidding markets' may be relevant and market shares may not accurately reflect underlying competitive conditions. For example, if there is only one customer for a particular service in a given sector BT's service share is either 0% or 100%. It thought where there are a small number of customers a sector might be categorised as uncompetitive even if the tender process is competitive.

5.222 DotEcon and BT suggested that we calculate service shares looking at revenues as well as volumes of leased lines e.g. using bandwidth as a proxy for customer spend. DotEcon thought it would be appropriate to weight service shares towards higher spending customers as OCPs will target these customers first. It considered this issue to be of particular concern for AISBO services where customer spend could vary significantly between the lowest and highest bandwidth services within the product market.

Ofcom's considerations of consultation responses

5.223 We believe an assessment of BT's service shares is useful in identifying differences and similarities in competitive conditions between areas. However, consistent with the approach advocated in the ERG Common Position,[482] we do not place much weight on BT's service share in individual postcode sectors given that we are not defining each geographic unit as a separate geographic market. Consequently, we have assessed BT's service share across aggregated contiguous postcodes to inform our geographic market definition.

Accuracy of service shares

5.224 A number of stakeholders (in particular BT) questioned the accuracy of the service share estimates. We have made changes to our circuit count methodology and service share estimates in response to stakeholder comments and further analysis. We discuss these changes in detail at Annex 5.The revised estimates for BT's service shares are shown in Figure 5.21 below, along with the figures for 2007, and the June BCMR Consultation. We also present the service shares for the WECLA+ area – these are almost identical to those for the WECLA.

[482] ERG Common Position, Section 4.2.

Figure 5.21: Service shares for the UK, the London area and the UK excluding the London area and Hull

	2007			2011 – June BCMR			2011 - Statement			
Product market	UK	WECLA	UK excl WECLA and Hull	UK	The WECLA	UK excl WECLA and Hull	UK	WECLA	WECLA+	UK excl WECLA+[483] and Hull
LB TISBO	87%	73%	90%	85%	68%	89%	87%	61%	62%	93%
MB TISBO	37%	22%	45%	59%	17%	74%	56%	12%	13%	77%
HB TISBO	43%	18%	57%	39%	12%	49%	35%	7%	8%	51%
VHB TISBO	7%	6%	7%	5%	3%	8%	15%	3%	3%	35%
AISBO	65%	47%	69%	62%	41%	67%	69%	51%	51%	74%
MISBO	65%	62%	66%	47%	15%	59%	47%	25%	24%	57%

Source: Operators/Ofcom

5.225 The main changes to BT's service share estimates relative to the June BCMR Consultation are:

- BT's service share for LB TISBO is lower in the WECLA+, however, it remains at a high level;
- BT's service shares for MB and HB TISBO are lower across the UK (including the WECLA+), however, there remains a significant difference between the service shares in the UK (excluding the WECLA+ and Hull) and the WECLA+;
- BT's service share for VHB TISBO is higher in the UK, but remains at a low absolute level;
- BT's service shares for AISBO are higher across the UK (including the WECLA+), there remains a significant difference between the WECLA+ and the rest of the UK (excluding the WECLA+ and Hull); and
- BT's service shares for MISBO are higher in the WECLA+ but remain at a relatively low level.

5.226 We remain of the view that in four of the product markets (highlighted in yellow above) the service shares are markedly different in the WECLA+ compared to the rest of the UK, which suggests a separate WECLA+ geographic market definition is appropriate. We discuss each market in detail below.

Service shares and the boundary of the geographic market

5.227 DotEcon thought that we defined the boundary of the geographic market by looking at service shares and this resulted in a bias toward defining the competitive market too narrowly.

[483] BT's service share for the UK excluding the WECLA+ and Hull is almost the same (within one percentage point) as that for the UK excluding WECLA and Hull for all product markets.

5.228 We think that DotEcon has misunderstood our approach because we do not define the boundary of the geographic market by looking at service shares. The boundary of the geographic market is defined by the extent of contiguous sectors which have HNR. We use the service shares as part of our geographic market analysis but they are not used to determine the precise location of the boundary. The service share analysis confirmed that BT's share was lower in aggregate across the HNR sectors which make up the WECLA+ relative to the rest of the UK. As noted by DotEcon, using service shares to determine the boundary might result in a bias.

5.229 DotEcon argued that the boundary of the market should be defined on the basis of what it called the "gradient" of service shares. We do not consider this would result in a sufficiently robust market boundary since the relationship between the service share "gradient" and competitive conditions is unclear and in any case it is unlikely to be measurable with accuracy.

5.230 DotEcon was concerned that service shares might not be informative when the number of sales is small. We agree with DotEcon (and noted in the June BCMR Consultation and above) that, where there are a small number of customers in a given sector, service shares may fluctuate over time to a greater extent than the geographic market as a whole and therefore need to be interpreted cautiously. This is one reason why we look at BT's service share in aggregate across the WECLA+ rather than in individual sectors.

Service shares using revenues

5.231 We have estimated service shares on a revenue basis for AISBO, using bandwidth as a proxy for spend, as suggested by DotEcon and BT. We present the results in Section 7. Because the service shares are immaterially different to those based on volumes we have not considered this issue further here.

Geographic assessment for each product market

5.232 In this sub-section, we summarise the geographic analysis for each product market and discuss stakeholder comments.

5.233 As noted above, the network reach analysis, circuit count methodology and service share estimates have been updated since the June BCMR Consultation. In this sub-section, we present updated estimates (including the results for the WECLA+ area), alongside those presented in the June BCMR Consultation. The revisions have not changed any of the proposals set out in the June BCMR Consultation.

LB TISBO (up to and including 8Mbit/s)

Proposed geographic market definition in the June BCMR Consultation

5.234 We proposed that the geographic scope of the LB TISBO market was national (excluding the Hull area). We noted the following:

- The wholesale service share analysis showed that BT's service shares were consistent with a presumption of SMP both in the WECLA and in the rest of the

UK (excluding the WECLA and Hull) if these shares were to be regarded as market shares.[484]

- Alternative operators had focused much of their network roll-out in the London area, but the analysis of service shares indicated that this infrastructure was not being widely used to compete in the provision of low bandwidth TISBO circuits.

- While BT offered a discount on its 2Mbit/s TISBO circuits in the CLZ, which might be indicative of increased competitive pressure in the London area, this was only a single bandwidth service (although the most significant) in the low bandwidth market, with BT choosing to price the remaining bandwidth circuits on a geographically uniform basis.

Consultation responses

5.235 BT argued that we should define a separate WECLA market for LB TISBO because BT's service share in the WECLA was significantly lower relative to the rest of the country. It noted this would remove an anomaly which leaves this as the only wholesale product market, apart from the obsolete VHB TISBO market, where no separate WECLA market has been defined.

5.236 As noted above, a number of stakeholders commented generally on the circuit count methodology and the accuracy of the service share estimates.

Ofcom's consideration of consultation responses

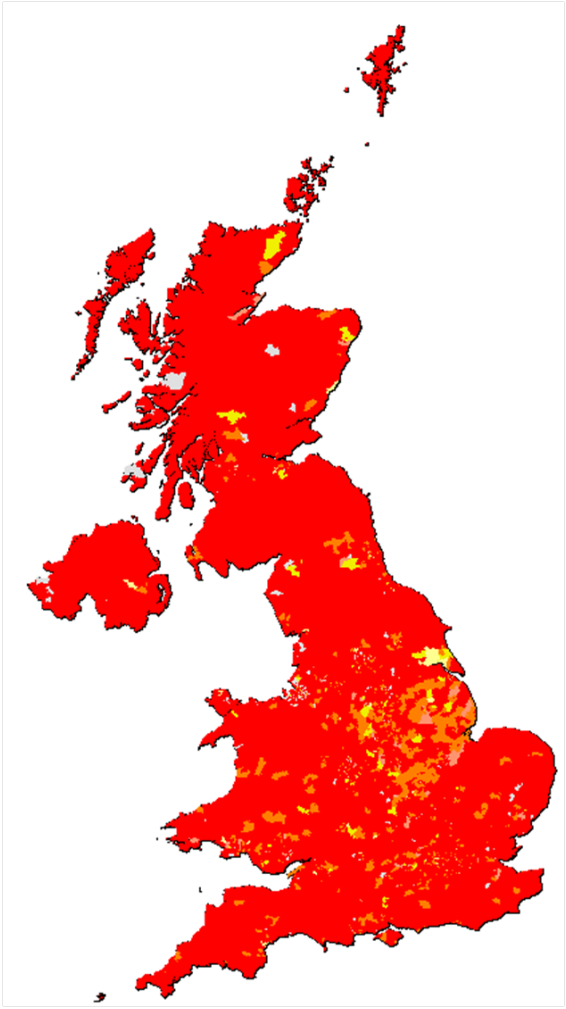
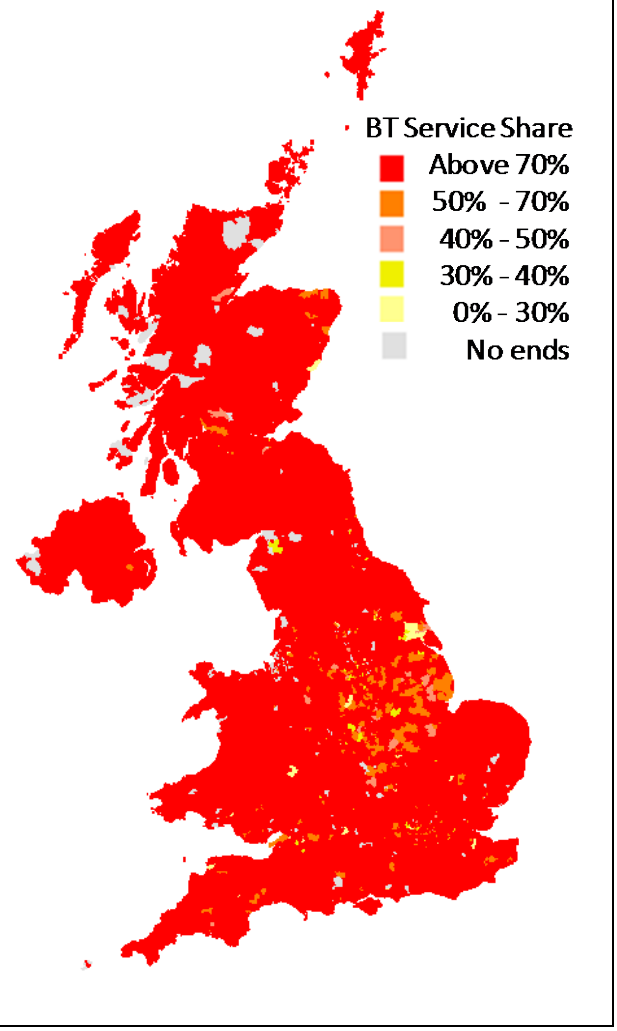
Revised wholesale service shares

5.237 In light of stakeholder comments and further analysis we have revised the service share estimates – these are presented below for the UK as a whole and with a focus on London.[485]

[484] See Table 32 in the June BCMR consultation which showed that BT's service shares for LB TISBO in 2007 were 73% in the WECLA and 90% in the UK excluding the WECLA and Hull. In 2011 the corresponding figures were 68% in the WECLA and 89% in the UK excluding the WECLA and Hull.

[485] In Annex 5 we review the data analysis process, presenting the key steps in the methodology we have used to ensure that the information that communications providers have provided to us is as accurate as it can reasonably be.

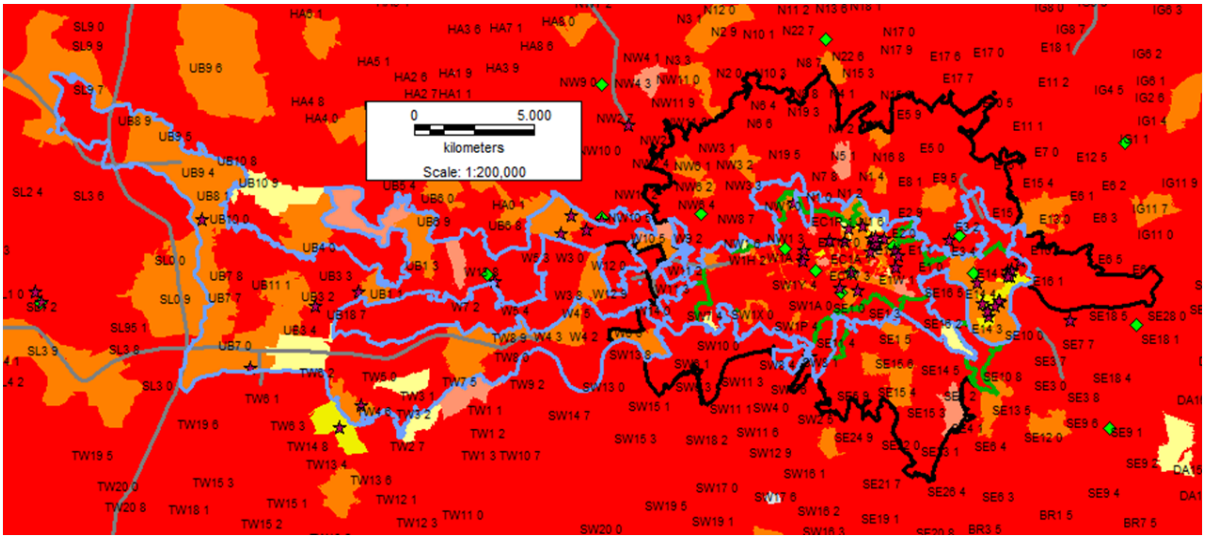
Figure 5.22: BT's service share in the LB TISBO market: UK

June	Statement
	

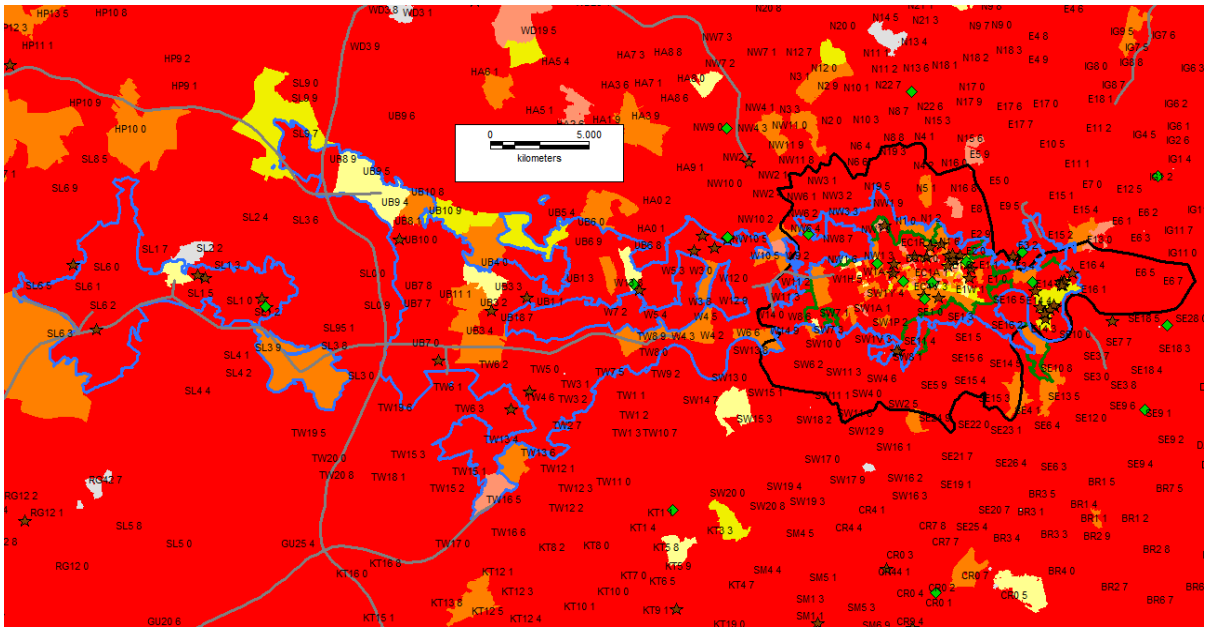
Source: Operators/Ofcom

Figure 5.23: BT's service share in the LB TISBO market: London

June



Statement



Key: BT Tier 1 TISBO network nodes are displayed as diamonds (green) and data centres as stars (brown). Service share values are coloured as per the previous legend.
Source: Operators/Ofcom

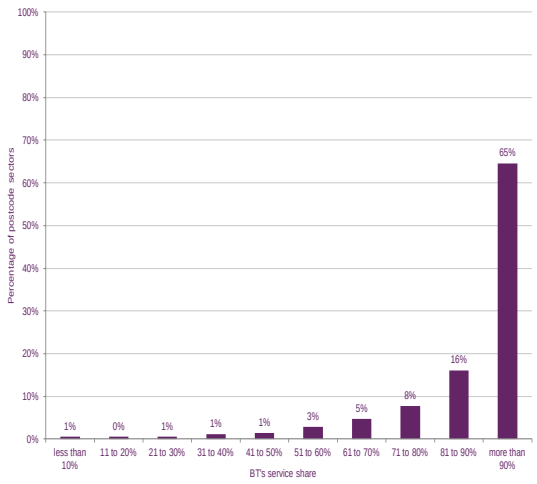
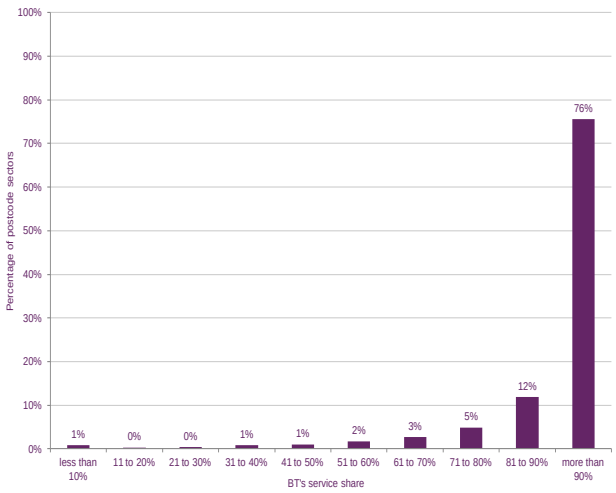
5.238 BT's average service share is 62% in the WECLA+ and 93% in the rest of the UK (excluding the WECLA+ and Hull). We note that BT's service share in the WECLA+ is somewhat lower than the rest of the UK, however, in both cases BT's service share is high and we do not consider the competitive conditions are sufficiently different for us to define a separate geographic market in the WECLA+.[486] As the

[486] See, in this respect, the ERG Common Position where it states that "[i]f areas where the conditions of competition are sufficiently homogenous are integrated into a single market, the result of the market analysis (and the imposition of remedies) is the same as if each area had been considered individually" (Section 2). See

market is in decline it is unlikely to become more competitive over the period of this review.

5.239 BT's share differs across postcode sectors, with extreme values of 100% and 0% in many cases. However, we consider that such variations are to be expected because in some cases the number of sites in an individual postcode sectors may be very low.

Figure 5.24: Distribution of BT LB TISBO service shares UK-wide

June	Statement
	

Source: Operators/Ofcom

Conclusion: LB TISBO

5.240 Having considered consultation responses, and as per our proposal in the June BCMR Consultation, we conclude that the LB TISBO market is national in scope.

MB TISBO (from 8Mbit/s up to and including 45Mbit/s)

Proposed geographic market definition in the June BCMR Consultation

5.241 In the June BCMR Consultation, we proposed two geographic markets for the UK excluding the Hull area, as follows:

- the WECLA; and
- the UK (excluding the Hull area and the WECLA).

5.242 We noted the following:

- The wholesale service share information indicated that there were significant geographic variations in competitive conditions in the MB TISBO market. While there were postcode sectors with high BT shares throughout the UK, these were

also the ERG Common Position were, in determining which areas should be aggregated, it states that, "[i]t is important for NRAs to bear in mind the purpose of market definition which… is not an end in itself but a means to undertake an analysis of competitive conditions, for the purposes of determining whether *ex ante* regulation is required or not" (Section 4.2).

mainly outside London. In London, BT's service share in most postcode sectors was below 40%.

- The network reach analysis showed that alternative operators have focused much of their network roll-out in the London area. The analysis of service shares indicated that this infrastructure was being used to compete in the provision of MB TISBO circuits.

- We acknowledged the presence of a longstanding geographic variation in BT prices in London in the form of the CLZ discount for all of its MB TISBO circuits, which may be indicative of increased competitive pressure in the London area. However, as for other product categories, we did not place significant weight on this evidence because unit costs were likely to be relatively lower in the London area because of the high concentration of customers.

- Evidence of merchant market transactions indicated that insurmountable barriers to an OCP merchant market did not exist, and the potential limitations in OCPs coverage or merchant market transactions were not a concern that would warrant a revision of our proposed definition of the WECLA geographic market.

Consultation responses

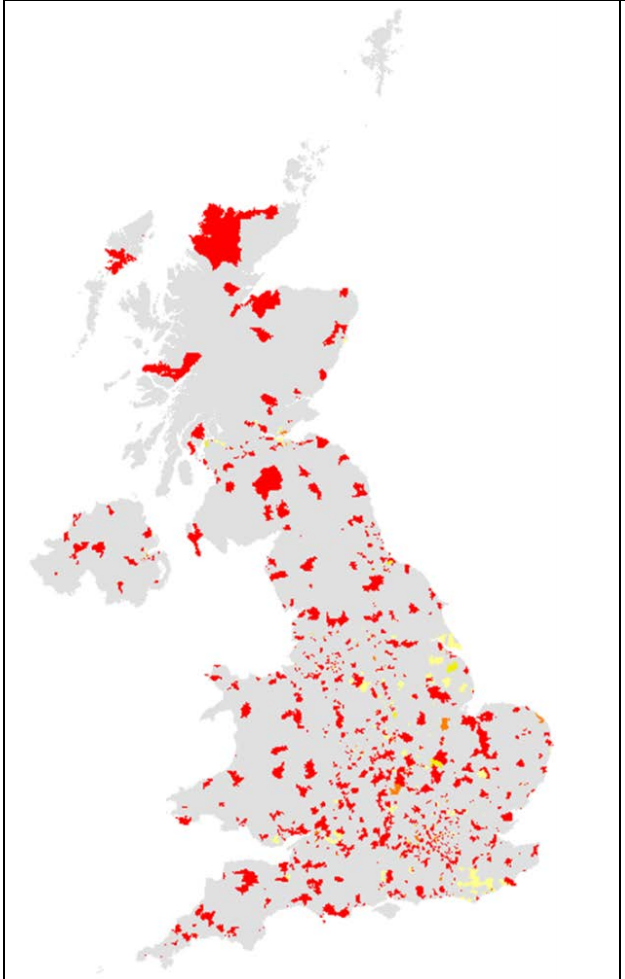
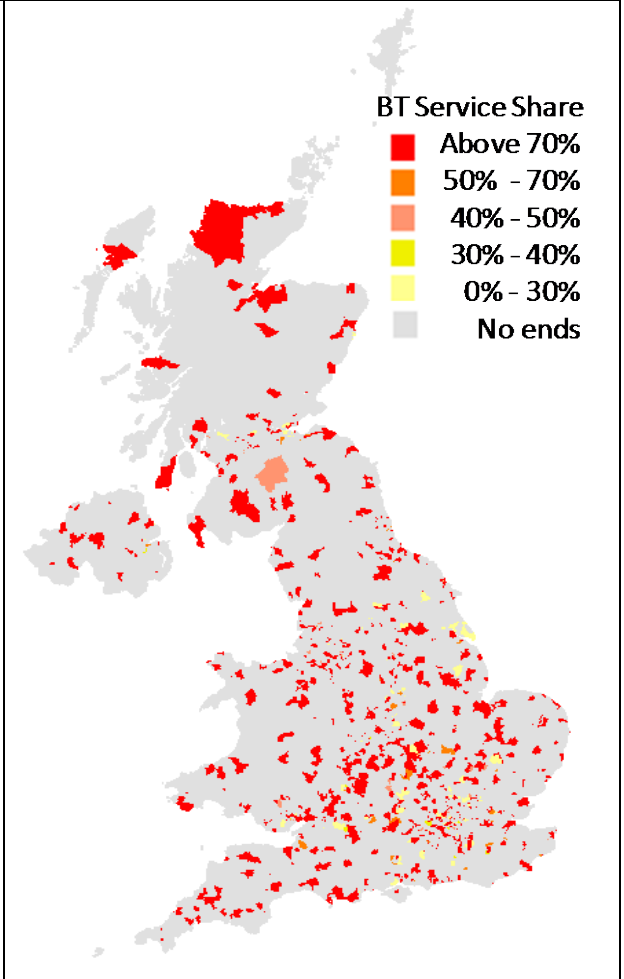
5.243 No stakeholders commented specifically on the geographic market definition for MB TISBO. However, as noted above, some stakeholders commented generally on the circuit count methodology and service share estimates.

Ofcom's considerations of consultation responses

Revised wholesale service shares

5.244 As noted above, in light of stakeholder comments and further analysis we have revised the service share estimates – these are presented below for the UK as a whole and with a focus on London.

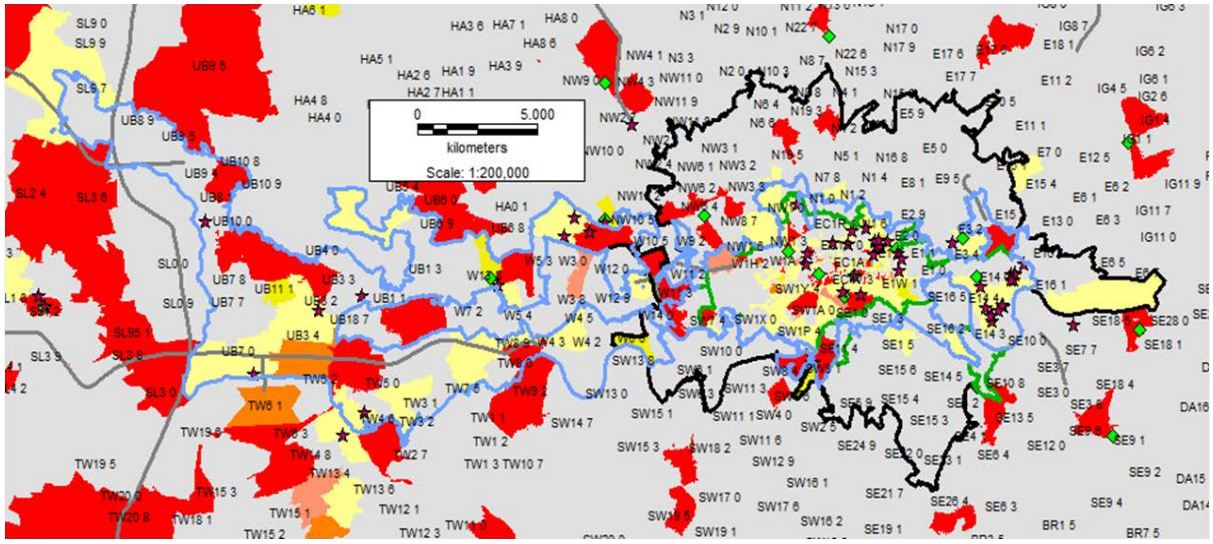
Figure 5.25: BT's service share in the MB TISBO market: UK

June	Statement
	

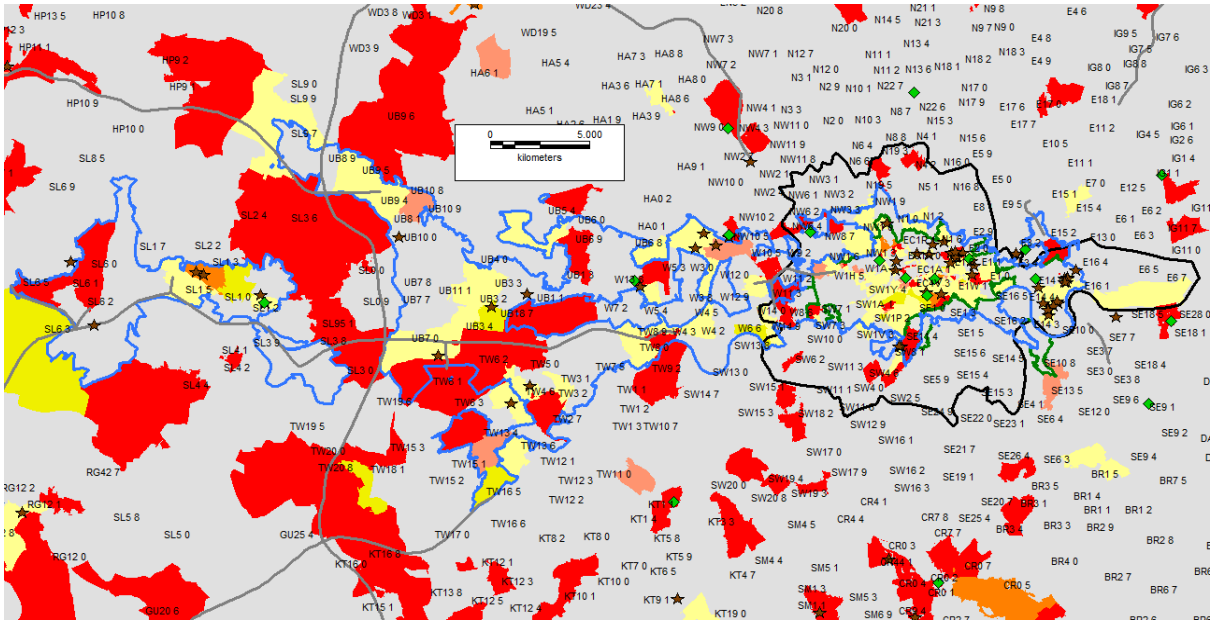
Source: Operators/Ofcom

Figure 5.26: BT's service share in the MB TISBO market: London

June



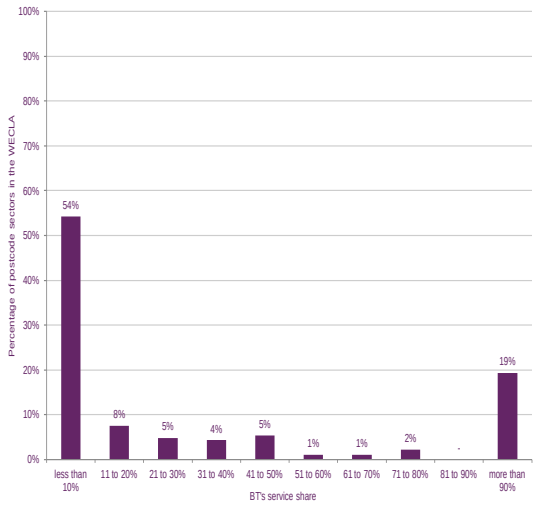
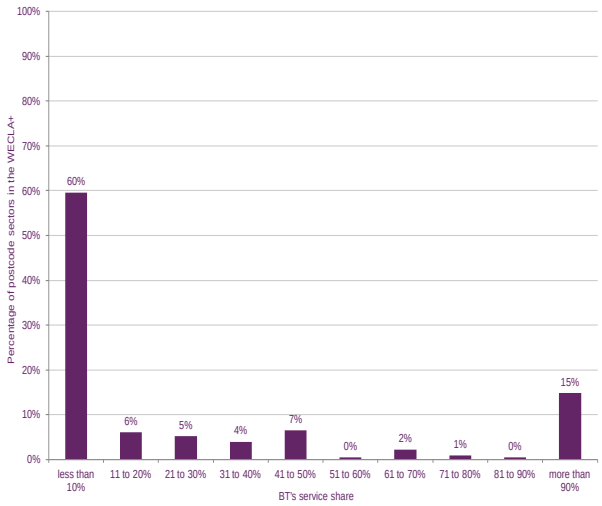
Statement



Key: BT Tier 1 TISBO network nodes are displayed as diamonds (green) and data centres as stars (brown). Service share values are coloured as per the previous legend.
Source: Operators/Ofcom

5.245 BT's average service share is 13% in the WECLA+ and 77% in the rest of the UK (excluding the WECLA+ and Hull) which suggests a difference in competitive conditions. In the WECLA+ BT's service share differs across postcode sectors, with extreme values of 100% and 0% (see Figure 5.27 below).

Figure 5.27: Distribution of BT MB TISBO service shares within the London Area

June - WECLA	Statement – WECLA+
	

Source: Operators/Ofcom

5.246 In the majority of postcode sectors, BT's service share is very low, 10% or less. In the WECLA+ 93% of MB TISBO ends are in sectors where BT's service share is less than 50%. In the few postcode sectors where BT's service share is high, this likely reflects the relative 'thinness' of the market (small number of customers) in some sectors. This suggests that, insofar as service share variation is concerned, competitive conditions within the WECLA+ are relatively homogeneous.

Defining geographic markets for MB TISBO

5.247 The network reach analysis shows that alternative operators have focused much of their network roll-out in the geographic areas where business customers are located, particularly in the London area.

5.248 Using the network reach metric we have identified an area of HNR sectors in the London area (the WECLA+). We consider the WECLA+ as the starting point for defining the extent of the local London area market. We have supplemented this by looking at BT's service shares across the reference area.

5.249 As noted above, BT's service share is lower in the WECLA+ relative to the rest of the UK (excluding the WECLA+ and Hull), which is consistent with OCPs using their infrastructure to compete in the provision of MB TISBO circuits to a greater extent in the WECLA+.

5.250 The network reach and service share evidence suggests the competitive conditions in the WECLA+ are different relative to the rest of the UK, and a separate WECLA+ geographic market is appropriate.

The viability of competition in the WECLA+ geographic market for MB TISBO

5.251 In the June BCMR Consultation, we conducted an analysis of the following issues to determine whether they warranted us revising the market boundaries:

- limits to individual operators' coverage of the proposed local geographic markets; and

- limits to merchant market transactions[487] between OCPs (e.g. driven by barriers to interconnection).

5.252 As noted in paragraph 5.83 above we consider that the pattern of alternative infrastructure present indicates that operators' coverage is not a factor of concern in the WECLA+.

5.253 The market for MB TISBO in the CELA was deregulated as a result of the last BCMR. Merchant market transactions between OCPs may be important in assessing competitive constraints in a market with no regulation and where operators do not have a network presence in all parts of it. In order for the geographic reach of competitive constraints to extend beyond an individual operator's network, it would have to be able to access the infrastructure of other operators which are present in other areas.

5.254 A number of factors are relevant to the existence of merchant market transactions between OCPs:

- the extent of technical barriers to interconnection;

- the extent of commercial barriers to interconnection e.g. what incentives are there to interconnect with each other rather than only with BT; and

- the extent to which networks built using wholesale inputs from a number of different operators can provide the same quality of service as one based on wholesale inputs provided by a smaller number of operators.[488]

5.255 We have updated the information presented in the June BCMR Consultation on merchant market transactions in light of our revised circuit count methodology.

Table 5.28: OCPs' merchant market transactions in the MB TISBO market, 2011

	June BCMR		Statement		
	UK	**WECLA**	**UK**	**WECLA**	**WECLA+**
Total no. of circuit ends[489]	10,295	2,772	5,101	1,653	1,698
No of ends of circuits sold as an OCP merchant market transaction	2,849	1,299	982	544	551
Merchant market as a % of total	28%	47%	19%	33%	32%

Source: Operators/Ofcom

5.256 Around a third of ends in the WECLA+ are sold in the OCP merchant market. This suggests that there are not insurmountable technical or commercial barriers to interconnection in the WECLA+.

[487] By merchant market transactions we mean sales by one CP of (in this case) MB TISBO capacity on its network to another CP.

[488] For instance, it is usual practice for service providers to limit the number of network operators that input into the provision of a retail business connectivity service.

[489] BT and OCP.

5.257 However, we also note that alternative operators with significant coverage of a particular geographic area may have less of an incentive to transact with their competitors than an operator with a lower coverage. Where it has capacity, an operator is likely to want to use its own network end-to-end since, once capacity is installed, the additional costs of using it are very low, and so it will be less likely to purchase such capacity in the merchant market.

5.258 In addition, we note that interconnection of multiple alternative operators may create transaction costs that make such interconnection less economically justifiable, limiting the incentives for such arrangements to take place on a purely commercial basis. However, we note that merchant market transactions between OCPs do currently take place indicating that commercial barriers are not insurmountable.

5.259 We do not have any direct evidence as to whether a service provided using the networks of multiple operators causes a degradation of service. However, operators tell us that service degradation does occur, particularly when networks of more than two or three operators are required to provide the service.

5.260 Overall, we consider that insurmountable barriers to an OCP merchant market do not exist (as evidenced by actual merchant market transactions), and the potential limitations in OCPs' coverage or merchant market transactions do not warrant a revision of our proposed definition of the WECLA+ geographic market.

Conclusion: MB TISBO

5.261 Having considered consultation responses, and as per our proposal in the June BCMR Consultation, we conclude that there are two geographic markets for MB TISBO:

- the WECLA+; and
- the rest of the UK (excluding the WECLA+ and the Hull area).

HB TISBO (from 45Mbit/s up to and including 155Mbit/s)

Proposed geographic market definition in the June BCMR Consultation

5.262 In the June BCMR Consultation, we proposed two geographic markets for the UK excluding the Hull area, as follows:

- the WECLA; and
- the UK (excluding the Hull area and the WECLA).

5.263 We noted the following:

- The wholesale service share information indicated that there were significant geographic variations in competitive conditions in the HB TISBO market. While there were postcode sectors with high BT shares throughout the UK, these were mainly outside London. In London, BT's service share in most postcode sectors was below 40%.
- The network reach analysis showed that alternative operators have focused much of their network roll-out in the London area. The analysis of service shares

indicated that this infrastructure was being used to compete in the provision of HB TISBO circuits.

- It was our understanding that BT offered a CLZ price discount for all of its HB TISBO circuits, which may be indicative of increased competitive pressure in the London area. However, as for other product categories, we did not place significant weight on this evidence because unit costs were likely to be relatively low in the London area because of the high concentration of customers.

- Evidence of merchant market transactions indicated that insurmountable barriers to an OCP merchant market did not exist, and the potential limitations in OCPs coverage or merchant market transactions were not a concern that would warrant a revision of our proposed definition of the WECLA geographic market.

Consultation responses

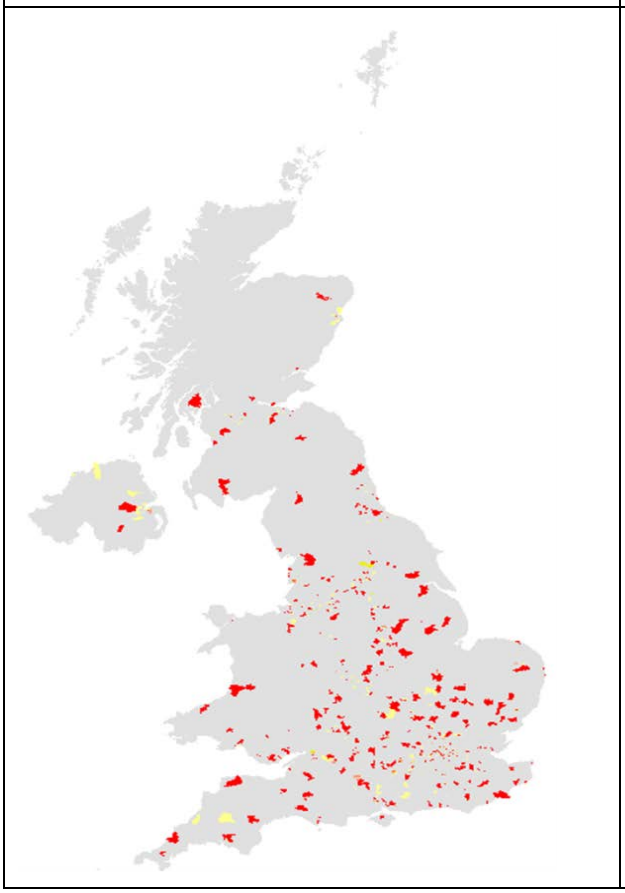
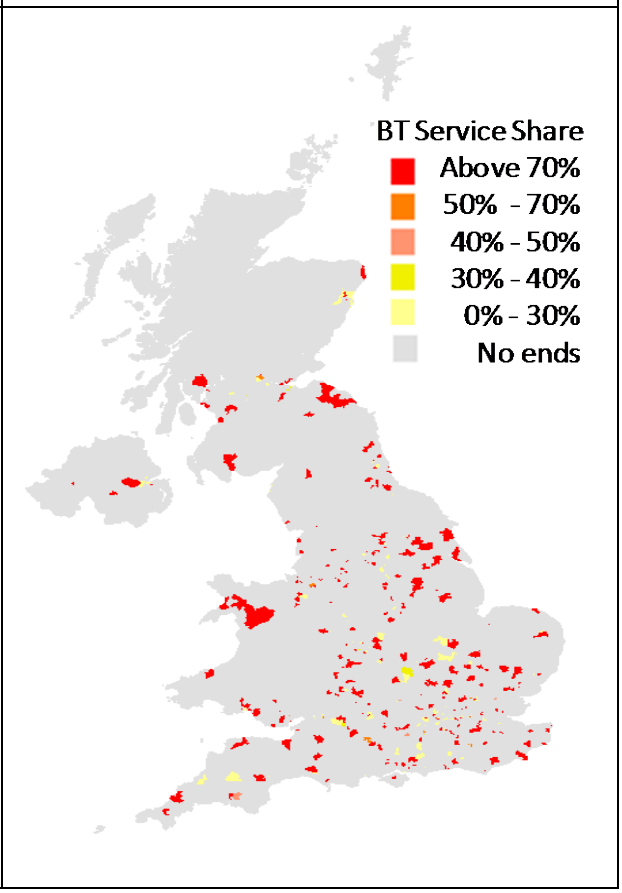
5.264 No stakeholder commented specifically on the geographic market definition for HB TISBO. However, as noted above, some stakeholders commented generally on the circuit count methodology and service share estimates.

Ofcom's considerations of consultation responses

Revised wholesale service shares

5.265 As noted above, in light of stakeholder comments and further analysis we have revised the service share estimates – these are presented below for the UK as a whole and with a focus on London.

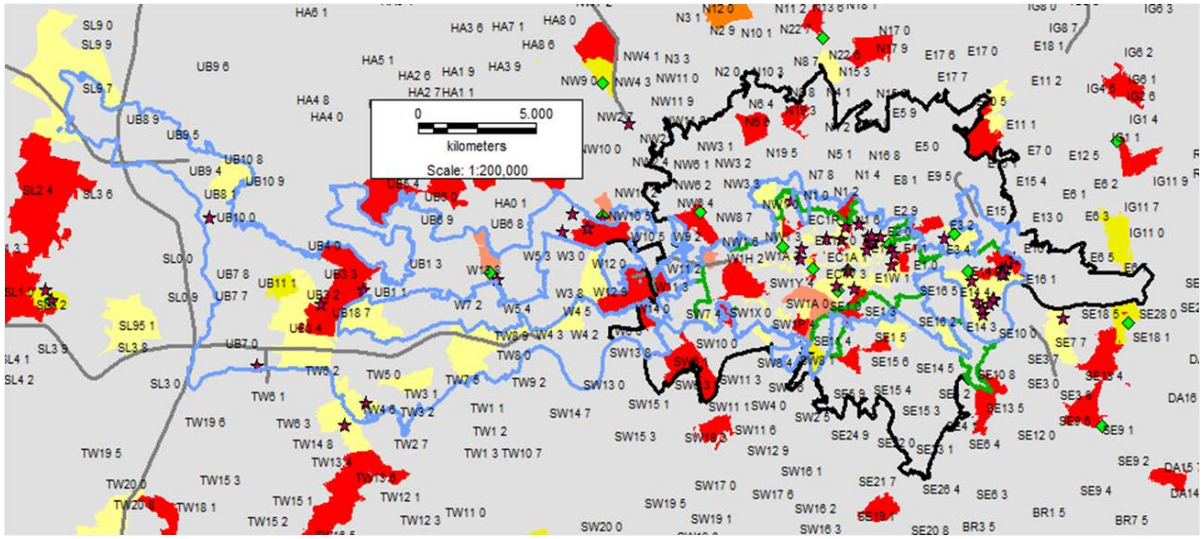
Figure 29: BT's service share in the HB TISBO market: UK

June	Statement
	

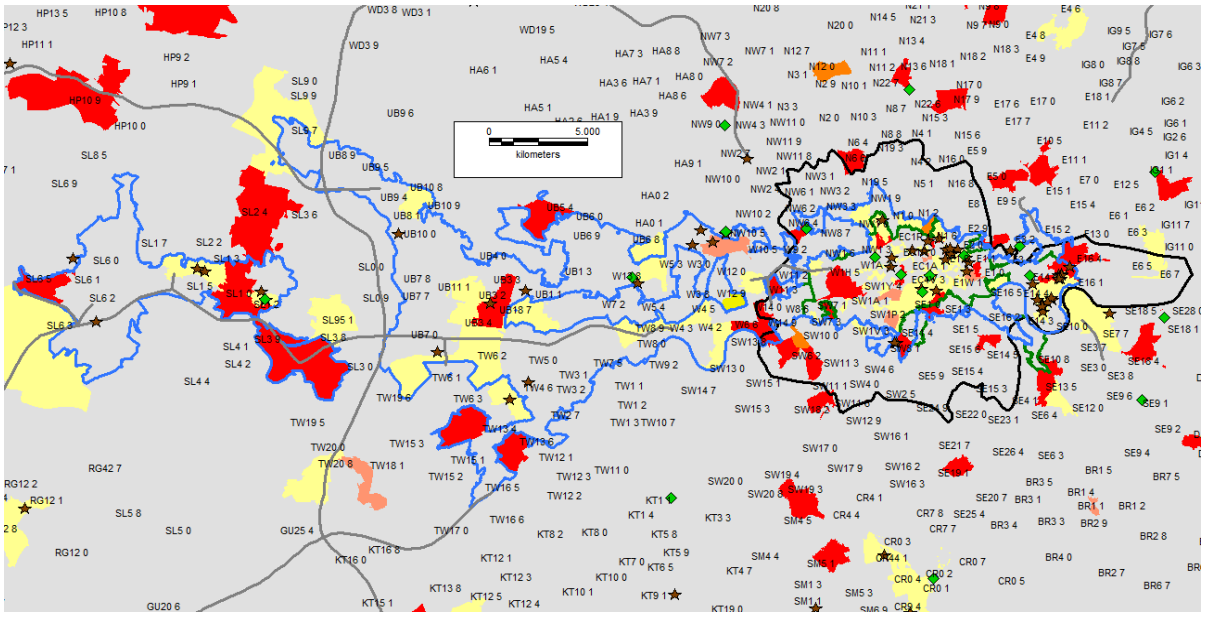
Source: Operators/Ofcom

Figure 5.30: BT's service share in the HB TISBO market: London

June



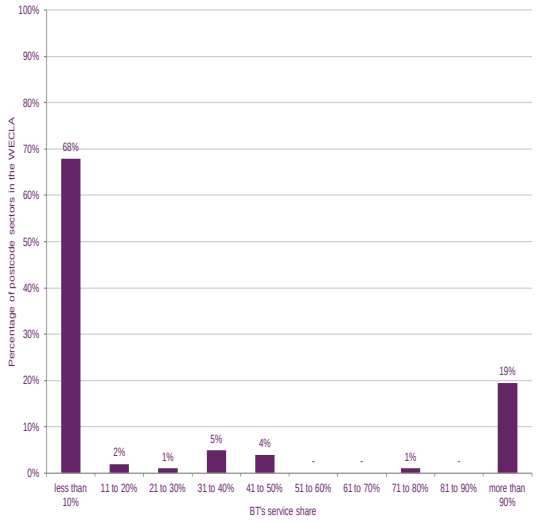
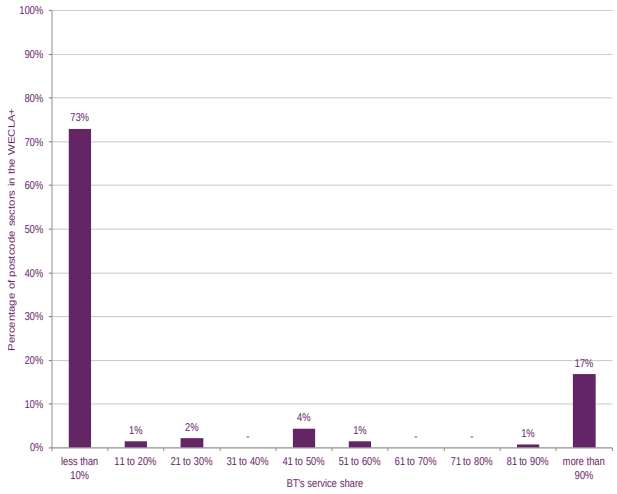
Statement



Key: BT Tier 1 TISBO network nodes are displayed as diamonds (green) and data centres as stars (brown). Service share values are coloured as per the previous legend.
Source: Operators/Ofcom

5.266 BT's average service share is 8% in the WECLA+ and 51% in the rest of the UK (excluding the WECLA+ and Hull) which suggests a difference in competitive conditions. In the WECLA+ BT's share differs across postcode sectors, with extreme values of 100% and 0%.

Figure 5.31: Distribution of BT HB TISBO service shares within the London Area

June - WECLA	Statement – WECLA+
	

Source: Operators/Ofcom

5.267 The figure shows that, insofar as competition is reflected in service share variation, competitive conditions within the WECLA+ are relatively homogeneous. In the great majority of postcode sectors, BT's service share is very low, 10% or less. In the WECLA+ 94% of HB TISBO ends are in sectors where BT's service share is less than 50%. In the few sectors where BT's service share is high, this is likely to reflect the relative 'thinness' of the market (small numbers of customers) in some areas.

5.268 The service share evidence for London, together with the network reach analysis, indicates that alternative operators are using their networks to provide services in this market in competition with BT.

Defining geographic markets for HB TISBO

5.269 The network reach analysis shows that alternative operators have focused much of their network roll-out in the geographic areas where business customers are located, particularly in the London area.

5.270 Using the network reach metric we have identified an area of HNR sectors in the London area (the WECLA+). We consider the WECLA+ as the starting point for defining the extent of the local London area market. We have supplemented this by looking at BT's service shares across the reference area.

5.271 As noted above, BT's service share is lower in the WECLA+ relative to the rest of the UK (excluding the WECLA+ and Hull), which is consistent with OCPs using their infrastructure to compete in the provision of HB TISBO circuits to a greater extent in the WECLA+.

5.272 The network reach and service share evidence suggests the competitive conditions in the WECLA+ are different relative to the rest of the UK, and a separate WECLA+ geographic market is appropriate.

The viability of competition in the WECLA+ geographic market for HB TISBO

5.273 We have checked whether the evidence on OCPs' coverage or interconnection in the WECLA+ would lead us to revise the market boundaries.

5.274 We consider that the pattern of alternative infrastructure present in the WECLA+ indicates that operators' coverage is not a factor of concern in the WECLA+.

5.275 We also checked whether alternative operators can and do transact with each other in the WECLA+ (using the revised circuit count information). The evidence shows that around a third of ends in the WECLA+ are sold in the OCP merchant market, which suggests that technical or commercial barriers to interconnection in the WECLA+ are not insurmountable.

Figure 5.32: OCPs' merchant market transactions in the HB TISBO market, 2011

	June BCMR		Statement		
	UK	**The WECLA**	**UK**	**The WECLA**	**The WECLA+**
Total no. of circuit ends	5,534	1,510	2,439	888	919
No of ends of circuits sold as an OCP merchant market transaction	2,543	783	736	298	303
Merchant market as a % of total	46%	52%	30%	33%	33%

Source: Operators/Ofcom

5.276 Thus, as in the MB TISBO market discussed above, we consider that potential limitations in OCPs coverage or merchant market transactions are not a concern that would warrant a revision the definition of the WECLA+ geographic market.

Conclusion: HB TISBO

5.277 Having considered consultation responses, and as per our proposal in the June BCMR Consultation, we conclude that there are two geographic markets for HB TISBO:

- the WECLA+; and
- the rest of the UK (excluding the WECLA+ and the Hull area).

VHB TISBO (622Mbit/s)

Proposed geographic market definition in the June BCMR Consultation

5.278 We proposed that the geographic scope of the VHB TISBO market was national (excluding the Hull area). We noted the following:

- The wholesale service share analysis suggested insignificant geographic variations in competitive conditions in the VHB TISBO market i.e. BT's service share was very low across the whole of the UK.
- It was our understanding that BT offered a price discount for VHB TISBO circuits in the CLZ. We noted that this may be indicative of different competitive

conditions in the London area, but there could also be other reasons for such pricing differences. Therefore we did not put much weight on this evidence.

Consultation responses

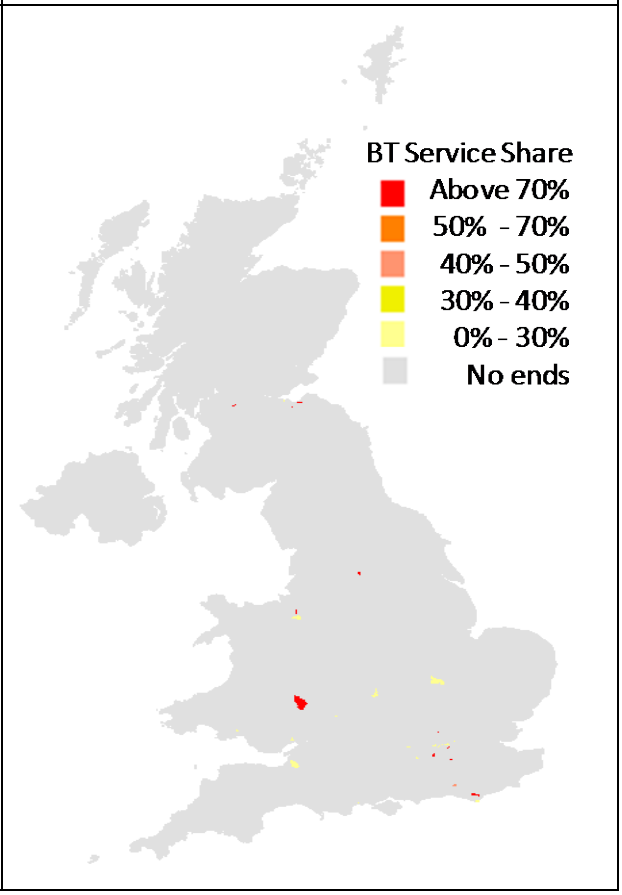
5.279 No stakeholder commented specifically on the geographic market definition for VHB TISBO. However, as noted above, some stakeholders commented generally on the circuit count methodology and service share estimates.

Ofcom's consideration of consultation responses

Revised wholesale service shares

5.280 As noted above, in light of stakeholder comments and further analysis we have revised the service share estimates – these are presented below for the UK as a whole and with a focus on London.

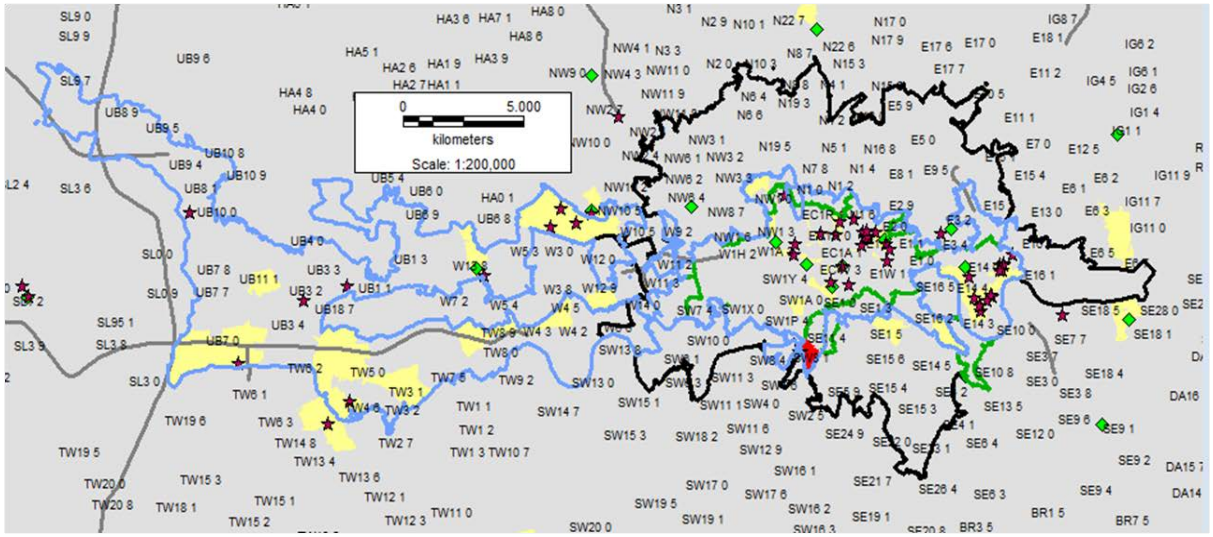
Figure 5.33: BT's service share in the VHB TISBO market: UK

June	Statement
	

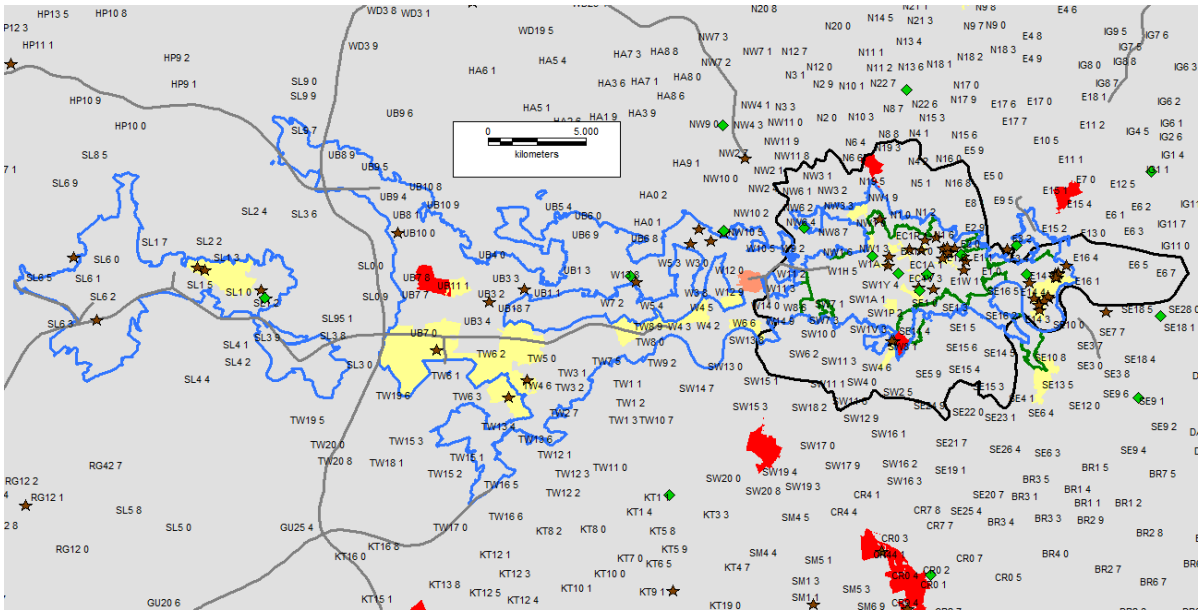
Source: Operators/Ofcom

Figure 5.34: BT's service share in the VHB TISBO market: London

June



Statement



Key: BT Tier 1 TISBO network nodes are displayed as diamonds (green) and data centres as stars (brown). Service share values are coloured as per the previous legend
Source: Operators/Ofcom

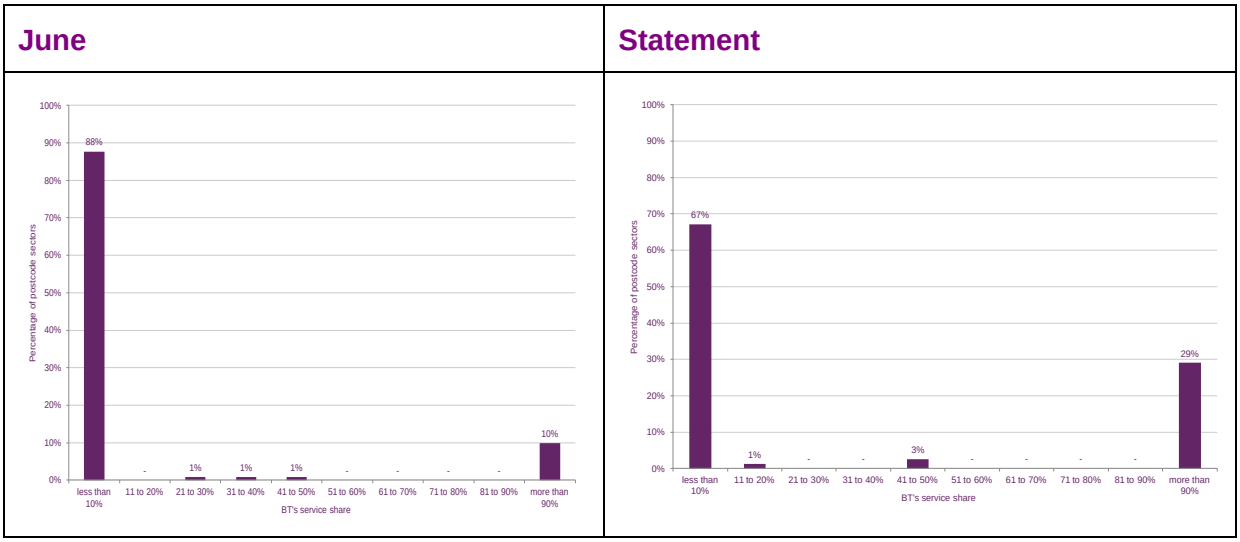
5.281 BT's average service share is 3% in the WECLA+ and 35% across the rest of the UK (excluding the WECLA+ and Hull). We note the difference in BT's service share between the WECLA+ and the rest of the UK (excluding the WECLA+ and Hull). However, as noted in the ERG Common Position,[490] "it is important for NRAs to bear in mind the purpose of market definition which… is not an end in itself but a means to undertake an analysis of competitive conditions, for the purposes of determining

[490] And also consistent with our approach to defining the geographic scope of the LB TISBO market.

whether ex ante regulations is required or not."[491] Our geographic market analysis indicates that the conditions of competition in these two areas are sufficiently homogenous such that the result of our overall market analysis would be the same if each area had been considered individually.[492]

5.282 BT's share differs across postcode sectors, with extreme values of 100% and 0% (see Figure below). However, such variations are to be expected where the number of sites in an individual postcode sector could be very low. The majority of sectors have a BT service share of less than 10%.

Figure 5.35: Distribution of BT VHB TISBO service shares UK-wide



Source: Operators/Ofcom

5.283 We note that, unlike the other product markets, there is a much more limited number of VHB TISBO circuits in the UK. This means that in any particular postcode sector, it only requires a small number of circuits (in absolute terms) to be provided by an operator for there to be significant changes in operators' service shares. Due to the low volumes of circuits in this market, we note that the service share information needs to be interpreted cautiously.

Conclusion: VHB TISBO

5.284 We note that sales of high bandwidth circuits tend to be more contestable by rivals to BT. This is one reason why we considered that there is a break in the product markets between the HB and VHB TISBO markets (there are different competitive conditions).

5.285 We note that volumes in this market have shrunk vastly. Although there are some geographic variations in service shares, they appear to be largely random, and are likely to reflect the small number of VHB TISBO circuits in any given postcode sector. Overall, the evidence suggests that the competitive constraints in the VHB TISBO market are likely to be quite similar throughout the UK.

[491] ERG Common Position, Section 4.2.

[492] See, in this respect, Section 2 of the ERG Common Position.

5.286 Therefore, having considered consultation responses, and as per our proposal in the June BCMR Consultation, we conclude that the geographic scope of the VHB TISBO market is national (excluding the Hull area).

AISBO (up to and including 1Gbit/s)

Proposed geographic market definition in the June BCMR Consultation

5.287 In the June BCMR Consultation, we proposed two geographic markets for the UK excluding the Hull area, as follows:

- the WECLA; and
- the UK (excluding the Hull area and the WECLA).

5.288 We noted the following:

- The network reach analysis showed that alternative operators have focused much of their network roll-out in the London area. The analysis of service shares (see bullet below) indicated that this infrastructure was being used to compete in the provision of AISBO circuits.
- The wholesale service share information indicated that there were significant geographic variations in competitive conditions in the AISBO market. BT's average service share in the WECLA was lower than the rest of the UK (excluding the WECLA and Hull).
- BT had introduced geographic variation of the prices for a subset of its AISBO product, in several instances as a time-limited offer. When BT has offered geographic price variations for AISBO products, London has always been included in such discounting schemes.
- Evidence of merchant market transactions indicated that insurmountable barriers to an OCP merchant market did not exist, and the potential limitations in OCPs coverage or merchant market transactions were not a concern that would warrant a revision of our proposed definition of the WECLA geographic market.

Consultation responses

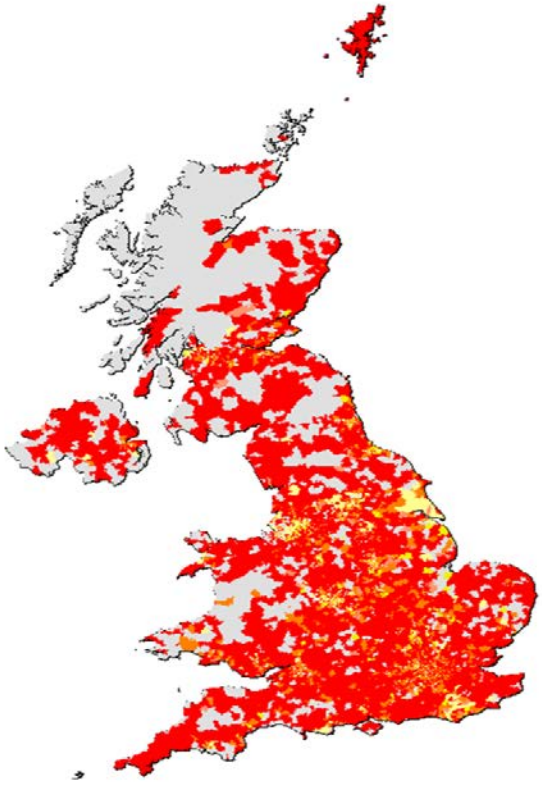
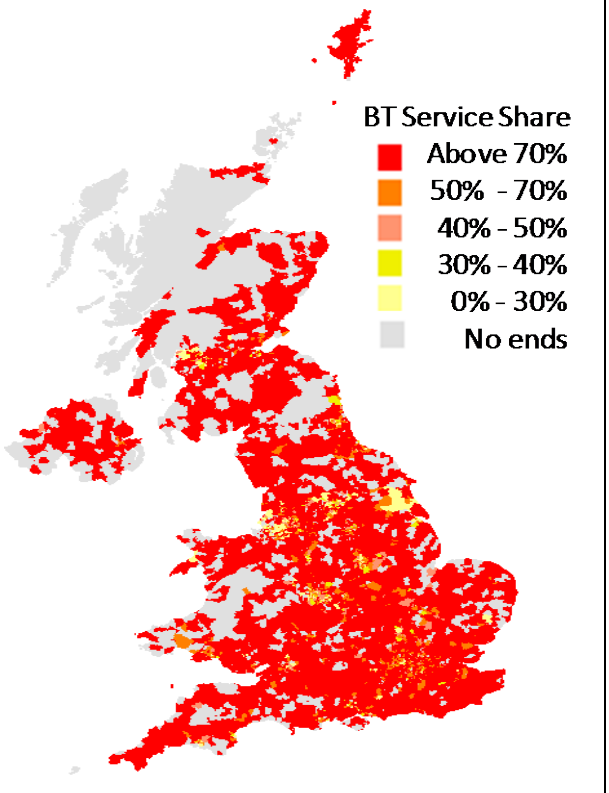
5.289 Level 3 and Exponential-e thought the significant reduction in BT's AISBO service share relative to the 2007/8 Review was unlikely, Level 3 thought this called into question the reliability of the data.

Ofcom's considerations of consultation responses

Revised wholesale service shares

5.290 As noted above we have revised our service share estimates since the June BCMR Consultation. Our current estimates for BT's service shares across the UK and with a focus on London are presented below.

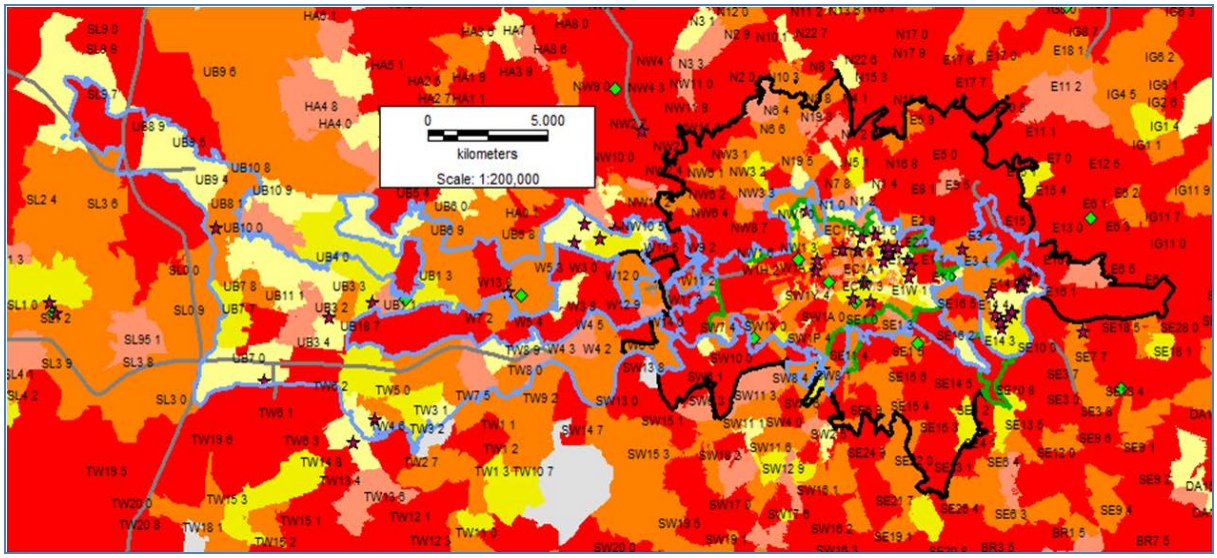
Figure 5.36: BT's service share in the AISBO market: UK

June	Statement
	

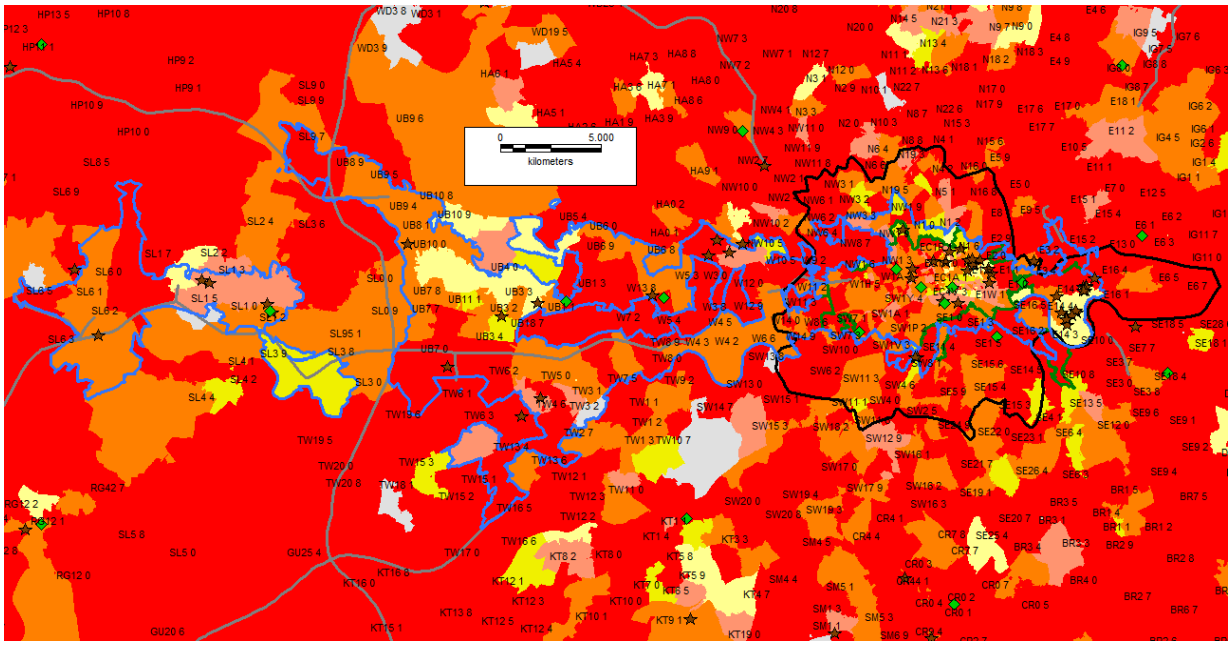
Source: Operators/Ofcom

Figure 5.37: BT's service share in the AISBO market: London

June



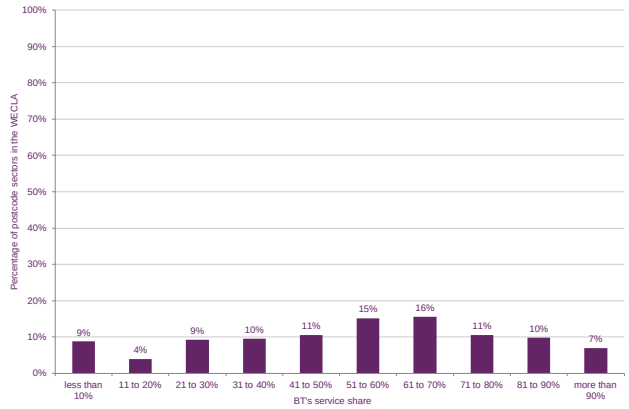
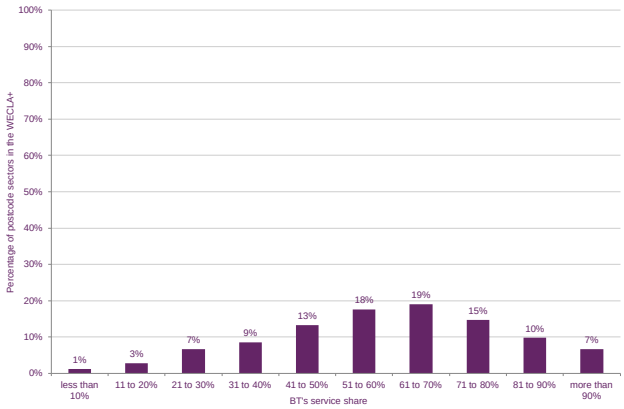
Statement



Key: Openreach Handover Points are displayed as diamonds (green) and data centres as stars (brown). Service share values are coloured as per the previous legend.
Source: Operators/Ofcom

5.291 BT's average service share is 51% in the WECLA+ and 74% in the rest of the UK (excluding the WECLA+ and Hull). In the WECLA+ BT share differs across postcode sectors, with extreme values of 100% and 0% (see Figure below).

Figure 5.38: Distribution of BT AISBO service shares within the London area

June - WECLA	Statement – WECLA+
	

Source: Operators/Ofcom

5.292 This distribution of service shares is fairly flat, although there is a peak in the 50% - 70% range. The service share evidence for London, together with the network reach analysis, might indicate that alternative operators are using their networks to provide services in competition with BT in the London area to a greater extent than elsewhere in the UK, such that sufficiently different competitive conditions may warrant the definition of separate geographic markets. The share evidence, the fact that the market is growing, and the extent of OCPs' infrastructure in the WECLA+ suggests that the competitive conditions are sufficiently distinct in comparison to the rest of the UK (excluding the WECLA+ and Hull).

Defining geographic markets for AISBO

5.293 The network reach analysis shows that alternative operators have focused much of their network roll-out in the geographic areas where business customers are located, particularly in the London area.

5.294 Using the network reach metric we have identified an area of HNR sectors in the London area (the WECLA+). We consider the WECLA+ as the starting point for defining the extent of the local London area market. We have supplemented this by looking at BT's service shares across the reference area.

5.295 As noted above, BT's service share is lower in the WECLA+ relative to the rest of the UK (excluding the WECLA+ and Hull), which is consistent with OCPs using their infrastructure to compete in the provision of AISBO circuits to a greater extent in the WECLA+.

5.296 The network reach and service share evidence suggests the competitive conditions in the WECLA+ are different relative to the rest of the UK, and a separate WECLA+ geographic market is appropriate.

The viability of competition in the WECLA+ geographic market for AISBO

5.297 We checked whether the evidence on OCPs' coverage or interconnection in the WECLA+ would lead us to revise our proposed market boundaries.

5.298 We consider that the pattern of alternative infrastructure present in the WECLA+ indicates that operators' coverage is not a factor of concern in the WECLA+.

5.299 We also checked whether alternative operators can and do transact with each other in the WECLA+. The evidence suggests that there is an OCP merchant market for AISBO services in the WECLA+ (see Figure 5.39 below). The proportion of circuit ends which are sold in the merchant market is lower relative to the TISBO markets discussed above, but the fact that there are some merchant market transactions suggests that technical or commercial barriers to interconnection are not insurmountable.

Table 5.39: OCPs' merchant market transactions in the AISBO market, 2011

	June BCMR		Statement		
	UK	**The WECLA**	**UK**	**The WECLA**	**The WECLA+**
Total no. of circuit ends	288,856	48,333	151,124	26,794	27,929
No of ends of circuits sold as an OCP merchant market transaction	29,909	7,519	12,206	2,917	3,049
Merchant ends as a % of total	10%	16%	8%	11%	11%

Source: Operators/Ofcom

5.300 Thus, we consider that potential limitations in OCPs coverage or merchant market transactions are not a concern that would warrant a revision of the WECLA+ geographic market.

Conclusion: AISBO

5.301 Having considered consultation responses, and as per our proposal in the June BCMR Consultation, we conclude that there are two geographic markets for AISBO:

- the WECLA+; and
- the rest of the UK (excluding the WECLA+ and the Hull area).

5.302 We note that BT's service shares for AISBO have generally been revised upwards since the June BCMR Consultation. However, we still consider that the difference in BT's average service share in the WECLA+ relative to the rest of the UK (excluding the WECLA+ and Hull), the extent of rival infrastructure, the context of a growing market and the potential for greater competition are indicative of a separate geographic market in the WECLA+.

MISBO (over 1Gbit/s and WDM)

Proposed geographic market definition in the June BCMR Consultation

5.303 In the June BCMR Consultation, we proposed two geographic markets for the UK excluding the Hull area, as follows:

- the WECLA; and
- the UK (excluding the Hull area and the WECLA).

5.304 We noted the following:

- The network reach analysis showed that alternative operators have focused much of their network roll-out in the London area. The analysis of service shares (see bullet below) indicated that this infrastructure was being used to compete in the provision of MISBO circuits.

- The wholesale service share information indicated that there were significant geographic variations in competitive conditions in the MISBO market. BT's average service share was lower in the WECLA relative to the rest of the UK (excluding the WECLA and Hull).

- At the time of the June BCMR Consultation, BT was not subject to any SMP regulation in its provision of MISBO services, so it was not required to publish its prices and they were made available on a 'terms on application' basis. [493] For this reason, we considered that BT may be able to vary its prices flexibly in response to different characteristics of the product requested, one of which may be the location of the service.[494] Some MISBO products are delivered as part of complex bids which are highly customised to reflect the needs of the end customer. For these reasons we had limited evidence of price variation by geography in MISBO, although we considered that such variation was likely given the nature of the market and the obligations to which BT is currently subject.

- Evidence of merchant market transactions indicated that insurmountable barriers to an OCP merchant market did not exist, and the potential limitations in OCP coverage or merchant market transactions were not a concern that would warrant a revision of our proposed definition of the WECLA geographic market.

Consultation responses

5.305 BT (supported by research undertaken by Analysys Mason) made a number of comments about the geographic definition for MISBO, some of which we mentioned above in the discussion of the network reach methodology. Here we summarise all the points made in relation to MISBO and provide our further analysis and response. In summary, the points made were:

- The Experian large business sites are not a good proxy for users of MISBO services e.g. it is inappropriate to use the 220,000 large business sites to represent the 1-2,000 sites requiring MISBO services. Analysys Mason provided some examples to illustrate that smaller organisations do take MISBO services while very large ones may not. It estimated that 10-20% of organisations that purchase MISBO services have fewer than 250 employees;

- CPs will dig further to reach MISBO customers because they are higher value customers. Analysys Mason noted some examples where CPs had dug further than 200m to connect customers taking MISBO services;

- MISBO customers tend to locate in areas where competing networks are present meaning the build distance parameter is of limited relevance; and

[493] We noted that under the Undertakings, a number of Openreach's MISBO products are subject to product level equivalence at present.

[494] BT is subject to EOI requirements on almost all of the products within the MISBO market, which does not restrict its ability to tailor its prices as a function of the location of the leased lines.

- The contiguity requirement is not relevant because there is a low number of MISBO customers and their sites are scattered across the country.

5.306 BT thought that we should undertake an additional analysis for high bandwidth services taking into account these factors. It thought that there should be a single national market for MISBO.

5.307 As noted above, some stakeholders commented generally on the circuit count methodology and service share estimates.

Ofcom's considerations of consultation responses

5.308 In light of BT's comments, we have conducted a further network reach analysis using MISBO customer ends in place of large business sites. Since the June BCMR Consultation, we have also commissioned a consumer research exercise to study MISBO users – we summarise the findings which are relevant to the geographic market definition below.

Network reach analysis for MISBO customers

5.309 We recognise that the Experian database of large business sites will include businesses which do not currently use MISBO. Therefore we have looked at the impact on our network reach analysis of using actual MISBO customer sites instead of large business sites. However, this analysis also has weaknesses, for example, it only takes into account current MISBO customers and not potential future customers – this could be particularly significant for a market where demand is growing like MISBO. We present it here for illustrative purposes, and note that it broadly confirms our MISBO geographic market definition.

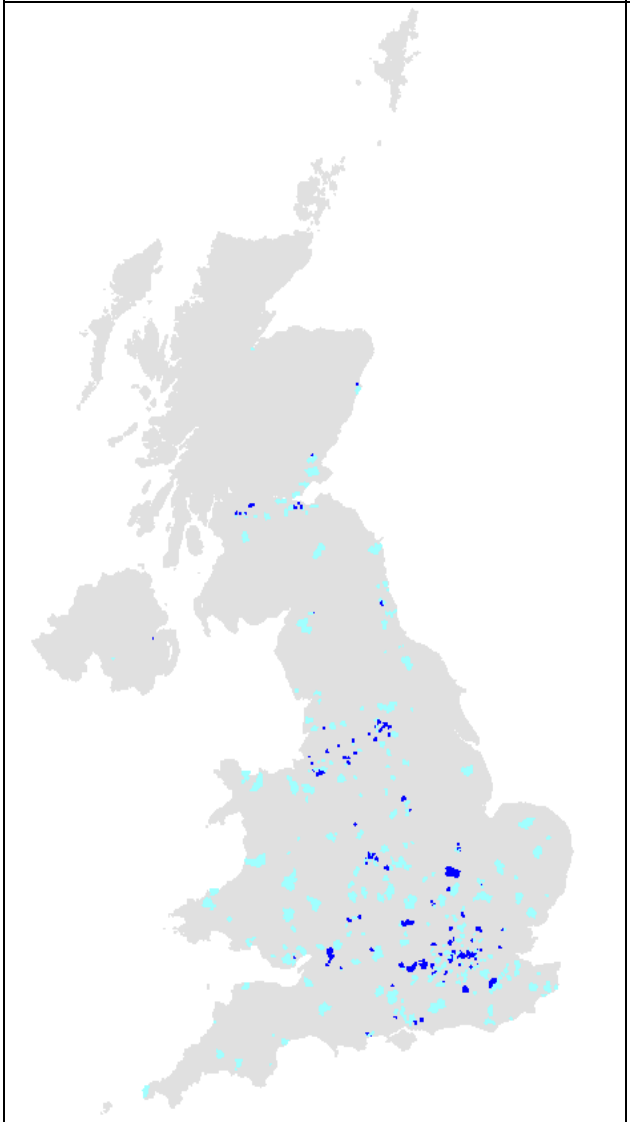
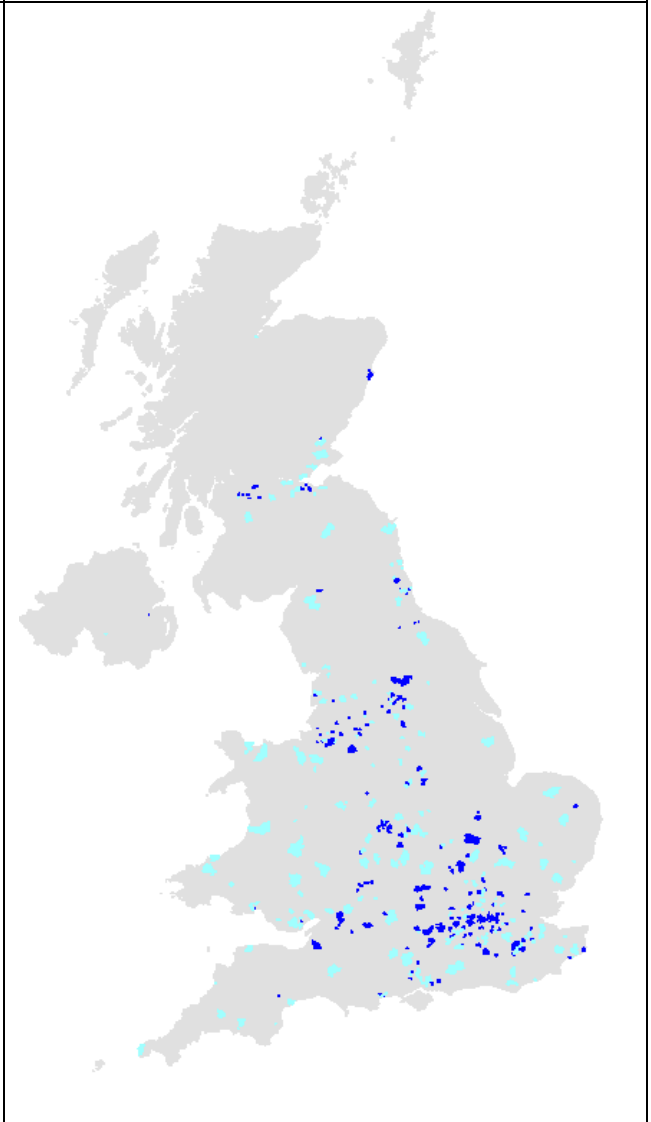
5.310 In the customer ends analysis we took the circuit end postcodes from all CPs and removed any network node postcodes. Then we selected circuits with a bandwidth greater than 1Gbit/s and all WDM circuits.[495] We then calculated the number of OCP flexibility points within a 200m and 500m buffer of each MISBO circuit end.[496] In addition to the standard 200m buffer assumption, we used 500m buffer as a sensitivity test because we expect (as noted by BT and discussed above) that MISBO customers may be relatively higher value thus OCPs may be prepared to dig further to reach them.[497] In line with our network reach methodology a postcode sector is HNR if, on average, the MISBO ends in it have two or more OCPs within the 200m/500m buffer. The Figure below shows the postcodes sectors which contain MISBO customers across the UK. The light blue shading indicates sectors which are low network reach and the dark blue indicates sectors which are HNR. The results for the 200m buffer and the 500m buffer are presented separately.

[495] We excluded broadcast access circuits.

[496] Each circuit was mapped to the centre of the postcode where it is located.

[497] The data we collected from CPs has only have a limited number of examples (13) of build distances to provide services with a bandwidth greater than 1Gbit/s. The average build distance for the available sample is 249m, however, we consider caution should be attached to this figure due to the limited sample size. We consider a 500m buffer assumption to be a reasonable upper bound for the average distance over which a CP would be willing to extend its network to provide MISBO services.

Figure 5.40: MISBO network reach analysis - UK wide

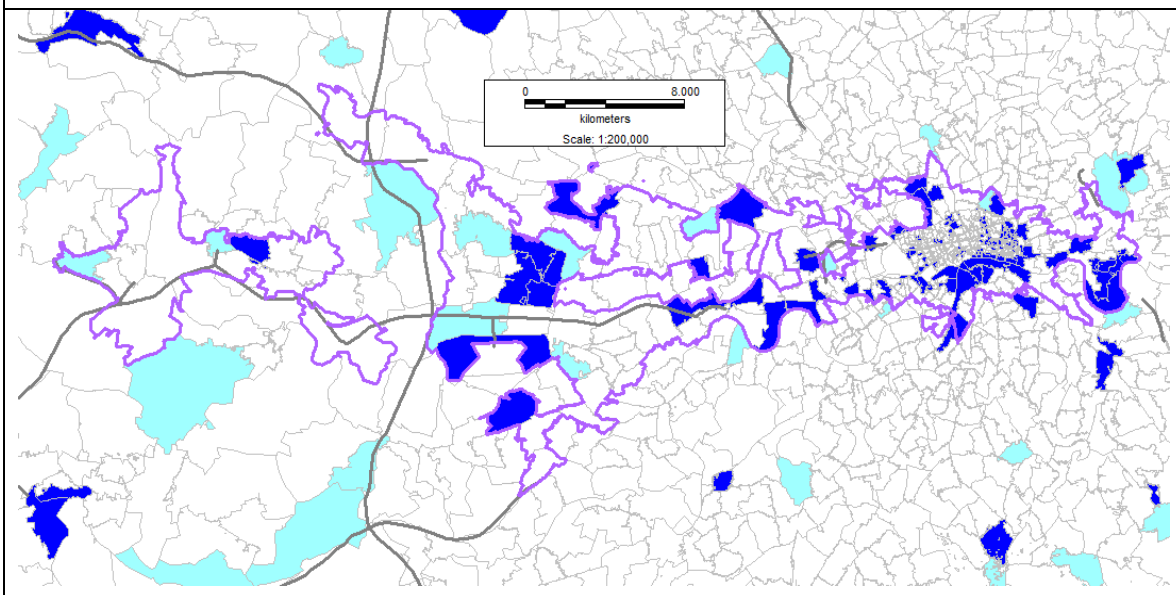
200m buffer	500m buffer
	

Key: Dark blue is HNR sectors, light blue is low network reach sectors.
Source: Operators/Ofcom

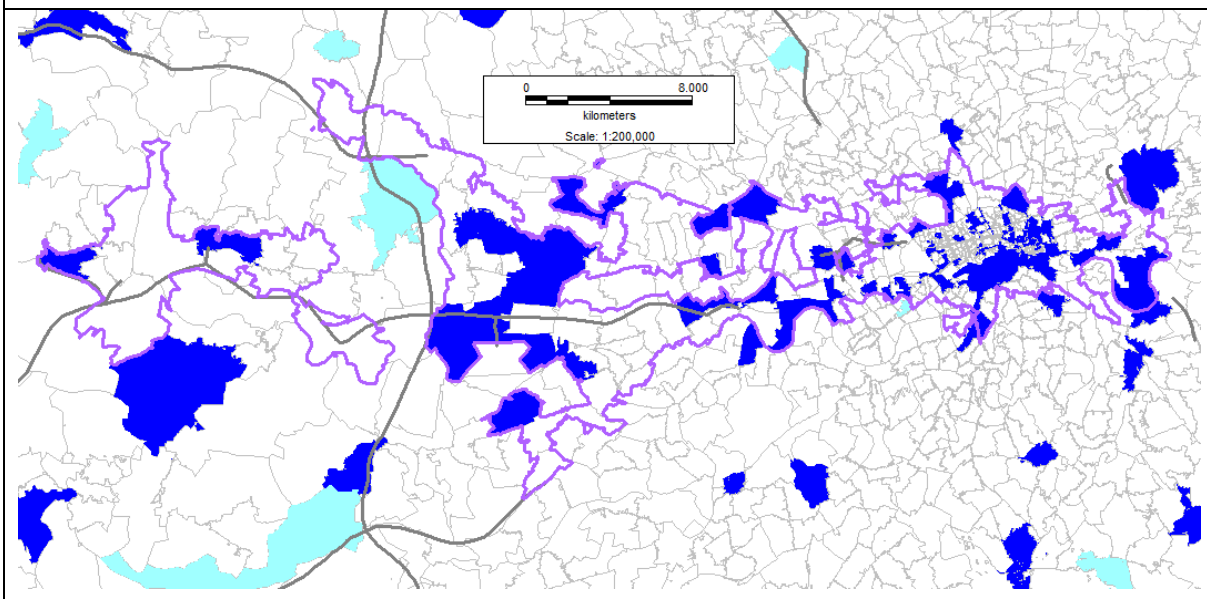
5.311 There are 552 postcode sectors across the UK which contain MISBO customers. Using a 200m buffer assumption 246 (45%) of these sectors are HNR, for a 500m buffer 349 sectors (63%) are HNR. The figure shows a concentration of MISBO customers in the South East of the country, particularly in central London and an area extending out of London to the west (somewhat like the WECLA+). The Figures below focus on MISBO customers in the London area.

Figure 5.41: MISBO network reach analysis – London area

200m buffer



500m buffer



Key: Dark blue is HNR sectors, light blue is low network reach sectors and the WECLA+ is outlined in purple.
Source: Operators/Ofcom

5.312 There are 120 sectors in the WECLA+ which contain MISBO customers. The vast majority of these (94% using a 200m buffer and 100% using a 500m buffer) are HNR, a significantly larger proportion than in the UK as a whole (see paragraph 5.311). We consider this supports the finding of a separate WECLA+ geographic market.

Research on MISBO customers

5.313 In December 2012, we commissioned CSMG to undertake consumer research of MISBO customers – the report is published alongside this Statement. CSMG

conducted interviews with 30 organisations using or reselling MISBO services. This represents a limited sample. However, we believe it is helpful in forming a view of the MISBO market.

5.314 The overall view from organisations interviewed was that there was a good choice of MISBO suppliers in London. Nine interviewees (30%) drew a clear distinction between satisfactory levels of competition in the London area, and less satisfactory competition elsewhere in the UK. Five interviewees (17%) drew a slightly different distinction, believing that there were a number of cities beyond London – such as Manchester, Bristol, Birmingham, Glasgow, York and Leeds – which also offered reasonable levels of choice.[498] Both groups of interviewees agreed that regions outside major metro zones rarely had a choice of infrastructure-level provider, and that BT was often the only fibre provider available, perhaps re-sold by another service provider. Further detail on respondents' comments regarding interviewee satisfaction with supply and choice is provided in the CSMG report.[499]

5.315 We consider these findings are broadly consistent with the finding of a separate geographic market in the London area.

Requirement for contiguity

5.316 BT argued that a contiguity requirement was not relevant when defining geographic markets for MISBO because there are a low number of MISBO customers and their sites are scattered across the country. We accept that there are relatively few MISBO customers currently and these customers are scattered across the country. Our geographic market assessment measures the extent of OCP network irrespective of the products actually supplied at present. As we explain above, we consider it reasonable to impose a contiguity requirement when defining geographic markets for leased lines to identify areas where OCPs could potentially compete with BT, and the rationale we set out is not specific to a product market or markets.

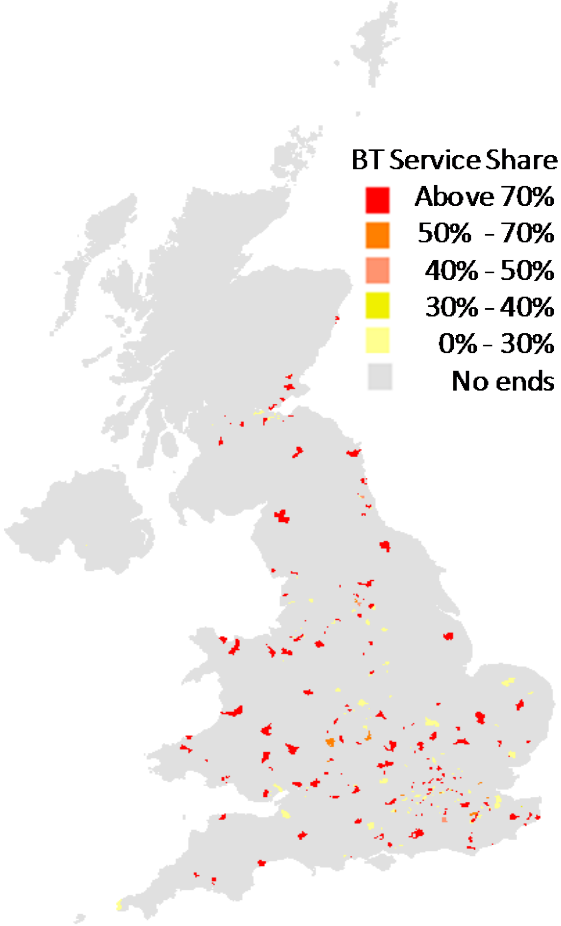
Updated wholesale service shares

5.317 As for the other product markets, we have also updated the service share estimates for MISBO and present these below for the UK as a whole and in the London area.

[498] We consider competitive conditions in major cities outside London later in this Section.

[499] See pages 28 to 32.

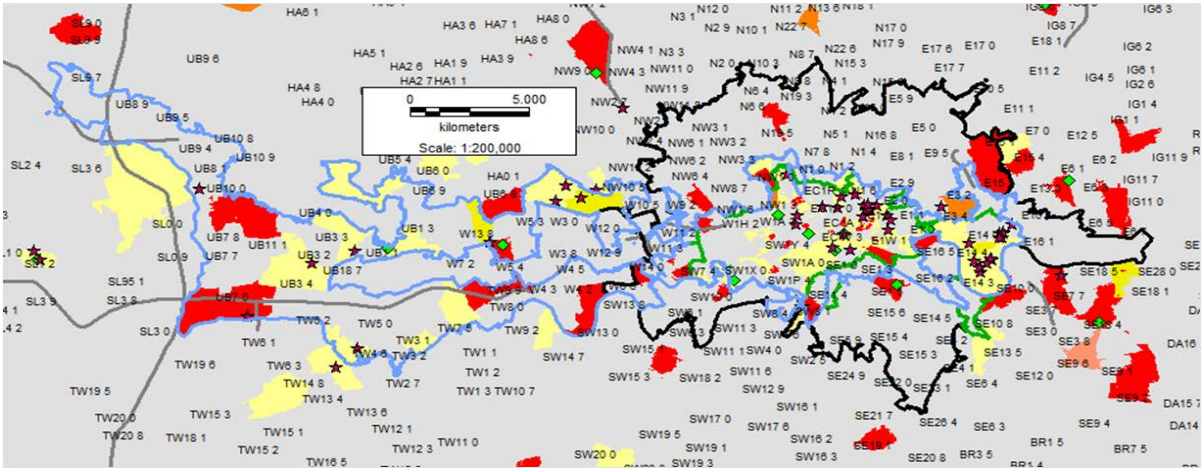
Figure 5.42: BT's service share in the MISBO market: UK

June	Statement
	

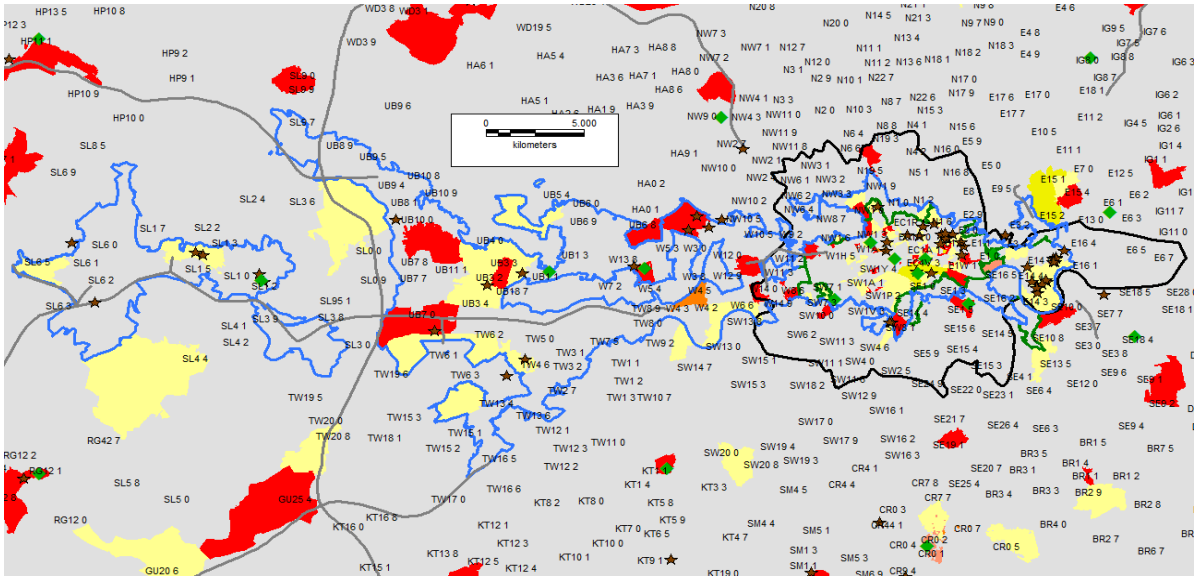
Source: Operators/Ofcom

Figure 5.43: BT's service share in the MISBO market: London

June



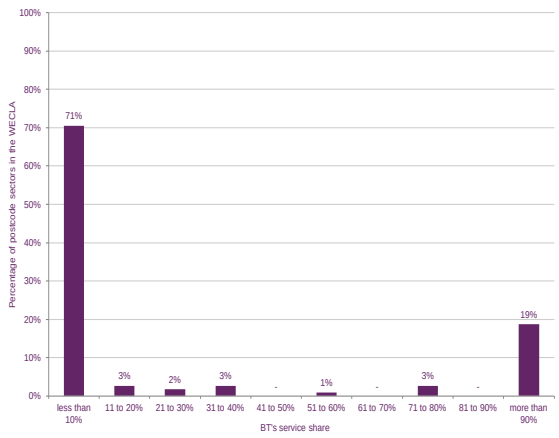
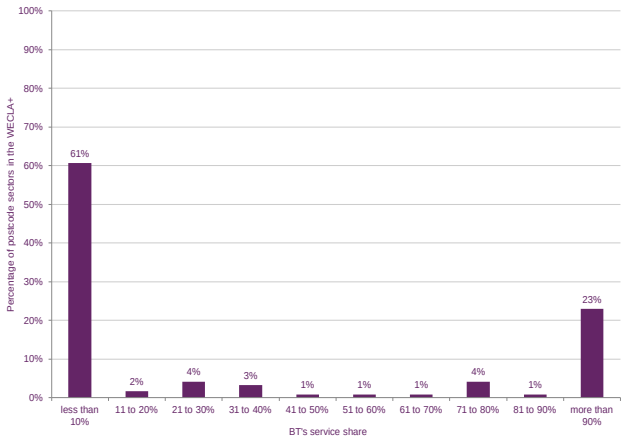
Statement



Key: Openreach Handover Points are displayed as diamonds (green) and data centres as stars (brown). Service share values are coloured as per the previous legend.
Source: Operators/Ofcom

5.318 BT's average service share is 24% in the WECLA+ and 57% in the rest of the UK (excluding the WECLA+ and Hull) which suggests a difference in competitive conditions. In the WECLA+ BT's service share differs across postcode sectors, with extreme values of 100% and 0% (see Figure below).

Figure 5.44: Distribution of BT MISBO service shares within the London area

June - WECLA	Statement – WECLA +
	

Source: Operators/Ofcom

5.319 We consider that, insofar as service share variations are concerned, competitive conditions within the WECLA+ are relatively homogeneous. In the majority of postcode sectors, BT's service share is very low, 10% or less. In the WECLA+ 80% of MISBO ends are in sectors where BT's service share is less than 50%. In the few sectors where BT's service share is high, this is likely to reflect the relative 'thinness' of the market in some sectors.

Defining geographic markets for MISBO

5.320 The network reach analysis shows that alternative operators have focused much of their network roll-out in the geographic areas where business customers are located, particularly in the London area.

5.321 Using the network reach metric we have identified an area of HNR sectors in the London area (the WECLA+). We consider the WECLA+ as the starting point for defining the extent of the local London area market. We have supplemented this by looking at BT's service shares across the reference area.

5.322 As noted above, BT's service share is lower in the WECLA+ relative to the rest of the UK (excluding the WECLA+ and Hull), which is consistent with OCPs using their infrastructure to compete in the provision of MISBO circuits to a greater extent in the WECLA+.

5.323 The network reach and service share evidence suggests the competitive conditions in the WECLA+ are different relative to the rest of the UK, and a separate WECLA+ geographic market is appropriate.

The viability of competition in the WECLA+ geographic market for MISBO

5.324 We checked whether the evidence on OCPs' coverage or interconnection in the WECLA+ would lead us to revise our proposed market boundaries.

5.325 The pattern of alternative infrastructure present in the WECLA+ indicates that operators' coverage is not a factor of concern in the WECLA+.

5.326 Regarding interconnection, we note that the MISBO market comprises products, such as WDM links, which are based on relatively recent technical developments. In practice, interconnection between CPs' WDM-based leased lines services is currently uncommon, both because doing so can be costly and because available technology has not, at least until recently, allowed the CP to assure reliability of the resulting service to the level often required by the end-user. For these reasons, we expect the extent of merchant market transactions between OCPs to be limited compared to other product markets.

5.327 Nevertheless, we checked whether alternative operators can and do transact with each other in the WECLA+. The evidence (below) suggested that there are some merchant market transactions in the WECLA+, notwithstanding the aforementioned potential limitations to interconnection for some MISBO products.[500] However, as expected, it is smaller relative to the total number of ends than in TISBO markets.

Figure 5.45: OCPs merchant market transactions in the MISBO market, 2011

	June		Statement		
	UK	**WECLA**	**UK**	**WECLA**	**WECLA+**
Total no. of circuit ends	11,108	2,937	4,472	1,273	1,333
No of ends of circuits sold as an OCP merchant market transaction	1,205	411	478	80	93
Merchant ends as a % of total	11%	14%	11%	6%	7%

Source: Operators/Ofcom

5.328 The merchant market for MISBO is less significant than for MB and HB TISBO but only slightly less so than for AISBO despite the barriers to WDM interconnection described above. However, the evidence on service shares indicates that OCPs are able to successfully compete with BT in the WECLA+ with only limited recourse to the merchant market. Thus, we do not consider that potential limitations in OCPs coverage or merchant market transactions a concern that would warrant a revision of the definition of the WECLA+ geographic market.

Conclusion: MISBO

5.329 We have conducted an extensive further analysis of MISBO in light of BT's comments, including a network reach analysis using customer ends and different buffer assumptions. Having considered consultation responses, and as per our proposal in the June BCMR Consultation, we conclude that the evidence continues to support the finding of two geographic markets for MISBO:

- the WECLA+; and
- the rest of the UK (excluding the WECLA+ and the Hull area).

[500] This may mean that the merchant market transactions captured in Figure refer to end to end wholesale circuits.

Other comments on the definition of the London area geographic market

5.330 A number of stakeholders had further comments on the area we had defined as the WECLA in the June BCMR Consultation and our assessment of competitive conditions within it. There were two main issues raised:

- BT thought that sectors with HNR in Slough should be included in the WECLA; and
- a number of OCPs thought that the competitive conditions in the western part of the WECLA were appreciably different to the CELA and we should look at this more closely.

5.331 We discuss these points below. We issued a separate consultation on the first point where we proposed to include some sectors in Slough within the WECLA. We discuss comments on that consultation and set out our responses below.

Extending the WECLA to include some sectors in Slough

Responses to June BCMR Consultation

5.332 BT commented that postcode sectors in Slough should be included in the WECLA because the same CPs are present in Slough and the WECLA, and OCP networks extend westwards from the WECLA to Slough in a more or less seamless fashion. It noted that the reason why Slough was not included in the WECLA was a single postcode sector (SL3 0) with low network reach between the WECLA and Slough. It noted that several OCPs' networks run through this postcode sector and questioned whether the network reach assessment for the SL3 0 postcode sector was correct. BT considered that the intense competition observed in Slough should be sufficient to warrant its inclusion in the WECLA even if there was low network reach in the postcode sector SL3 0.

5.333 DotEcon noted that geographical features around postcode sector SL3 0, including the Heathrow Airport site, the M25 motorway and reservoirs around Heathrow, would make it difficult for CPs' networks to meet the network reach test. DotEcon thought that it was not possible for customer sites or network flexibility points to be located in these areas.

Ofcom's further consultation

5.334 We identified a number of HNR sectors in Slough (the 'Slough sectors') at the time of the June BCMR Consultation, however, these were not included in the definition of the WECLA because they were not strictly contiguous to it. The Slough sectors were separated from the WECLA by a single postcode sector (SL3 0) that was low network reach.

5.335 We considered this issue in detail in a separate consultation published in November. The consultation included an extensive analysis of the competitive conditions in Slough and consideration of whether the lack of strict contiguity between the WECLA and the Slough sectors is a barrier to defining both areas in a single geographic market. Our assessment was that the lack of strict contiguity should not be a barrier in these specific circumstances for the reasons set out in paragraph 5.175 above (and discussed at Annex 9 paragraphs A9.4 to A9.12).

5.336 We found evidence of connectivity and economic linkages between the Slough sectors and the WECLA that supported the existence of a single economic market.

5.337 Our analysis showed that the competitive conditions in the WECLA and the Slough sectors were sufficiently similar to include in the same geographic market (which we subsequently called the WECLA+ market). In particular we found that:

- OCP coverage is extensive in the WECLA and the Slough sectors;
- for the only product market with a substantial number of circuit ends in the Slough sectors (AISBO) BT's service share is similar to the WECLA; and
- the scale of merchant market activity, as a percentage of the total number of circuit ends, is very similar in the WECLA and in the Slough sectors.

5.338 We asked stakeholders for comments on our proposal to include the Slough sectors in the WECLA.

Responses to the November BCMR Consultation

5.339 BT agreed with the proposal to include the Slough sectors in the London area geographic market. It thought this better reflected the reality of competition in business connectivity in south-east England. It also thought the relaxation of the requirement for strict contiguity showed greater flexibility and pragmatism. BT made some further comments about the proposed geographic markets – particularly that some sectors on the edge of the WECLA+ area should be included within it and about the contiguity requirement when defining geographic markets. These points are discussed in other parts of this Section.

5.340 TalkTalk believed that we should ensure our economic assumptions about the likely reach of alternative networks were based on realistic commercial behaviour in the absence of regulation of BT.

5.341 CWW, Easynet, EE, Geo, Verizon and Virgin disagreed with our proposal to include the Slough sectors in the London area geographic market. We summarise the points made below.

5.342 CWW's overarching concern was that the competitive conditions across the WECLA and the Slough sectors were not homogenous. It agreed that parts of the Slough town centre and industrial estates do have significant alternative infrastructure. However, it was concerned that the Slough sectors covered a wider area where there was not the same level of alternative infrastructure. It noted that the operators with good coverage in the Slough sectors differ relative to those with good coverage in the WECLA. It thought that the same operators needed to have significant coverage across the entire WECLA+ market to sustain competition.

5.343 CWW noted a feature of the leased lines market was the need to provide connectivity to customer sites dispersed around the UK i.e. to tender for a contract a CP needs to be able to provide access to all the required sites for that customer. In light of this, CWW argued that 'principal' operators need to be present across all the geographic markets on a consistent basis to provide a competitive constraint. It noted that in the WECLA two OCPs have significant coverage. In the Slough sectors one of these operators is within reach of 80% of large businesses but the other operator has minimal coverage. It noted that only BT has total coverage across the WECLA+.

5.344 CWW noted that building network is expensive and only a small number of operators have network on a comparable scale to BT. Other providers rely on their own networks together with wholesale services to fill the gaps. CWW thought that having relationships with multiple wholesale service providers resulted in greater costs and complexity. It also thought that using inputs from multiple smaller providers would not be acceptable to customers e.g. it considered that it would be difficult to manage or guarantee the service required by the customer. Its view was that, because the two OCPs with significant coverage of the WECLA have lesser coverage in the Slough sectors, a CP requiring wholesale services would find BT the more attractive wholesale provider across the WECLA+.

5.345 It further considered the inclusion of the Slough sectors in the London market would undermine the credibility of the two 'principal' OCPs to provide wholesale services in the WECLA due to their more limited coverage in the Slough sectors. It thought this would mute competition in the WECLA. CWW thought we should ensure that the same 'principal' operators are able to provide wholesale services across the entire WECLA+, and we should discount localised network suppliers who, in its view, do not provide a credible wholesale alternative.

5.346 CWW also thought it was difficult for CPs to access premises owned by Slough Estates due to issues with wayleaves.

5.347 Easynet, Verizon, Level 3 and EE noted that we had not answered questions raised in their responses to the June BCMR Consultation regarding the geographic market definition (in particular, Easynet and Verizon felt the request to provide disaggregated data for the CELA and the western extension of the WECLA was relevant to the November proposal). Easynet and Verizon were also concerned that we had changed our mind on the WECLA definition and felt this called into question the soundness of the proposals. Both asked why we felt that the concerns raised by BT in response to the June BCMR Consultation warranted a revision to the WECLA definition. Easynet thought that the differences in OCPs coverage in the WECLA and the Slough sectors illustrated the difficulties for CPs to develop extensive and connected networks between the areas.

5.348 EE noted that the cumulative network reach of OCPs was lower in the Slough sectors compared to the WECLA (in particular it noted the network reach for mobile sites). It thought there was no justification for where we had drawn the boundary which resulted in specific areas either being in or out of the WECLA. It thought this illustrated a flaw and subjectivity in the methodology.

5.349 Virgin noted that the Slough sectors were not contiguous to the WECLA. It thought that the methodology should not be revised to allow non-contiguous sectors to be included in the same geographic market. It thought we should make it clear that including the Slough sectors within the WECLA was an exception and the requirement for contiguity should otherwise hold. It was concerned that including non-contiguous sectors in the same geographic market might give rise to submissions for additional sub-national geographic markets.

5.350 Level 3 was unconvinced by the arguments for 'virtual' contiguity. It thought that if the Slough sectors were sufficiently large to withstand a test of competitiveness then they should be identified as a separate geographic market. It thought the notion of economic linkages across the low network reach sector between the WECLA and the Slough sectors could create a precedent to include non-contiguous sectors as part of the same geographic market which it believed could result in market distortions.

5.351 Geo noted that including the Slough sectors within the WECLA would mean that BT would not have SMP for some products. It thought this would make it difficult for operators to compete fairly against BT in Slough. In its experience, competition in Slough is restricted to a few large data centres and it queried whether this had skewed the data. It also thought that some operators lease fibre in the Slough sectors rather than owning the infrastructure. Overall, Geo felt that including the Slough sectors in the WECLA would damage its business opportunities and ability to compete with BT in the area.

Ofcom's consideration of the November BCMR Consultation responses

OCPs with significant coverage in the WECLA and Slough sectors differ

5.352 CWW thought that competition across a WECLA+ geographic market would be undermined because the OCPs with significant coverage in the WECLA have lesser coverage across the Slough sectors.

5.353 In Figure 5.46 below we present the coverage of each OCP's network in terms of:

i) the percentage of large businesses within reach;[501] and

ii) the percentage of sectors where the OCP has network for the WECLA and the Slough sectors.

5.354 We have updated the information as a result of our further detailed analysis of the data underpinning the network reach analysis (see paragraph 5.68 above).

Figure 5.46: Coverage of each OCP by business sites and by postcode sectors – the WECLA and the Slough sectors

	WECLA		Slough sectors	
Communications provider	**Businesses**	**Sectors**	**Businesses**	**Sectors**
[✂] Operator 1	92%	94%	85%	86%
[✂] Operator 2	79%	88%	18%	43%
[✂] Operator 3	64%	75%	0%	0%
[✂] Operator 4	61%	62%	18%	43%
[✂] Operator 5	49%	51%	27%	79%
[✂] Operator 6	44%	53%	31%	64%
[✂] Operator 7	37%	37%	11%	50%
[✂] Operator 8	32%	36%	97%	93%
[✂] Operator 9	13%	19%	21%	86%
[✂] Operator 10	13%	11%	6%	14%
[✂] Operator 11	5%	6%	77%	79%
[✂] Operator 12	2%	2%	0%	0%
[✂] Operator 13	0%	1%	0%	0%
[✂] Operator 14	0%	1%	0%	0%
[✂] Operator 15	0%	0%	0%	0%
[✂] Operator 16	0%	0%	0%	0%

Source: Operators/Ofcom

[501] By 'within reach' we mean the OCP has a flexibility point within a 200m buffer of the business site.

5.355 We recognise that OCP 2 has substantially lower coverage in the Slough sectors relative to the WECLA. However, OCP 1 has very significant coverage across both areas (i.e. it is within reach of 92% and 85% of large businesses in the WECLA and the Slough sectors respectively). A relatively small number (15%) of large businesses in the Slough sectors are not within reach of this OCP. Importantly, whilst this may indicate that there are some differences between the Slough sectors and the (average for the) WECLA, the purpose of the analysis is not to determine whether the competitive conditions in the Slough sectors and the WECLA are perfectly homogeneous but whether the competitive conditions are sufficiently homogeneous taking account of all the considerations discussed in the November BCMR consultation and listed above.

5.356 In the November BCMR Consultation, we noted that different OCPs had extensive coverage in the Slough sectors and the WECLA, and CPs might need to rely on the merchant market to achieve full coverage of both areas. CWW thought CPs that relied on wholesale services would need to transact with different wholesale providers to achieve coverage across the whole area. It thought that this would increase costs and complexity. In fact, as OCP 1 has significant coverage of both areas, it is possible that CPs requiring wholesale services could just deal with OCP 1.

5.357 We have looked at the current levels of merchant market activity in the Slough sectors and the WECLA to check whether there are apparent barriers to merchant market transactions in the Slough sectors. Figure 5.47 below shows the merchant market ends as a percentage of total circuit ends in the WECLA and the Slough sectors (updated to reflect changes to the circuit count methodology since the November BCMR Consultation).

Figure 5.47: Merchant market circuit ends – the WECLA and the Slough sectors

	WECLA		Slough sectors	
	Merchant ends	**% of total ends**	**Merchant ends**	**% of total ends**
MB TISBO	544	33%	6	14%
HB TISBO	298	33%	6	18%
AISBO	2,917	11%	132	12%
MISBO	80	6%	13	21%

Source: Operators/Ofcom

5.358 The number of merchant market transactions in the Slough sectors is small for MB TISBO, HB TISBO and MISBO – but we would expect this given the small size of the Slough sectors. Taking all products, the size of the merchant market as a percentage of total ends in the WECLA and the Slough sectors is very similar. This is particularly the case for AISBO where there are fewer potential issues arising from small sample measurement issues.

5.359 CWW commented that using multiple wholesale providers would be unacceptable to customers because it would be difficult to manage or guarantee service. As noted above, it is not clear that a CP would need multiple wholesale providers to achieve coverage across the WECLA and the Slough sectors as OCP 1 has significant coverage of both areas. Further, we are aware that systems integrators and aggregators are active in the business connectivity markets. These operators are able to package inputs from a variety of providers and resell a complete retail solution to a customer. This suggests that using multiple wholesale providers is not an insurmountable barrier to providing a service to the end user.

5.360 We do not consider that limits to or costs associated with accessing the merchant market are such that the Slough sectors should not be included in a WECLA+ market.

5.361 CWW noted that OCP coverage might not extend to all parts of the Slough sectors, and Geo thought that competition was restricted to a few data centres, with little competition in most other areas. We recognise that OCP coverage might not extend to all parts of the Slough sectors. However, our analysis shows that the majority (93%) of large business have at least 2 OCPs within reach in the Slough sectors (see Figure below). Therefore we think that OCPs should be able to provide services across the majority of the Slough sectors. This is clearly different to the rest of the UK excluding the WECLA+ where only 20% of large business sites have two or more OCPs within reach.

Figure 5.48: Cumulative distribution of OCPs within reach of large businesses – the WECLA, the Slough sectors and the UK excluding WECLA+

# of OCPs within reach	WECLA	Slough sectors	UK excluding WECLA+
0+	100%	100%	100%
1+	99%	99%	51%
2+	96%	93%	20%
3+	87%	85%	7%
4+	77%	56%	2%
5+	61%	29%	1%
6+	42%	15%	0%
7+	23%	6%	0%
8+	8%	4%	0%
9+	3%	2%	0%
10+	2%	0%	0%

Source: Operators/Ofcom

5.362 Easynet thought that the differences in OCPs coverage in the WECLA and the Slough sectors illustrated the difficulties for CPs to develop extensive and connected networks between the areas. For the November BCMR Consultation, we checked whether OCPs were able to provide connections between the WECLA and the Slough sectors. We identified that, of the total wholesale AISBO circuits and WDM wavelengths that had at least one end in the Slough sectors, 34% had the other end in the WECLA. We thought this was consistent with OCPs being able to provide circuits/wavelengths between the two areas using their own networks (i.e. without recourse to BT).

5.363 CWW thought that differences in the extent of OCP coverage meant that competitive conditions were not sufficiently homogenous across the WECLA and the Slough sectors to include both areas in a single geographic market. We have looked at BT's wholesale service shares to give an indication of the extent to which OCPs are actually successfully competing with BT. Figure 5.49 below sets out the updated service shares.

Figure 5.49: BT service share – UK, the WECLA, the Slough sectors and the WECLA+

	UK excluding WECLA+ and Hull		WECLA		Slough sectors		WECLA+	
	Circuit ends	BT share	Circuit ends	BT share	Circuit ends	BT share	Circuit ends	BT share
MB TISBO	3,389	77%	1,653	12%	45	52%	1,698	13%
HB TISBO	1,517	51%	888	7%	31	31%	919	8%
AISBO	122,016	74%	26,794	51%	1,135	50%	27,929	51%
MISBO	3,139	57%	1,273	25%	60	22%	1,333	24%

Source: Operators/Ofcom

5.364 In the Slough sectors the number of circuit ends for MB TISBO and HB TISBO services respectively are very small so we do not place significant weight on the fact that these service shares are somewhat higher than the equivalent values in the WECLA. BT's share in the Slough sectors for the provision of AISBO services, which is by far the largest of these markets, and therefore less susceptible to measurement error, is very similar to that in the WECLA. While this information is not conclusive, it would tend to indicate that the competitive conditions in the WECLA and the Slough sectors are broadly similar.

5.365 In summary, we recognise that there are some differences in OCP coverage in the WECLA relative to the Slough sectors i.e. OCP 2 has significantly greater coverage in the WECLA relative to the Slough sectors. We do not expect competitive conditions to be completely homogenous across the WECLA and the Slough sectors – indeed competitive conditions vary even within the WECLA, and some degree of heterogeneity in competition conditions is consistent with the ERG Common Position.[502] However, we consider that the competitive conditions are sufficiently similar to include the Slough sectors and the WECLA as a single geographic market.

Leased fibre

5.366 Geo noted that some OCPs lease fibre in the Slough sectors rather than owning the network infrastructure. We have considered the information provided by Geo alongside the data on the location of flexibility points provided by other operators. In the light of this, we consider that our assessment of competitive conditions in Slough is robust. Providing an OCP is able to supply a wholesale service without using BT infrastructure this constitutes an alternative to BT, irrespective of whether the infrastructure is owned or leased.

Lack of contiguity between the WECLA and the Slough sectors

5.367 Virgin was concerned that including non-contiguous sectors in the same geographic market might give rise to submissions for additional sub-national geographic markets. It thought we should make it clear that including the Slough sectors within the WECLA+ was an exception and the requirement for contiguity should otherwise hold. Level 3 was unconvinced about the arguments we had made for including the Slough sectors in the London area market despite the lack of strict contiguity. It was concerned about the precedent this set.

5.368 We have set out in detail above the rationale for the contiguity requirement. In relation to business connectivity, we consider that geographic markets should

[502] See, in this respect, paragraph 56 of the SMP Guidelines and the ERG Common Position, Section 4.

comprise contiguous postcode sectors. We made an exception to this rule regarding including the Slough sectors in the London area market due to the specific circumstances in this case.

Boundary for including specific sectors in the WECLA

5.369 EE noted that the cumulative network reach of OCPs was lower in the Slough sectors compared to the WECLA (particularly noting mobile sites). It thought there was no justification for where we had drawn the boundary which resulted in specific areas either being in or out of the WECLA.

5.370 In relation to mobile sites, we conducted a separate network reach assessment to determine the number of OCPs within reach of mobile sites in the WECLA and the Slough sectors. Figure 5.50 below presents the updated cumulative distribution for the number of OCPs within reach of mobile sites.

Figure 5.50: Cumulative distribution of OCPs within reach of mobile sites in the WECLA, the Slough sectors and the UK excluding WECLA+

# of OCPs within reach	WECLA	Slough sectors	UK excluding WECLA+
0+	100%	100%	100%
1+	98%	89%	40%
2+	93%	72%	15%
3+	85%	61%	5%
4+	74%	33%	2%
5+	60%	21%	1%
6+	44%	12%	0%
7+	25%	5%	0%
8+	9%	3%	0%
9+	4%	1%	0%
10+	2%	0%	0%

Source: Operators/Ofcom

5.371 As noted by EE, OCP coverage across the Slough sectors and the WECLA does differ. In the WECLA 93% of mobile sites have two or more OCPs within reach. For the Slough sectors the equivalent figure is 72%. However, competitive conditions in the Slough sectors are different compared to the UK (excluding WECLA+) where only 15% of mobile sites across are within reach of two or more OCP. In summary:

- most mobile sites are currently served by LB TISBO where we have defined a national market (excluding Hull) – i.e. this product market is unaffected by the inclusion of the Slough sectors in the WECLA+ or otherwise; and

- again, some variation in competitive conditions is to be expected in any geographic market. The key point is that first, our analysis shows competitive conditions in the Slough sectors and the WECLA are sufficiently similar, and secondly, that competitive conditions in the rest of the UK are heterogeneous compared to those in the Slough sectors.

5.372 In the light of the above, we do not think the scale of the apparent differences in network reach affecting MNO sites is inconsistent with the definition of a single geographic market.

5.373 In relation to the boundary of the WECLA, this is drawn around the contiguous sectors with HNR. We have explained above at paragraphs 5.234 to 5.329 why we think the competitive conditions in the WECLA area are appreciably different to the rest of the UK for some product markets.

Points raised in the June BCMR Consultation responses

5.374 Easynet, Verizon, Level 3 and EE noted that we did not discuss in the November BCMR Consultation points they raised in response to the June BCMR Consultation. We did not discuss these points in the November BCMR Consultation in order to keep that consultation as concise and focused as possible. We address the points raised in response to the June BCMR Consultation in this Statement. In particular, disaggregated data for the CELA and the western extension of the WECLA is presented in the sub-section below.

Basis for re-consultation

5.375 Easynet and Verizon questioned why we had changed our mind on the extent of the WECLA and suggested that this called into question the soundness of our proposals.

5.376 We do not agree that the November BCMR Consultation called into question the soundness our proposals. As part of the consultation process, we review stakeholder responses and consider whether there are arguments or new evidence which would warrant re-visiting our proposals. We considered BT's arguments about including some sectors in Slough in the London area market had merit. We conducted a further detailed analysis of the implications of including the Slough sectors in the London area market before presenting our revised proposal.

Competitive conditions in the western extension and the CELA

Consultation responses

5.377 Colt, Virgin, UKCTA, Exponential-e, EE/MNBL and Verizon all commented that the competitive conditions in the Western Extension[503] (WE) of WECLA were appreciably different to those in the CELA. These stakeholders all argued that analysing the WECLA as a single market was misleading, and masks the fact that the WE is actually less competitive than the CELA. They thought that we ought to check whether the characteristics of the WE and CELA are similar. Colt noted that little new infrastructure build had occurred since the last review – so it was not clear why we were extending the CELA to the west.[504]

5.378 [✂.] UKCTA and Exponential-e also questioned whether two OCPs had very high coverage throughout the WECLA. Colt generally thought that there was a higher reliance on BT network than our figures would appear to suggest.

5.379 UKCTA thought that a substantial part of the network in the WE was the trunk network to Heathrow, and that much of this network was not easily usable for local connections. It was concerned that we had overestimated network availability in WE.

5.380 Colt suggested that regulation in the CELA and WE could be different, with less regulation in the CELA and more in the WE.

[503] This is the western extension of the WECLA excluding Slough, which we have discussed separately.

[504] As discussed above, we collected new information on OCP network for this review and we believe we now have a more accurate view of OCP coverage.

5.381 In contrast, Zen agreed with our proposed WECLA geographic market.

Ofcom's considerations of consultation responses

5.382 We would expect some differences in competitive conditions over the WECLA (and WECLA+) area – as noted above, the emphasis is on determining whether the competitive conditions are sufficiently homogeneous such that a single geographic market definition is appropriate.

5.383 The question our geographic analysis seeks to address is not whether to extend the CELA. Instead, the question is whether there exists evidence of local geographic markets or whether there is evidence which suggests a national market exists.[505]

5.384 Therefore, the appropriate exercise is not a comparison of competitive conditions in the CELA and the WE since such an exercise would be based on the presumption that our findings in the 2007/8 Review have not changed and that the CELA should continue to be regarded as a separate geographic market.[506]

5.385 Nevertheless, in light of stakeholder comments we have looked at network reach and competitive conditions in the WE[507] separately from the CELA. The figure below presents the coverage of each OCP's network in terms of:

i) the percentage of large businesses within reach; and

ii) the percentage of sectors where the OCP has network for the WE and the CELA.

5.386 This allows us to assess whether OCPs' networks have sufficient presence across the geographic area to be a credible alternative to BT in the absence of wholesale regulated products.

[505] See, in this respect, Section 2 of the ERG Common Position.

[506] See, in this respect, footnote 21 to paragraph 35 of the SMP Guidelines which states that "[t]o the extent that the electronic communications sector is technology and innovation-driven, any previous market definition may not necessarily be relevant at a later point in time".

[507] This comprises the additional sectors in the WECLA (not in the CELA) to the west of the CELA boundary (excluding the Slough sectors which we discuss separately above).

Figure 5.51: Coverage of each OCP by business sites and by postcode sector – the CELA and the WE

	Business sites		Sectors	
Operator	**CELA**	**WE**	**CELA**	**WE**
[✂] Operator 1	99%	76%	96%	89%
[✂] Operator 2	97%	40%	95%	68%
[✂] Operator 3	84%	28%	82%	62%
[✂] Operator 4	80%	21%	72%	35%
[✂] Operator 5	46%	63%	42%	89%
[✂] Operator 6	59%	11%	55%	40%
[✂] Operator 7	52%	5%	38%	32%
[✂] Operator 8	24%	49%	23%	73%
[✂] Operator 9	16%	9%	15%	38%
[✂] Operator 10	19%	1%	13%	7%
[✂] Operator 11	1%	12%	1%	26%
[✂] Operator 12	2%	0%	2%	2%
[✂] Operator 13	0%	0%	1%	1%
[✂] Operator 14	0%	0%	1%	1%
[✂] Operator 15	0%	0%	1%	0%
[✂] Operator 16	0%	0%	0%	0%

Source: Operators/Ofcom

5.387 There are some differences between OCPs' coverage in the CELA and in the WE. OCP 1 has substantial coverage across both areas. However, while OCPs 2, 3 and 4 have substantial coverage in the CELA, they are less prevalent in the WE. OCPs 5 and 8 have relatively higher coverage in the WE compared to the CELA. As noted above, this may indicate that there are some differences between the WE and the (average for the) CELA, just as there will be within the CELA itself. This is to be expected, particularly given that the CELA includes the City of London as well as areas outside the main business districts to the North and West.

5.388 We have also looked at the number of OCPs within reach of each individual large business site. This helps us to identify whether there are large businesses who lack alternative suppliers to BT (e.g. while OCP coverage across the area might be good as a whole, there could be pockets of businesses which have poor OCP coverage). We have included the results for the rest of the UK (excluding the CELA and the WE) for comparison. The results are presented in the figure below.

Figure 5.52: Cumulative distribution of OCPs within reach of business sites – the CELA, the WE and the UK excluding the WECLA+

# of OCPs within reach	CELA	WE	UK excluding WECLA+[508]
0+	100%	100%	100%
1+	100%	96%	51%
2+	99%	87%	20%
3+	96%	64%	7%
4+	91%	45%	2%
5+	81%	19%	1%
6+	59%	4%	0%
7+	34%	1%	0%
8+	12%	0%	0%
9+	4%	0%	0%
10+	2%	0%	0%

Source: Operators/Ofcom

5.389 The results show that the majority of business sites in both the WE and the CELA have two or more OCPs within reach. We recognise that coverage is better in the CELA where 99% of businesses are within reach of two or more OCPs, compared to 87% in the WE, and there is more depth of rival infrastructure to BT in the CELA. However, as noted above, we would expect some variation in competitive conditions over the WECLA. Importantly, though, the WE clearly has better coverage relative to the rest of the UK where only 20% of large businesses are within reach of 2 or more OCPs.

LLU and MNO sites

5.390 We have also checked alternative operators' infrastructure coverage of LLU and MNO sites across the WE and the CELA on the basis that such sites might require leased line connectivity but might not be included in the dataset of large businesses used in the network reach assessment. We discuss each below.

MNO sites

5.391 The cumulative distribution of OCPs within 200m of mobile sites for the CELA and the WE is shown below.

[508] We show the rest of the UK excluding the WECLA+ because the WECLA+ is the geographic market we have defined. However, for the purposes of this comparison the difference between the UK excluding WECLA and the UK excluding WECLA+ is immaterial.

Figure 5.53: Cumulative distribution of OCPs within reach of mobile sites in the CELA, the WE and the UK excluding the WECLA+

# of OCPs within reach	CELA	WE	UK excluding WECLA+[509]
0+	100%	100%	100%
1+	100%	92%	40%
2+	98%	77%	15%
3+	95%	56%	5%
4+	89%	36%	2%
5+	77%	16%	1%
6+	60%	4%	0%
7+	35%	1%	0%
8+	12%	0%	0%
9+	5%	0%	0%
10+	3%	0%	0%

Source: Operators/Ofcom

5.392 The majority of mobile sites across both the CELA and the WE are within reach of at least two OCPs. OCP coverage across the WE is lower than the CELA with 98% of mobile sites in the CELA having 2 or more OCPs within reach, compared to 77% for the WE. A small proportion of mobile sites in the WE (8%) may lack an alternative supplier to BT. However, as noted above (in the discussion of the Slough sectors):

- most mobile sites are currently served by LB TISBO where we have defined a national market (excluding Hull); and
- again, some variation in competitive conditions is to be expected in any geographic market, however, our analysis shows that competitive conditions in the CELA and the WE are broadly similar, and secondly, that competitive conditions in the rest of the UK (excluding the WECLA+) are heterogeneous compared to those in the CELA and the WE.

5.393 In the light of the above, we do not think the scale of the apparent differences in network reach affecting MNO sites is inconsistent with the definition of a single geographic market.

LLU sites

5.394 The cumulative distribution of OCPs within 200m of LLU sites for the CELA and the WE is shown below.

[509] We show the rest of the UK excluding the WECLA+ because the WECLA+ is the geographic market we have defined. However, for the purposes of this comparison the difference between the UK excluding WECLA and the UK excluding WECLA+ is immaterial.

Figure 5.54: Cumulative distribution of OCPs within reach of LLU sites in the CELA, the WE and the UK excluding the WECLA+

# of OCPs within reach	CELA	WE	UK excluding WECLA+[510]
0+	100%	100%	100%
1+	100%	94%	22%
2+	97%	88%	8%
3+	91%	63%	2%
4+	88%	19%	1%
5+	66%	13%	0%
6+	56%	0%	0%
7+	41%	0%	0%
8+	16%	0%	0%
9+	6%	0%	0%
10+	6%	0%	0%

Source: Operators/Ofcom

5.395 The majority of LLU sites across both the CELA and the WE are within reach of at least two OCPs. OCP coverage across the WE is lower than the CELA with 97% of LLU sites in the CELA having 2 or more OCPs within reach, compared to 88% for the WE. A small proportion of LLU sites in the WE (6%) may lack an alternative supplier to BT. Again, though, we do not consider the scale of the apparent differences in network reach affecting LLU sites is inconsistent with the definition of a single geographic market.

Wholesale service shares

5.396 To assess the extent to which OCPs are actually successfully competing with BT we have looked at BT's wholesale service share in the CELA and the WE for the product markets where we consider a separate WECLA+ market.

Figure 5.55: BT service share – the CELA, the WE and UK excluding the WECLA+ and Hull

Product market	CELA		WE		UK excluding the WECLA+ and Hull	
	Circuit ends	BT share	Circuit ends	BT share	Circuit ends	BT share
MB TISBO	1,446	11%	162	24%	3,389	77%
HB TISBO	762	6%	99	19%	1,517	51%
AISBO	22,289	48%	3,506	63%	122,016	74%
MISBO	1,076	22%	141	28%	3,139	57%

Source: Operators/Ofcom

5.397 The number of circuit ends for MB TISBO, HB TISBO and MISBO services respectively are small in the WE, but we note that in all cases the service share in the WE is between the share in the CELA and in rest of the UK and usually significantly lower than the UK excluding the WECLA+ and Hull. For AISBO BT's service share is

[510] We show the rest of the UK excluding the WECLA+ because the WECLA+ is the geographic market we have defined. However, for the purposes of this comparison the difference between the UK excluding WECLA and the UK excluding WECLA+ is immaterial.

somewhat higher in the WE relative to the CELA, however, in both cases the share is close to 50% or more.

5.398 We have also considered whether limits to merchant market transactions between OCPs might be a barrier to competition in the WE. Figure 5.56 below shows the merchant market ends as a percentage of total circuit ends in the CELA and the WE to provide an indication of wholesale activity between OCPs.

Figure 5.56: Merchant market transactions – the CELA and the WE

	CELA			WE		
	Circuit ends	Merchant market ends	Merchant as % total	Circuit ends	Merchant market ends	Merchant as % total
MB TISBO	1446	472	33%	162	56	35%
HB TISBO	762	240	31%	99	58	58%
AISBO	22289	2462	11%	3506	340	10%
MISBO	1076	68	6%	141	7	5%

Source: Operators/Ofcom

5.399 The Figure illustrates that there is a similar proportion of merchant market ends in the CELA and the WE.

5.400 In conclusion, we recognise that there are some differences between the CELA and the WE – in particular the OCPs with extensive coverage in each area differ. However, the overall level of coverage in both areas is similar – with the majority of large businesses within reach of at least 2 OCPs. The evidence of actual competition (i.e. BT's service shares) indicates that OCPs are active in both areas. Although there is some variation between the WE and the CELA, this is to be expected, just as there is inevitably some variation within the CELA itself. We consider that competitive conditions in the WE and in the CELA are broadly similar, which is consistent with the finding that they are part of a single geographic market.

Retail geographic market definition – very low bandwidth TI in the UK excluding Hull

5.401 In the June BCMR Consultation, we defined a retail low bandwidth TI product market. As described in Section 3, we have revised our market definition and now define a separate retail very low bandwidth TI product market. We present below our geographic assessment for the retail very low bandwidth TI market based on the criteria noted at paragraph 5.12.

Service share analysis

5.402 BT's average service share is 84% in the UK (excluding Hull). In Annex 15, we present a further analysis of the geographic variation in service shares for this product market. We find that there is little variation across the UK.

5.403 In taking a forward-looking approach to market definition, we consider likely developments in service shares over the three years up until the next review. In the June BCMR Consultation, when considering the retail low bandwidth TI market, we noted that the low bandwidth TI market is declining and significant new entry by local operators was unlikely to have occurred since the previous review. In fact, we thought the picture was likely to be one of consolidation among BT's rivals with some

leaving the market as independent competitors. However, we noted that BT's overall market share has fallen gradually over time since the last review suggesting some increase in the strength of competition. Along with other changes which have affected the market nationally,[511] we thought that future developments in the market were more likely to be influenced by national factors and, because significant new entry is unlikely, we did not anticipate the emergence of local variations in competitive conditions.

5.404 We consider that this assessment also applies to the very low bandwidth TI market.

Consumer survey evidence

5.405 The main purpose of the geographic element of the consumer research (see Section 5.5 of the Jigsaw research report) was to ascertain the extent to which consumers source their retail leased lines services from multiple suppliers. In this respect, the report does not differentiate between consumers of different bandwidth services (therefore the analysis presented below is the same as the June BCMR Consultation). If retail customers tend to demand solutions from single suppliers, that would reduce the significance of retail supply at the local level.

5.406 Our consumer research shows that 47% of respondents use more than one supplier (compared with 50% in 2007), and 53% use a single supplier for all business connectivity services. The high proportion of businesses using a single supplier (slightly higher than in the previous review) suggests that, at the retail level, national purchasing remains important.

5.407 BT remains the largest supplier, as it was in 2007, with 2 in 3 respondents using BT for business connectivity services. Once again, large companies (those with more than 500 employees) were significantly more likely to use alternatives to BT than small or medium sized businesses.

5.408 Finally, as part of our forward-look, we consider whether there are likely to be any significant changes in purchasing patterns over the three years up until the next review. In the light of evidence from the 2011 and 2007 surveys that the proportion of businesses using a single supplier was broadly constant, we do not expect any significant change in the frequency of usage of multiple suppliers over this time horizon.

BT pricing policies

5.409 In the June BCMR Consultation, we noted that it would be preferable to have the pricing policies of all operators in order to conduct a comprehensive analysis of geographic variations in competitive conditions. However, because retail leased lines form only one input to the services sold by service providers to businesses, the best available evidence was BT's retail prices (where BT has obligations to publish them). However, we also noted that BT is subject to retail regulation in this market which requires it to publish prices, and BT's pricing behaviour might change if such

[511] i.e. the achievement of replicability and the reduction in point of handover charges resulting from the charge control associated with the 2007/8 Review.

regulation was removed. Therefore, we concluded that BT's prices were not well suited in this instance to evaluating differentials in competitive conditions.[512]

Conclusion

5.410 In the June BCMR Consultation we proposed that the retail low bandwidth TI market was national in scope (excluding the Hull area). No stakeholders commented on this proposal. We have reconsidered our analysis in light of the revised retail product market definition noted above. Having considered the analysis presented above we have concluded that the retail very low bandwidth TI market is national in scope (excluding the Hull area). Annex 15 provides further detail on the analysis that we have conducted to inform our geographic market definitions.

Geographic definition of retail and wholesale markets in the Hull area

June BCMR Consultation

5.411 In the 2007/8 Review we concluded that the Hull area was a distinct geographic market from the rest of the UK partly on the basis that KCOM, the incumbent operator, was by some distance the biggest communications provider, with a much wider network reach than other providers throughout the Hull area.

5.412 Our updated analysis of network reach[513] and service shares in Hull, showed that this remains the case. We also noted that KCOM adopts a uniform price policy and, where it is required to publish its prices, it defines a set of pricing rules which apply equivalently throughout the Hull area for all of its leased line services sold within the area.[514]

Consultation responses

5.413 No stakeholders commented.

Conclusion

5.414 We have decided, as proposed in the June BCMR Consultation, that the Hull area constitutes a separate geographic market from the rest of the UK in each of the retail and wholesale product markets for terminating segments, as defined in Sections 3 and 4.The precise definition of the Hull area is provided in the Notification in Annex 7.

[512] For completeness we note that BT prices some of its retail low bandwidth traditional interface leased lines circuits at a discount in the Central London Zone (CLZ), which is the area traditionally corresponding to 0207 numbers.

[513] Subsequent to the June BCMR we became aware that MS3, an independent data and telecoms provider, was deploying a fibre network in Hull. We conducted a sensitivity test which looked at the impact of MS3 network in the Hull area. This did not make any difference to the findings in the June BCMR Consultation.

[514] As part of its retail pricing rules, KCOM charges different prices where the ends of a retail circuit are in exchange areas which are not adjacent to each other. However, this applies equally whether each of the ends is located in Hull or elsewhere. See http://pricing.k-c.co.uk/business-main.asp

The assessment of competitive conditions in city areas outside London and Hull

Summary

5.415 In the June BCMR Consultation, we proposed not to define any separate geographic markets outside London (the WECLA) or Hull. Having considered stakeholders responses, we maintain this view.

June BCMR Consultation

5.416 In the June BCMR Consultation, we presented separate analysis for the main city areas outside London that informed our proposals on geographic market definition across the product markets for terminating segments.

5.417 This analysis confirmed the presence of competition in urban areas outside London. For example, we found a small set of HNR areas within Birmingham, Leeds and Manchester. In those areas, services shares were low for some product markets in some postcode sectors, but for other product markets and postcode sectors shares were high (even if in all of these areas we had evidence of the presence of alternative infrastructure).

5.418 We compared the materiality of seven key urban areas (other than London) against the WECLA, looking at the volumes of AISBO and MISBO circuits, noting that the scale of activity in other urban areas was much smaller than in the WECLA. We considered that there was a clear contrast between the scale of the WECLA and the much smaller HNR areas in other cities.

5.419 We did not consider that any urban areas outside London were sufficiently material to define as separate geographic markets. In addition, across such small areas it was difficult to undertake a robust assessment of competitive conditions.

Consultation responses

5.420 Virgin, Colt and UKCTA agreed with our proposal not to define further geographic markets outside London.

5.421 DotEcon and BT disagreed.[515] In its response to the November BCMR Consultation, BT noted that there were HNR sectors in many cities including Manchester, Birmingham, Bristol, Leeds, Glasgow, Edinburgh and Liverpool. It noted that a number of these cities had a similar or larger number of AISBO circuits compared to the Slough sectors (which we include in the WECLA+ market). BT thought that we should consider forming a single geographic market for these areas or a number of separate regional metro area markets.

5.422 DotEcon noted that we had decided not to define other cities as separate markets because there were few customers taking AISBO and MISBO services in each area. DotEcon considered that this was not a reasonable criterion to apply because the current take up of services did not indicate much about the choices available to these customers, and a lower take up in urban areas outside London might just reflect differences in customers at the various locations. It commented that there were a

[515] BT argued that we should define a 'Rest of the UK Metropolitan Areas' geographic market which was logically contiguous to the WECLA. This is discussed under the Contiguity heading above.

significant number of business sites in the urban centres outside London i.e. there were about twice as many businesses in the HNR sectors in the urban areas outside London compared to WECLA.[516]

Ofcom's considerations of consultation responses

5.423 We agree with DotEcon that demand for leased lines is likely to vary between different urban centres. This is one reason why we have not aggregated postcodes sectors with high network reach from disparate regions into a single market (discussed further at paragraphs 5.167 to 5.172 above).

5.424 We have reconsidered the case for defining separate geographic markets outside London in light of stakeholder comments and our updated circuit count and service share methodology. We have focused on Manchester, Birmingham and Leeds which are the largest leased line markets outside London.

5.425 Our analysis focuses on AISBO circuits in the contiguous sectors with HNR in each city. For the other product markets the number of circuits is very small[517] and would not be amenable to a meaningful analysis of service shares.[518] Figure 5.57 below summarises key statistics for each area, the number of AISBO circuits and BT's service share.

Figure 5.57: Comparison of major urban areas, AISBO

	No of contiguous HNR sectors[519]	Large businesses in sectors	Experian large businesses as % of UK total	Number of AISBO circuit ends	% of UK volumes	BT's service share
Birmingham	12	738	0.3%	827	0.5%	58%
Leeds	32	1,174	0.5%	1,339	0.9%	65%
Manchester	55	1,540	0.7%	1,496	1.0%	79%
WECLA+	421	10,815	4.8%	27,929	18%	51%
UK less WECLA+ and Hull	9,563	211,757	94.5%	122,016	81%	74%

Source: Operators/Ofcom

5.426 The first point to note is the difference in BT's service shares across the cities – e.g. 79% for the sectors with HNR in Manchester compared to 51% in the WECLA+. It is clear that there are significant variations in competitive conditions across the distinct cities.

5.427 BT's service share is higher in all the cities outside London compared to the WECLA+ and Hull. For Manchester BT's service share is actually higher than the

[516] DotEcon response, paragraph 145. As noted in paragraph 5.429 below we think that DotEcon has misinterpreted the information provided in the consultation.

[517] The exception is LB TISBO, where we anyway define a national market (excluding Hull).

[518] This is not just because we have focused on the HNR areas, even if we expanded our analysis to include the whole metropolitan area for each city the number of circuit ends for these product markets for a given city is less than 70.

[519] As noted in paragraph 5.77, the WECLA+ includes 16 sectors which are low network reach, these are included in the WECLA+ statistics.

share for the UK excluding WECLA+. This suggests the competitive conditions are not sufficiently distinct from the rest of the UK to justify separate geographic markets.

5.428 In Birmingham, BT's service share is 58% which is higher than in the WECLA+, though lower than in the other urban areas. The Birmingham area is also much smaller than the WECLA+, and competitive conditions will also differ for this reason and because of the lower number of CPs present. The number of AISBO circuit ends is small (less than 900) and only equates to 0.5% of the total AISBO market in the UK.[520] The small market size in Birmingham means the potential for competition in AISBO is unlikely to be as good as the WECLA+ and it is less likely that competition would be sustainable (see paragraph 5.164 above). Furthermore, given the small number of circuits in the city it is unclear that any assessment of competitive conditions would be robust. We consider that we should not define a separate geographic market in the Birmingham area as competitive conditions do not appear to be sufficiently distinct from the surrounding area.

5.429 DotEcon thought that the areas of high network reach in the urban areas outside London contained a significantly greater number of large businesses than the WECLA. However, DotEcon misinterpreted table 40 in the June BCMR Consultation. There were 6367 large business sites in the areas of high network reach across all the 7 large urban areas listed in table 40 of the June BCMR Consultation, compared to 8965 large business sites in the area of high network reach in the WECLA (now revised to 10803). As we illustrate above, for each urban area outside London, the contiguous postcode sectors with high network reach contain less than 1% of total large UK businesses.

5.430 We do not think that any urban areas outside London have sufficiently material leased line demand to justify the definition of separate geographic markets currently.

[520] To give an idea of the value of the market we have taken BT's annual average revenue per AISBO circuit end [✂] as a proxy for industry average revenues per circuit, and multiplied it by the number of circuit ends in the HNR area Birmingham. Using this approach the market value in the HNR area in Birmingham is around [✂] per year.