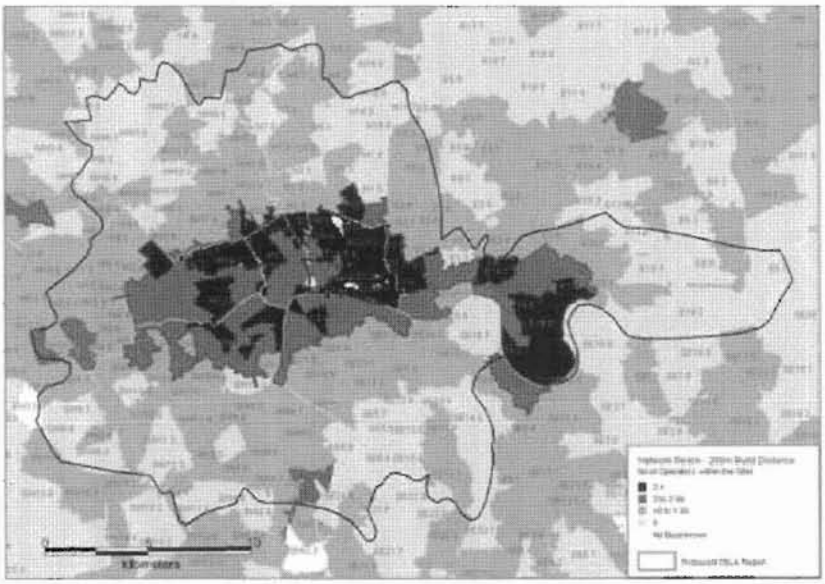
Assumed build distance is too long

6.25 Some respondents argued that our use of a 250m radial distance build distance was an order of magnitude too high. They made a number of points in order to support their view. This included arguing that we have not included all relevant costs in arriving at our economic build assumption and other factors such as the actual builds not being straight line builds, the contract length and the time involved in providing a circuit. These respondents question why Ofcom had used a relatively high build distance assumption of 250m despite responses to its Disaggregated Markets consultation document published in 2006 which suggested that the economic build distance is much shorter. One also cautioned against Ofcom using a long build distance because of practical difficulties of using a shorter distance. One of these respondents suggested that digging even 40m from a flex-point to a customer would be exceptional.

6.26 In light of the comments and additional evidence we received on the economic build distance used in our geographic analysis we revisited the question of what an appropriate build distance assumption would be. This additional analysis was set out in the July 2008 consultation where we considered the local geographic boundary of the very high bandwidth 155Mbit/s TISBO market. In light of this additional analysis we considered that a more appropriate build distance to use in our geographic analysis is 200m as opposed to 250m. This has the effect of changing the precise boundary of the Central and East London Area (CELA) market in those product markets where we conclude that local geographic markets exist. The revised boundary of the CELA market is shown in Figure 6.1 below, with the boundary of the market shown in red. The black boundary signifies the boundary of the CLZ, which is defined as the geographic area served by the 020 7 dialling code.

Figure 6.1: Boundary of the CELA market proposed in the July 2008 consultation document



6.27 We have received a number of comments in response to our revised build distance assumption in the July 2008 consultation. Many of these respondents remain critical that we have used too long a build distance. These respondents argue that given the build costs and the prices on which BT is required to make its services available, a

build distance of no more than 50m is justifiable. However, some of these respondents acknowledge that other relevant economic indicators such as existing service shares might suggest that an appropriate build distance assumption could be up to 100m.

6.28 BT on the other hand argues that for very high bandwidth 155 Mbit/s TISBO services in particular that the economic build distance for alternative operators should be substantially more than 200m. BT cites the fact that in postal sectors outside the proposed CELA boundary there are alternative operators which are able to provide a significant number of circuits. BT argues that the 200m assumption is impacted by the fact that BT is required to provide regulated wholesale access products and that absent regulation there would be a greater incentive for alternative operators to extend their networks.

6.29 One respondent commented that it agrees with our geographic assessment of the very high bandwidth 155Mbit/s TISBO market whereby we have identified a separate local market in the London area.

6.30 Ofcom has carefully considered all of the points raised by respondents on this issue in response to both the January and July 2008 consultations. After due consideration we continue to consider that the revised proposals set out in the July 2008 consultation remain appropriate and that the appropriate economic build distance assumption used in our network reach analysis is 200m (revised from 250m in the January 2008 consultation). We also consider that this economic build distance assumption is relevant for both the high bandwidth TISBO and the very high bandwidth 155 Mbit/s TISBO markets, where we found evidence of variations in competitive conditions, which suggest the presence of local geographic markets.

6.31 One of the main points put forward by respondents arguing for a shorter assumed economic build distance is that given the cost of purchasing wholesale inputs from BT based on current regulated prices, operators would not build out to 200m (with many arguing they would not build out beyond 50m). Some of these respondents contrasted this with the historic position where BT was not required to offer wholesale inputs at regulated prices and as such it was economic for alternative operators to build out longer distances in that environment.

6.32 Ofcom recognises that this indeed may be the case. We would expect that as regulation has been introduced which has had the effect of reducing BT's prices, alternative operators would revise their decisions about when to build and extend their own network or purchase inputs from BT. As BT's prices fall, we would expect operators to purchase more from BT. However, we have a number of observations on this point.

6.33 The first observation is that when defining markets for the purposes of assessing whether there exists SMP and whether there is a requirement for ex-ante remedies to be put in place, it is necessary to abstract from regulation at the level of the market being assessed. This is because to do otherwise introduces circularity into the market definition process. In the current discussion, this means abstracting from the provision of regulated wholesale inputs by BT at regulated prices. The appropriate build-buy consideration for operators is that which exists in the absence of such regulation. Therefore, the consideration of alternative operators may be closer to a decision as to whether to build and extend their own network in order to serve a new customer or not to build and extend their own network at all and to forego serving that customer. Such a build distance is likely to be greater (and perhaps significantly greater) than it would be where regulated wholesale products are available from BT.

6.34 A further observation, linked to the first, is that our network reach analysis together with our local service share analysis indicates that in the geographic area defined as the CELA a number of operators have extended their networks further than 50m in order to serve customers. Respondents have argued that this reflects the build decision at the time prior to the availability of BT regulated products and as such is not relevant now. On the contrary, Ofcom considers that this is very relevant as it shows that in the absence of the option of purchasing regulated products (which we have set out above we need to abstract from when defining markets in this review) operators do build significant distances.

6.35 A third observation is that despite the presence of regulation which requires BT to provide wholesale inputs at regulated prices, the evidence suggests that competition in the wholesale high bandwidth TISBO and very high bandwidth 155Mbit/s TISBO markets has continued to develop and increase. This is contrary to what might be expected if operators were truly limited in their ability to self-provide wholesale services in these markets.

6.36 Respondents also argued that even if an economic build distance of 200m can be established for the very high bandwidth 155Mbit/s market, then the appropriate build distance should be shorter for the high bandwidth market. Alternatively, as argued by BT, the build distance for the latter market should be longer as a 200m economic build distance has been established for the high bandwidth TISBO market.

6.37 In response, we agree that it is not unreasonable to suggest that there would be different economic build distances for different bandwidth services and that these would increase as bandwidth increases, due to the higher value of higher bandwidth services. That said, it is not clear, given the available evidence, that for these services where we have identified local geographic markets that any difference in economic build distance is significant. This is particularly so when we review the local service share data in the London area for each of the two product markets. This analysis suggests that a build distance in the region of 200m is appropriate for both product markets. Of course, we recognise that competitive conditions may change going forwards. It is therefore important that we continue to review conditions in these markets to ensure that the conclusions reached in this market review remain relevant.

Using postal sectors as the geographic unit for analysis

6.38 A number of respondents argued that this geographic unit is not disaggregated enough to fully capture any geographic differences in competitive conditions. The result of this will be that the local geographic markets defined by Ofcom will include areas of insufficiently homogeneous competitive conditions. Some of these respondents advocated that the analysis should be conducted on a building-by-building basis to mitigate this risk.

6.39 One of the respondents also added that it was not open to Ofcom to make a trade-off between precision and practicality. It added that if there are geographic areas within broader geographic units (e.g. postal sectors) which have different conditions of competition then the definition of markets based on these broader geographic units is likely to have unintended and detrimental impact on consumers. Another respondent argued that if Ofcom were not able to robustly identify those areas where there is more competition, then the market should be defined as national in scope. This approach, would ensure that regulation is kept in place unless it is shown that it needs to be removed.

6.40 We disagree with respondents which argued that we should not use postal sectors as the geographic unit in our analysis. As we noted in our discussion of this issue in the January 2008 consultation, while using individual premises would allow a very granular assessment of competitive conditions, there are practical issues which need to be considered. These practical considerations, including obtaining accurate data, conducting the required analysis and being able to implement the findings mean that it would not be possible to come to a conclusion on the question being asked or to implement the requirements of the Regulatory Framework. This would clearly not be an acceptable outcome and this is the reason why we need to strike an appropriate balance between granularity and practicality.

6.41 This is also the reason why we do not agree with the comment from the respondent which stated that we could not strike such a balance. In striking this balance and using postal sectors as the geographic unit in our analysis we explicitly recognised that within individual postal sectors included within a geographic market that there may nonetheless be some variation in competitive conditions. But this will be the case regardless of the geographic unit used if it is more aggregated than an individual premise. The alternative to not striking a balance is not to conduct the geographic analysis at all, which as noted is not an acceptable outcome.

6.42 We also do not accept the comment from one of the respondents which in effect proposed that if we are required to strike such a balance then the market should be defined as national in scope so that regulation is retained until it is shown that it needs to be removed. We disagree with this proposed approach for a number of reasons, including:

- it presumes that the default market definition is national and that it should be regulated (when in fact there is no such default market definition as definitions should be based on the available facts); and

- if geographic variations in competitive conditions which can be shown to exist are not reflected in market definitions, then the market power assessment could find that there is no operator with SMP across that whole market. In this scenario geographic areas which should properly be regulated will end up not being regulated, with the associated risks of detriment for citizens and consumers.

6.43 It might also be argued that by striking a balance between granularity and practicality this could risk creating pockets of monopoly within a deregulated local market. That is to say there might be small areas within a postal sector that is included in a deregulated market in which there are some small geographic areas e.g. individual buildings, where end users are unable to access competitive supply options. Ofcom notes on this point that it would nevertheless still have available its ex-post competition law powers to address any abuse of monopoly power in such a scenario.

More than two competing operators are required

6.44 Respondents argued that if separate local markets are to be defined, a presence of more than two competing operators in addition to BT is required. They also argued the proposed approach appears to be inconsistent with Ofcom's approach in other areas, with wholesale broadband access and mobile telephony cited. One respondent stated that economic theory suggested that five competitors are required for a market to be found competitive. Moreover, one of these respondents argued that due to operators having limited connectivity to buildings (even within the proposed CELA market) the prospects of a fully functioning merchant market existing are limited. In this light this respondent argued that the market must be national in

scope as it is not possible to sell multi-sited products but not to be able to offer supply in the proposed CELA area.

6.45 We do not agree that the presence of more than two competing operators in a geographic area is required in order to be able to define a geographic area as a separate market from another geographic area. In paragraphs 6.48 to 6.51 of the January 2008 consultation we set out our approach to defining the precise geographic boundary of the local market where the available evidence suggested that local geographic markets exist.

6.46 It is important to note from this discussion that the number of operators which are able to serve customers is only one of the indicators of whether there are local geographic markets. The other indicators are local service shares and BT's pricing policies. In the high bandwidth TISBO and the very high bandwidth 155 Mbit/s TISBO markets in which we identify a separate CELA market, our service share analysis showed that BT's service share tended to be lower in the central London area. It is also the case that BT chooses to sell services in the high bandwidth TISBO market at a discount in the CLZ (which covers the central London area). Our network reach analysis also showed that postal sectors where there are two or more competing operators able to serve customers were highly correlated with the postal sectors where BT had a low service share in the central London area. The postal sectors where there are three or more competing operators able to serve customers were much more dispersed and as such do not correlate as well with the data on local service shares.

6.47 We also consider that our approach is consistent with our approach in wholesale broadband access where three or more competing operators were used to inform the precise geographic boundary of the markets in that review. We explained in the January 2008 consultation that the model of competition in TISBO markets is based on investment in competing local infrastructure as opposed to gaining access to regulated local loops in the case of wholesale broadband access. This difference means that there is a difference in the balance between fixed costs of entry to a local market and the incremental cost of serving additional customers (with the incremental cost of serving additional customers within an exchange area being very low in the case of wholesale broadband access).

6.48 In the case of mobile telephony, while the 3G spectrum award in 2000 did provide a licence for a fifth operator it has never been our position that five operators are required in order to find the market to be competitive.

6.49 We also disagree with the respondent which argued that economic theory suggests that a minimum of five competitors are necessary for a market to be found to be fully competitive. This respondent did not provide a reference for its assertion. However, Ofcom would note that mergers are often cleared by competition authorities where the market structure changes from five to four competitors, four to three competitors and even three to two competitors.

6.50 On the comment relating to the prospects of a fully functioning merchant market, while the development of such markets in an unregulated environment could potentially support wider provision of downstream services (in that retailers will have access to wholesale inputs) it is not a necessary condition for the finding of a local market or for the justification of the removal of regulatory obligations at the wholesale level. The relevant consideration is whether there could be expected to be sufficient competition to protect the interests of consumers at the retail level. Our analysis shows that in the CELA market, there are a number of operators which have a very

significant coverage of the geographic area included in that market. In addition, there is substantial evidence of alternative operators interconnecting with each other in the London area suggesting that there are opportunities for a merchant market to continue on a forward-looking basis. These factors separately and together suggest that consumers (businesses) requiring multi-site connectivity will be able to secure such connectivity, even in a situation where there are different regulatory obligations in the CELA geographic market.

Practical issues associated with local geographic markets

6.51 Two respondents questioned the practical issues related to the finding of local geographic markets. The practical issues highlighted include the increased complexity introduced by local geographic markets such as understanding costs, the separation of regulatory accounts and the greater burden on Ofcom and operators and the potential for leverage between different geographic markets. One of these respondents argued that the geographic deregulation of leased lines markets would require significant changes to billing and provisioning processes. These respondents argued that these points meant that Ofcom should have conducted a more thorough impact assessment before coming to its conclusions.

6.52 We agree that the practical issue highlighted by these respondents are important and that regulating on the basis of local geographic markets does create additional complexities. However, we do not agree that this would be grounds for concluding that the market is national in scope when the available evidence suggests that there are substantial geographic variations in competition and local markets are present.

6.53 In addition, we do not agree that it is appropriate to determine the boundary of the relevant market by reference to an impact assessment or that Ofcom has duty to consider such issues in its impact assessments. The market definition should reflect the available evidence, which in the case of the high bandwidth TISBO and the very high bandwidth 155Mbit/s TISBO markets we considered support the definition of the CELA market. Impact assessments are however required to assess the suitability and proportionality of the different remedy options available.

Supply-side substitution and ability to interconnect

6.54 One respondent argued that there is not sufficient evidence of supply-side substitution to justify the relaxation of ex-ante remedies in the high bandwidth TISBO market. Another respondent made a related point, arguing that the evidence it had suggested that there remains limited scope for alternative operators to interconnect with each other.

6.55 We note that we have not argued that the geographic boundary of the markets considered in this market review should be defined by reference to supply-side substitution as the scope for such substitution is limited. We therefore seek to assess the homogeneity of competitive conditions to inform whether separate local markets exist in the provision of these services.

6.56 In paragraphs 6.57 to 6.66 of the January 2008 consultation we set out our consideration of barriers to interconnection together with operators' coverage of the geographic area which makes up the proposed CELA market. This included:

- the evidence available to us on the extent to which operators (excluding each other) interconnect with each other in different geographic areas (national, CLZ including City of London, CLZ excluding City of London, and City of London); and

- the coverage by business sites and postal sectors included in the proposed CELA market for each individual alternative operator for which we collected data for the market review.

6.57 We concluded in light of the available evidence that insurmountable barriers to interconnection do not exist. To the extent such barriers exist, their importance for competition is diminished by the evidence which shows that there are operators which have a very significant coverage of the proposed CELA market.

6.58 The evidence provided by one of the respondent could be interpreted to suggest that it is limited in its ability to interconnect with other operators. However, it did not identify in which geographic area its evidence related to so it is not possible for us to assess whether it applies to the proposed CELA market. Regardless of this, the evidence which we presented in the January 2008 consultation which showed that of 924 high bandwidth TISBO ends in the City of London, 233 (or around 25%) interconnect with alternative operators continues to support the conclusion that any barriers to interconnection are not insurmountable, particularly in the central London area.

The number of business premises included looks too low

6.59 One respondent commented that we have omitted a number of sites which should have been included in our network reach analysis as some will require 45Mbit/s (and higher bandwidth) services. These sites were BT network premises such as local exchanges, MSAN and METRO sites, mobile network operator network premises (e.g. radio base station sites), broadcast network premises, CCTV camera locations, telehouses and internet peering houses.

6.60 If we were to include these sites it is not clear how they would change the conclusions of the analysis (with the exception of BT's premises, telehouses and internet peering houses below). This is because there will be a limited number of additional locations in individual postal sectors so the conclusion of the geographic analysis will not be altered. What will be more important is that the relevant circuits supplying those locations are included in the market share analysis (once the market boundaries have been defined) and this is indeed the case. Therefore, we have included the additional sites where the relevant data has been easily sourced. On this basis we have included broadcast network premises in the analysis.

6.61 For BT's premises, telehouses and internet peering houses, when we considered these premises in the Disaggregated Markets discussion document we excluded these sites and associated circuits from the analysis. We found that due to the high concentration of circuits at these premises and the fact that many alternative operators have a presence at these sites, including these premises in the analysis could lead to the results of the postal sector analysis erroneously indicating that a postal sector was more competitive than it actually was. This effect can be illustrated by way of a simple example. Assume a postal sector contains the location of a telehouse and this telehouse has many hundreds of circuits connected to it with only a very small minority being provided by BT. Next assume that the same postal sector has within it five business sites, all of which were provided by BT. Under such a scenario there would be a risk of erroneously finding that postal sector to be relatively competitive (due to the supply conditions at the telehouse) even though there was little prospect of end-users being able to access competitive supply.

Local markets for very high bandwidth TISBO services

6.62 Two respondents to the January 2008 consultation disagreed with Ofcom's finding of a national market for the very high bandwidth TISBO market. One of these respondents cites lower retail prices from BT in the CELA as indicating differences in competitive conditions in support of its view. It also points to there being less competition in other areas of the UK as supporting a finding of local geographic markets. This respondent also argued in relation to the very high bandwidth market that if local geographic markets cannot be identified then Ofcom should be conservative about withdrawing regulation from this market as the withdrawal of regulation could lead to significant market failures in certain geographic areas. This point was supported by the other respondent which argued that local markets are more likely in higher bandwidth markets and as such 155Mbit/s TISBO products should be found to be in separate geographic markets, as there is negligible competition in certain geographic areas in the provision of these services while there is strong competition in other geographic areas.

6.63 The July 2008 consultation set out our revised proposals for the definition of separate product markets for very bandwidth 155Mbit/s TISBO and very high bandwidth 622 Mbit/s TISBO markets and the finding of a local CELA market for the very high bandwidth 155 Mbit/s TISBO market. We consider that the revised proposals in the July 2008 consultation address the comments summarised above.

The Hull area

6.64 Respondents who commented on the issues generally supported a finding of the Hull area to be a separate geographic market from the rest of the UK.

Trunk segments in the UK

6.65 As discussed in Section 5, we proposed a revised approach to identify the break between trunk and terminating segments for traditional interface circuits compared to the 2004 LLMR.

6.66 In the remainder of this Section, we discuss our revised trunk definition and, based on this definition, our assessment of geographic markets. First, we summarise our January 2008 consultation, in particular, we recap the key objectives of our trunk market definition to remind the reader why we thought it was necessary to revise our trunk market definition. We then explain the approach we adopted to identifying a revised trunk definition in the January 2008 consultation. We then consider responses to our January 2008 consultation and further analysis we have conducted in light of those comments. Finally, we present our conclusions in respect of trunk segments.

January 2008 proposals

Context to our geographic trunk market definition

6.67 Before setting out our approach to assessing geographic markets for trunk segments, we provide a reminder of the context to our trunk market definition. In particular, in the January 2008 consultation, we explained our concerns that the existing LLMR 2004 trunk market definition did not capture sufficiently the differences between trunk and terminating segments (i.e. TISBO services). In other words, we were concerned that the current trunk definition failed to capture where key economic bottlenecks existed.

6.68 The LLMR 2004 definition classed all circuits between BT Tier 1 nodes (or equivalents on OCPs' networks) as trunk. We believed this was appropriate, at that time, because many OCPs had elected to locate at a number of BT Tier 1 nodes and it seemed likely that they would interconnect at more nodes in future. Therefore, at the time of the last review, we considered that Tier 1 nodes would provide an appropriate forward-looking basis to inform the break between trunk and terminating segments.

Evidence since the last review suggested we re-assess the trunk definition

6.69 In the January 2008 consultation, we noted, however, that market developments since the last review suggested that OCPs had not built out their networks further to all Tier 1 nodes. In many cases, our assessment was that, for a large part, this reflected insufficient aggregation opportunities on certain routes to justify OCPs building further network to interconnect at all Tier 1 nodes. The evidence on OCPs' network build decisions appeared to point to the fact that the economies of scope and scale were more limited on some routes. We explained that some inter-Tier 1 routes might instead share characteristics more similar to terminating segments (i.e. routes that are more likely to be economic bottlenecks).[44]

6.70 By continuing to define trunk as circuits between Tier 1 nodes, we thought that this would potentially ignore evidence on the factors that limit operators' ability to interconnect deeper into the network. Hence, in light of the above developments since the last LLMR 2004, we wanted an alternative definition. We based this on the identification of key network nodes – referred to as "aggregation nodes" – that better captured where these bottlenecks reside (i.e. where the terminating market ends and where potentially competitive trunk market begins).

We proposed to identify aggregation nodes to inform the scope of the trunk market

6.71 In order to benefit from economies of scale an OCP is likely to want to carry all of its traffic between urban centres over a single high capacity trunk circuit if possible. It will therefore wish to aggregate traffic from all of its customers within each centre at a single point or node for onward conveyance over this trunk link. In most urban centres, therefore, operators are likely to interconnect at only one of BT's Tier 1 nodes. The OCP may need to purchase wholesale circuits from BT to provide links from customer premises to this node. At present, the links purchased from BT may well comprise both TISBO and trunk circuits, the latter being used where the link passes over more than one Tier 1 node within the same urban area. In future, under our proposed market definition, all the Tier 1 nodes within the same area would be grouped within a single aggregation node and any links between Tier 1 nodes in the same aggregation node will be regarded as TISBO.

6.72 As explained in Section 5, we considered that the aggregation nodes concept better reflects where the likely break between trunk and terminating segments sits. The aggregation nodes approach would capture the differences in competitive conditions, with more competitive trunk routes connecting urban centres, and the less competitive terminating segments distributing traffic to customer premises within these centres. This does not of course mean that all trunk routes are necessarily competitive, or that all SBO markets are necessarily uncompetitive. But it is consistent with the idea that competitive entry is more likely where entrants are able

to benefit from economies of scale by aggregating traffic onto their own high capacity links.

We identified aggregation nodes based on interconnection evidence and wider analysis

6.73 As a first stage to our trunk geographic market analysis, we assessed the likely location of these aggregation nodes to determine the scope of the trunk market. We based our identification of aggregation nodes on OCPs' interconnection and network build decisions. We supported this assessment with our own bottom-up analysis that identified potential aggregation nodes based on the likely available economies of scale in different geographic locations.

6.74 As a second stage to our geographic market assessment, having used the aggregation nodes we identified to determine the scope of the trunk market, we then undertook geographic analysis of the trunk routes between aggregation nodes to see whether it was appropriate to define sub-national markets. We explain these stages in more detail below.

Identification of aggregation nodes

6.75 In the January 2008 consultation, we therefore proposed to narrow the scope of the trunk definition by defining trunk circuits as those between a smaller number of "aggregation nodes". We identified 40 such aggregation nodes.

6.76 In order to determine the likely locations of these aggregation nodes we looked at available evidence on where most OCPs had chosen to interconnect with BT to locate their key points on the network to pick-up traffic. In parallel, we undertook further analysis ("proximity analysis"), which sought to take into account the factors that drive CPs' interconnection decisions and hence the likely extent of their trunk networks.

Proximity analysis

6.77 As explained in the January 2008 consultation, we undertook analysis intended to reflect the factors most important in determining the likely scope of CPs' trunk networks. We identified that, as a general rule, CPs' decision to interconnect at a particular node relates to two key factors:

- **the aggregation opportunities available:** based for example on the volume of circuits potentially served by that node; and
- **the relative distances involved:** if they are already located at another interconnection point (i.e. a BT Tier 1 node), what distances would be involved in getting back to an existing interconnection point (relative to interconnecting at the new node).

6.78 These volume and distance factors are likely to be very important in informing CPs' interconnection decisions. For example, consider the situation where a CP has the choice over whether to interconnect at one or more Tier 1 nodes in a big city (e.g. in Glasgow an OCP might choose to pick-up terminating traffic from either the Clyde or Glasgow Tier 1 nodes). It might be the case that one of these Glasgow nodes serves a relatively smaller number of potential end-users than the other. If a CP already has a point of interconnection at the other Tier 1 nearby, in these circumstances, it may not be worth investing in additional infrastructure to interconnect at a closer Tier 1 node. Instead of locating at all Tier 1 nodes in Glasgow area (i.e. both the Clyde and

Glasgow Tier 1 nodes), the CP would be more likely to backhaul their traffic to an existing point of interconnection (e.g. from an end-user site in the Clyde area to the CP's interconnection point at the Glasgow Tier 1 node nearby). On the other hand, with larger volumes of circuits, it may be economic to locate a network node closer to pick-up traffic from existing (and prospective) end-users sooner. Therefore, with sufficient aggregation opportunities it may be worthwhile to have a number of interconnection points in relatively close proximity.

6.79 To capture the relationship described above between the volume of circuits and the distance to the next nearest node, we assumed that it would be appropriate to group together any Tier 1 nodes with certain proximity of each other. However, reflecting the discussion above, we had to take into account the fact that the potential volumes served by different Tier 1 nodes would mean that there were different aggregation opportunities across the UK. We therefore used different "proximity assumptions" depending on the volume of circuits served at different Tier 1 locations. For example, we assumed that for areas with greater aggregation opportunities (based on the volumes of circuits sold in the catchment area of that node), a CP would interconnect at Tier 1 nodes even if these nodes were in relatively close proximity (10-15km). For Tier 1 nodes, serving relatively fewer circuits, we used a "proximity assumption" of 20-25km.

6.80 Hence, we took as our starting point BT's Tier 1 nodes and used our "proximity assumptions" to group those nodes together. For each Tier 1 node, we assessed whether it would be worthwhile for an OCP to locate at a particular Tier 1 node, given the location of one or more Tier 1 nodes nearby. We did this by comparing the information on the actual distances between nodes to our proximity assumption and grouped any nodes where the distance between them was less than the proximity assumption. Any Tier 1 nodes grouped together would form part of the same aggregation node. Therefore, each aggregation node represented at least one Tier 1 node and for some aggregation nodes potentially a group of one or more Tier 1 nodes. This "bottom-up" modelling approach resulted in grouping BT's Tier 1 nodes into a consolidated list of 40 identified aggregation nodes as set out in Table 6.3 below.

Table 6.3: January 2008 consultation aggregation node proposals based on major urban centres

ABERDEEN	CRAWLEY/REDHILL	LIVERPOOL	PRESTON
BELFAST	DONCASTER	LONDON	READING
BIRMINGHAM	EDINBURGH	LUTON	SALISBURY
BISHOPS STORTFORD	GLASGOW/CLYDE	MANCHESTER	SHEFFIELD
BRIGHTON	GLOUCESTER	MILTON KEYNES	SLOUGH
BRISTOL	GUILDFORD	NEWCASTLE	SOUTHAMPTON/COSHAM
CAMBRIDGE	IPSWICH	NEWPORT/CARDIFF	SWINDON
CARLISLE	IRVINE	NORTHAMPTON	WARRINGTON
CHELMSFORD	LEEDS	NOTTINGHAM	WOLVERHAMPTON
COVENTRY	LEICESTER	OXFORD	YORK

Source: BCMR, January 2008

6.81 Table 6.3 above shows, for example, a single Glasgow aggregation node (i.e. BT's two Tier 1 nodes in the Glasgow area and would now be represented by the single node). Hence, our assessment was that an OCP would not build out to both of those Tier 1 nodes reflecting a lack of aggregation opportunities. This would mean that we

would class any circuits between the Tier 1 nodes within the same aggregation nodes as terminating segments reflecting this form of economic bottleneck.

We complemented this proximity analysis with wider market evidence

6.82 The consolidation of 67 Tier 1 nodes into one of these 40 "aggregation nodes", depended to a large extent on the proximity assumptions referred to in paragraph 6.79 above. However, in parallel to this analysis, we also looked at actual interconnection evidence. This enabled us to cross-check the results we derived from the "bottom-up" analysis. It therefore helped ensure that the proximity assumptions we used to capture the likely relationship between likely aggregation opportunities and distances mentioned above were sufficiently robust. The available evidence on OCPs' network build and interconnection decisions tended to confirm our results. In other words, the evidence suggest that the aggregation nodes we identified using our proximity analysis coincided with evidence on where OCPs had chosen to interconnect with BT.

6.83 Therefore, through a combination of bottom-up (based on proximity assumptions) and top-down analysis (based on the actual CP interconnection), we were able to identify the 40 aggregation nodes.

Assessment of geographic markets

6.84 Having identified the 40 aggregation nodes that informed the scope of the trunk market, we then went on to assess whether we should identify local geographic markets for the trunk market. For each of the 40 aggregation nodes we identified, there would be (potentially) 39 other aggregation node destinations, resulting in up to 780 potential trunk routes. We considered whether, from this total number of (up to) 780 trunk routes, we could identify a sub-set of competitive trunk routes such that local trunk markets might exist.

6.85 Consistent with the approach we took to assessing our geographic market definition for TISBO and AISBO markets (as set out above) we based our geographic assessment of trunk markets on three main areas:

- demand and supply-side substitution opportunities;
- available price evidence; and
- potential variations in competitive conditions between individual trunk routes.

6.86 We explain our assessment in each of these areas below. Our overall assessment was that the available evidence, when taken together, pointed towards a national market definition.

Demand and supply-side substitution

6.87 In the January 2008 consultation, we noted that the principles of demand and supply-side substitution also apply to the definition of the geographic scope of the relevant economic market. However, rather than considering alternative products, we explained that (in the context geographic market definition) this analysis should assess whether a hypothetical monopolist seeking to impose a SSNIP on a particular trunk route would face constraints from demand and supply-side substitution. We

summarise below our assessment of demand-side substitution opportunities, which was the main point considered in our January 2008 consultation[45].

6.88 We noted that our product market definition (i.e. the identification of aggregation nodes) to some extent already captured demand-side substitution opportunities. This is because, under the proposed aggregation nodes approach we would treat many routes between Tier 1 nodes as possible substitutes. For example, circuits between any Tier 1 node within an aggregation node (e.g. London) to another aggregation node destination (e.g. Reading) would all be alternative means of serving the London-Reading trunk route. Hence, we would treat some circuits between Tier 1 nodes as direct substitutes for each other. Therefore, our aggregation node analysis implicitly took into account demand-side opportunities.

6.89 However, in the January 2008 consultation, we noted that CPs may also have the option of routing traffic less directly over alternative trunk routes (for example, if a CP had available trunk capacity, it could route traffic from London to Oxford and then from Oxford to Reading). We therefore noted that the ability of CPs to route traffic indirectly might point to much wider set of trunk routes constraining each other based on these indirect routing opportunities.

6.90 We considered, however, that the relevant test for market definition purposes was whether a hypothetical monopolist would be constrained from imposing a SSNIP on the London to Reading trunk route (on the assumption that each trunk route were competitively priced). If the costs of indirect routing were also priced in a cost reflective manner, we considered it would be unlikely that such "indirect" routing would impose a constraint (as the distances involved were higher).

6.91 However, we pointed to other scenarios in which indirect routing could impose a constraint. For example, we highlighted that a circuit routed from London to Manchester could use an intermediate point between both cities (e.g. Birmingham). Therefore, a CP with capacity on routes from London to Birmingham and Birmingham to Manchester could potentially compete for the London to Manchester route. If the choice of alternative trunk routes available to a CP is sufficiently flexible, (i.e. there are many alternative routes that could be used to serve a particular trunk requirement) then this could potentially result in each trunk route being progressively widened to include those alternate routes.

6.92 In our January 2008 consultation, we thought that demand-side evidence potentially pointed in different directions. As discussed above, based on a strict interpretation of market definition, we thought that this could result to a quite narrow market definition (based on individual trunk routes). Nevertheless, we also highlighted why a wider market definition might exist, which might, ultimately point to a national market definition. For example, if different trunk routes could be easily combined then, via a chain of substitution, this could result in a trunk market being defined as national in nature.

BT's pricing policies

6.93 If BT were subject to significantly different levels of competition on particular routes, then it might be expected to respond to that competition by reducing the price of trunk routes serving particular areas. However, based on our assessment of BT's published prices for its PPC trunk, we noted that it had elected to apply a uniform

[45] In the context of the hypothetical monopolist test, we did not think supply-side substitution would provide a sufficient constraint, given the significant cost and sunk nature of investments.

national price for its trunk segments (i.e. the price of trunk does not vary depending on which geographic area that circuit serves). As BT's trunk regulation does not prevent BT from varying prices by geography, we considered that its pricing behaviour did not suggest that it was facing strong competitive pressure on particular trunk routes. Therefore, we did not think that evidence from BT's pricing behaviour lent support to a finding of separate local trunk markets.

6.94 Hence, in the January 2008 consultation, we thought that BT's pricing behaviour did not support a sub-national definition; but we did not rule out demand-side substitution (via indirect constraints) also pointing to a wider market view. However, we explained that a demand and supply-side substitution might point to very narrow view of trunk markets. With this in mind, we undertook further analysis, starting with a relatively narrow (route-specific) definition. As with our geographic assessment of AISBO and TISBO markets, this was based on an assessment of variations on competitive conditions.

6.95 We explain further below our assessment of variations in competitive conditions. This includes how we came to a view that a national trunk market definition was appropriate, as was also suggested by BT's pricing behaviour and, in certain circumstances cases, by demand-side substitution.

Assessment of variations in competitive conditions

6.96 We analysed whether there was any other evidence of variations in competitive conditions that might point to "local markets" for specific trunk routes. To do this we followed a similar overall approach to the one we adopted to assess competitive conditions for terminating segments, namely:

- **Identification of the relevant geographic unit:** in the case of the assessment of trunk markets, we proposed that the relevant geographic unit would be each of the 780 possible route combinations between aggregation nodes;

- **Assessment of indicators of competitive conditions for each geographic unit:** we then identified relevant indicators of competitive conditions on trunk routes and used these indicators to assess potential competition for each route. We used three proposed criteria to capture the extent of likely competition based on likely CP presence on a particular route:

    i. that there are two or more other CPs located within 10km of at least one BT Tier 1 at both ends of the route;

    ii. that three or more CPs including BT are selling circuits to other CPs on the route; and

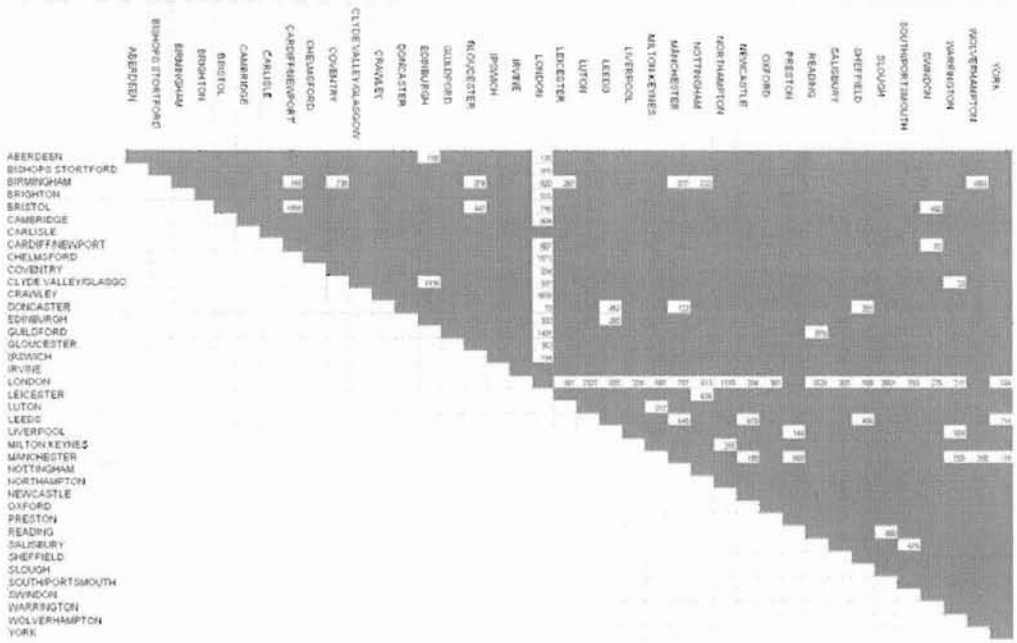
    iii. that there are ten or more circuits on the route.

- **Group together units with homogenous competitive conditions into geographic areas:** we grouped individual trunk routes together based on where the conditions of competitive are similar or sufficiently similar (as suggested by the three criteria above);

- **Conclude on relevant geographic markets:** having identified a sub-set of potentially competitive routes that would form a geographic area we then assessed whether available service share evidence suggested that competitive conditions were appreciably different for those routes.

6.97 Therefore, for those routes that we identified as potentially competitive, we looked at the available service share evidence to assess whether we could identify distinct geographic markets. We grouped individual trunk routes together based on where the conditions of competition were potentially similar or sufficiently similar. The results of this process are set out in Figure 6.2 below, where the greyed out routes showing routes excluded from our "candidate" list of potentially competitive routes.

Figure 6.2: Identification of potentially competitive routes



Source: BCMR, January 2008

6.98 The above results suggest that based on the above three criteria less than 10% of all routes are candidate "potentially competitive" routes (although this represents nearly 60% of total circuit counts). Therefore, the materiality of the "potentially competitive" trunk routes is relatively high in circuit count terms.

We assessed whether competitive conditions were appreciably different for those routes.

6.99 Having identified a sub-set of "potentially" competitive routes we then assessed whether available service share evidence[46] suggested that competitive conditions were appreciably different for those routes.

6.100 To assess potential variations in competitive conditions, we then looked at the available service share evidence. We considered that the competitive conditions did

[46] We have set out our methodology for estimating wholesale service shares in Annex 6 (paragraphs A6.24 to A6.45). In summary, as we did not obtain direct information on OCPs' self-supply (due to OCPs not routinely recording information on how they provision individual retail circuits), we had to estimate the extent of OCP self-supply on particular routes more indirectly. To do this, we used total trunk demand arising from retail markets (based on geographic information we had on retail sold between major urban areas) and information on BT and OCP wholesale circuit sales. From this total wholesale demand, we assumed that the OCP demand not met through their wholesale purchases would be self-supply.

not vary significantly on the "potentially competitive" routes compared to the other trunk routes. For the "potentially competitive" routes, BT's average services shares were very similar to the national picture. There were few individual routes (6 routes) where BT had a service share below 40% and we calculated that these routes only accounted for less than 4% of trunk circuits (weighted by bandwidth).

6.101 Therefore, BT's high service share on most routes and the materiality of those routes where BT had relatively low service shares did not provide compelling evidence of the existence of local markets. Hence, taking all of these routes together, BT's overall service share would not be very different when compared to the combined service share of all other trunk routes. In other words, we considered there was insufficient evidence of variations in competitive conditions to identify sub-national markets. Combined with the other available evidence, in particular on BT's pricing behaviour, we considered that a national market definition was appropriate for the trunk market.

Review of responses to the January 2008 consultation

6.102 In the January 17 consultation, we asked the following question:

Question 6: Do stakeholders agree with our proposed wholesale geographic market definitions?

6.103 Only BT provided specific comments on our geographic assessment of trunk markets. Other respondents were mainly interested in the possible impact of the change to the boundary of our trunk definition, which we have already addressed in Section 5.

6.104 As discussed in Section 5, BT and other respondents also requested to clarify further on the precise scope of the AISBO market. In Section 5, we explained why we think it is better to address this issue in the context of our geographic market definition rather than in the wholesale product market definition. We therefore also provide our discussion of the implications for the AISBO market in this Section.

Geographic assessment of trunk markets

6.105 As highlighted above, only BT provided specific comments on our geographic assessment of trunk markets. In summary, BT raised three main points, which we discuss in turn below:

- it expressed concerns that the three criteria we used to identify potentially competitive routes might exclude trunk routes that were in fact competitive;
- it suggested we should identify potentially competitive routes based on evidence of CP presence at either end of a trunk route; and
- it argued that we had underestimated the impact of competition from parallel infrastructure in our trunk assessment;

Criteria used to identify potentially competitive routes

6.106 Turning to our analysis of competitive conditions, in BT's view, the second and third screening criteria that we used to identify a group of potentially competitive markets were not legitimate basis for assessing competition on trunk routes. BT considered that the second criterion (i.e. that three or more CPs including BT are selling circuits to other CPs on the route) ignores the importance of self-supply. BT also noted that the third criterion, based on materiality (i.e. that there are ten or more circuits on the route) is not an appropriate indicator of the existence of competition problems. BT was therefore concerned that our proposed criteria excluded a number of potentially competitive trunk routes from subsequent geographic analysis.

6.107 BT considered that our analysis produced results that were counter-intuitive. For example, it noted that only four of the routes from the London aggregation nodes to other aggregation nodes are highlighted as competitive using the service share analysis. It also noted that only two of those routes (London-Newcastle and London-Cardiff) are among the top 25 routes out of London in terms of CPs with a presence at both ends, i.e. those with five or more other CPs.

Alternative approach to identify potentially competitive routes

6.108 BT believed that rather than applying the three thresholds and market share tests in defining geographic markets for wholesale trunk segments, Ofcom should base its analysis on the number of other CPs present at both ends of a route. It considered this approach would be consistent with the Commission's rationale for removing trunk segments from the Recommendation. BT proposed that the number of routes that would then be included in a separate geographic sub-market based on different thresholds would be as follows:

Table 6.4: BT's proposals for potentially competitive routes

Number of other providers	Number of routes	Percentage of total routes
3 or more	681	87%
4 or more	567	72%
5 or more	384	49%

6.109 In subsequent correspondence, BT also highlighted that it might be worth analysing "Big City" routes or those routes with the largest circuit counts.

Existence of parallel routes

6.110 BT was also concerned that our approach to assessing competitive conditions for individual routes did not take into account the European Commission's view, expressed in the explanatory note to its Recommendation, that the existence of parallel infrastructure has made the market for trunk segments effectively competitive. In BT's view, this suggested that the existence of sufficient alternative trunk capacity should be sufficient to conclude that the trunk market was competitive.

Ofcom's response to respondents views on geographic analysis

6.111 In this part of the Section, we provide our consideration and response to BT's concerns relating to the three main issues it raised regarding our approach to the geographic analysis of trunk:

- Whether the criteria we applied excluded potentially competitive trunk routes;
- We consider whether the alternative criteria proposed by BT might be more appropriate; and
- We assess BT's comments on parallel infrastructure.

Did the criteria used exclude potentially competitive trunk routes?

6.112 Before specifically addressing BT concerns in turn below, it is worth briefly highlighting why our geographic analysis is consistent with our standard approach to geographic market definition and relevant SMP Guidelines.

We applied the three main steps to geographic market definition

6.113 Similar to the approach to geographic assessment of wholesale symmetric broadband origination, we followed three main steps:

- An assessment of potential demand-side and supply-side substitution on specific trunk routes;
- The presence of a common pricing constraints across geographic areas; and
- Whether different trunk routes might be found to be in the same relevant geographic markets to the extent that the competitive conditions in different areas are sufficient homogenous.

Demand-side and supply-side analysis could point to very narrow markets

6.114 The starting point for product market definition is an assessment of the effect of possible demand and supply-side constraints. In particular, we consider whether a SSNIP imposed by a hypothetical monopolist on an individual trunk route would be rendered unprofitable by constraints arising from demand-side substitution (switching to other wholesale trunk routes) or from supply-side substitution (from other providers entering the market to provide competing trunk on that route).

6.115 In respect of demand-side substitution, as discussed in the January 2008 consultation (see for example paragraphs 4.4-4.6 and 6.6 to 6.10) we highlighted that in general geographic demand-side substitution often points to very narrow markets. This is because communications networks generally have a fixed and pre-defined geographic presence. This means that demand-side substitution is generally unlikely because customers are unlikely to regard a circuit in one location as a good substitute for a circuit located somewhere else. We did not consider that supply-side substitution would provide a sufficient constraint in response to a SSNIP on a particular trunk route, given the significant cost and sunk nature of investments. Therefore, supply-side substitution would not support wider markets.

6.116 However, we also noted that this finding was not that clear-cut because (on some routes) CPs may be able to switch their demand to alternative indirect routings using other trunk routes.

The existence and impact of uniform price on trunk circuits does not support sub-national markets

6.117 We attached significant weight to the fact that BT had continued to apply a national uniform price on trunk circuits.

6.118 BT's trunk regulation does not prevent BT from varying prices by geography. We considered in the January 2008 consultation that the fact that BT has not selectively cut prices suggests that it does not face strong competitive pressures on particular trunk routes. The evidence suggested that a national common pricing constraint was present. Therefore, BT's pricing behaviour does not lend support to a finding of separate local trunk markets.

6.119 In our SMP assessment, we also noted that information on BT's Return on Capital Employed suggest that BT's trunk profitability has been significantly and persistently high (our most recent estimates in Section 7, suggest that BT made a 67% return). Our conclusion in the January 2008 consultation was that competitive forces in the trunk market have not constrained BT's trunk pricing.

6.120 Therefore, BT's pricing behaviour does not suggest that it faces significant competition for a particular sub-set of trunk routes. This is underlined by the fact that, even with uniform prices (that is, without cutting prices to respond to competition on some routes), BT has been able to sustain very high returns on its wholesale trunk segments, which suggests that BT can act to an appreciable extent independently of its competitors.

Assessment of the homogeneity of competitive conditions

6.121 While the existence and impact of a uniform price for trunk segments suggested a national trunk market definition, we undertook further geographic analysis. Consistent with the European SMP Guidelines on market analysis and the assessment of market power, we sought to identify different geographic areas (i.e. a group of individual trunk routes) that might be found to be in the same relevant geographic markets, where:

- Competitive conditions are sufficiently homogenous; and
- The area can be distinguished from neighbouring areas where the competitive conditions are appreciably different.

6.122 The reason for using geographic analysis based on analysis of homogeneity of competitive conditions relates to the fact that our demand and supply-side substitution suggest very narrow market definitions (780 potential individual trunk routes). It was therefore necessary to devise criteria to identify a candidate group of competitive routes to make further analysis tractable (and that is consistent with the EC guidelines).

Identifying distinct geographic areas using "screening criteria"

6.123 Our objective was therefore to identify a group of potentially competitive routes within which the competitive conditions are sufficiently homogenous and sufficiently different from other routes to suggest they belong in a separate geographic market.

6.124 As discussed above, we applied three "screening criteria":

i. that there are two or more other CPs located within 10km of at least one BT Tier 1 at both ends of the route;

ii. that three or more CPs including BT are selling circuits to other CPs on the route; and

iii. that there are ten or more circuits on the route.

6.125 The first of the above criteria looked at the number and identity of operators present at both ends of a route. In general, the number of operators in a market is accepted as an indicator of its competitiveness, though other indicators are of course also relevant. This was supplemented by a measure of actual network presence based on the number of operators selling to third parties. This was merely intended to ensure that the operators identified by the first criterion did indeed have trunk capacity on the route. Combined with the third criteria we then "screened-out" a number of routes, leaving us with a small number of routes that were potentially more competitive than other trunk routes.

The competitive conditions for trunk routes were not sufficiently different to find local markets

6.126 The SMP Guidelines require that the relevant geographic area (i.e. the group of "potentially competitive" trunk routes) should only be defined as a separate local market, where this area: *"...can be distinguished from neighbouring areas where the competitive conditions are appreciably different."* As discussed in paragraph 6.99 earlier in this Section, having followed all of the above steps on geographic market definition, we did not find that the competitive conditions on this group of routes differed significantly from other routes. We concluded that it was not appropriate to identify separate local markets for a particular group of trunk routes.

6.127 Therefore, we consider that the steps we took to assess geographic markets were entirely consistent with the SMP Guidelines and in line with the three main steps that we also followed in our geographic analysis of AISBO and TISBO markets. However, one of BT's concerns over our geographic analysis related to the particular screening criteria we applied. In particular, it expressed concerns that our criteria based on "sales to third parties" and screening-out routes on which few circuits were sold may have excluded potentially competitive trunk routes.

6.128 To address this issue, we consider whether these criteria had excluded some potentially competitive routes from our analysis. We then go on to assess the alternative criteria proposed by BT.

Further assessment of the specific "screening criteria"

6.129 In the January 2008 consultation, we used sales of circuits to third parties on particular routes to establish CP presence. We highlighted in the January 2008 consultation the importance of ensuring that CPs were actually present on particular trunk routes. In particular, we noted that the fact that an OCP has presence at either end of a particular trunk route does not necessarily mean that they have competing trunk capacity between those locations.

6.130 Some providers also provided us with network information. But simply looking at OCPs' network maps as a way of determining whether they have capacity on a particular route does not tell us whether any prospective capacity could easily be used to serve traditional interface trunk markets. Operators such as C&W have highlighted for example that even where they are using their own trunk circuits to supply some of their retail leased lines customers they are still reliant on BT for trunk capacity to serve other customers at the same locations. In some cases, it would require significant further investment for an OCP to replace circuits they procure from BT with their own trunk capacity.

6.131 Given these issues, we therefore considered that third party sales on routes would provide a simple way of identifying "potentially competitive" routes with reasonably homogeneous competitive conditions. However, the use of this criterion does not mean that we overlooked the competitive constraint arising from self-supply.

6.132 Firstly, the criterion is intended only to identify groups of routes with reasonably similar competitive conditions for further analysis. The extent of self-supply as well as supply to third parties has then been taken into account in the subsequent SMP analysis and in our assessment of competitive conditions on the potentially competitive routes.

6.133 Secondly, the criterion identifies the routes where the most active competition is likely to exist. Our finding in the January 2008 consultation was that it was not possible to identify variations in competitive conditions on the initial set of most competitive routes. It therefore should follow that if, on trunk routes where competition is potentially most intensive, competitive conditions are not found to differ significantly from other routes, this result would be unlikely to change by widening our analysis to other routes.

6.134 Thirdly, it is likely that, on routes on which there is significant supply to third parties (other than by BT), operators are also competing by using self-supplied trunk. It is reasonable to assume that if a CP is selling to OCPs, it is also able to self-provision trunk itself to some extent.

6.135 Nevertheless, we have conducted a further assessment below to ensure that our criterion is sufficiently robust. This assessment looks at each of the routes that we identified, to ensure that our proposed criterion reflects where CPs are likely to compete most intensively (and hence where the majority of self-supply would also be likely to occur).

Assessment of whether this criterion excluded potentially competitive routes

6.136 We might be concerned about using third party sales as a main indicator of CPs' presence on routes (and potentially competitive trunk routes) if this excluded a large proportion of circuits where BT faced genuine competition. Indeed, Figure 6.2 above shows that the number of routes we identified in the January 2008 consultation as potentially competitive was relatively small (in terms of route counts these only represent about 10% of all potential UK trunk routes).

6.137 However, we have assessed in more detail the potentially competitive routes we identified using our screening criteria. The evidence we present below suggests that the routes identified in the January 2008 consultation provide significant coverage in terms of the total trunk circuits sold. They also tend to correlate quite well with the way in which CPs have built their SDH/PDH networks.

6.138 Our further assessment of the "potentially competitive" routes identified in the January 2008 consultation looks at:

- Materiality of routes: what percentage of total trunk circuits counts is represented by these routes;
- Geographic reach: in terms of geographic reach, how much of the UK would these routes address; and
- Coverage by different CPs: are the same CPs present on most of the identified routes.

6.139 We discuss each of these above factors in turn below.

Materiality of routes

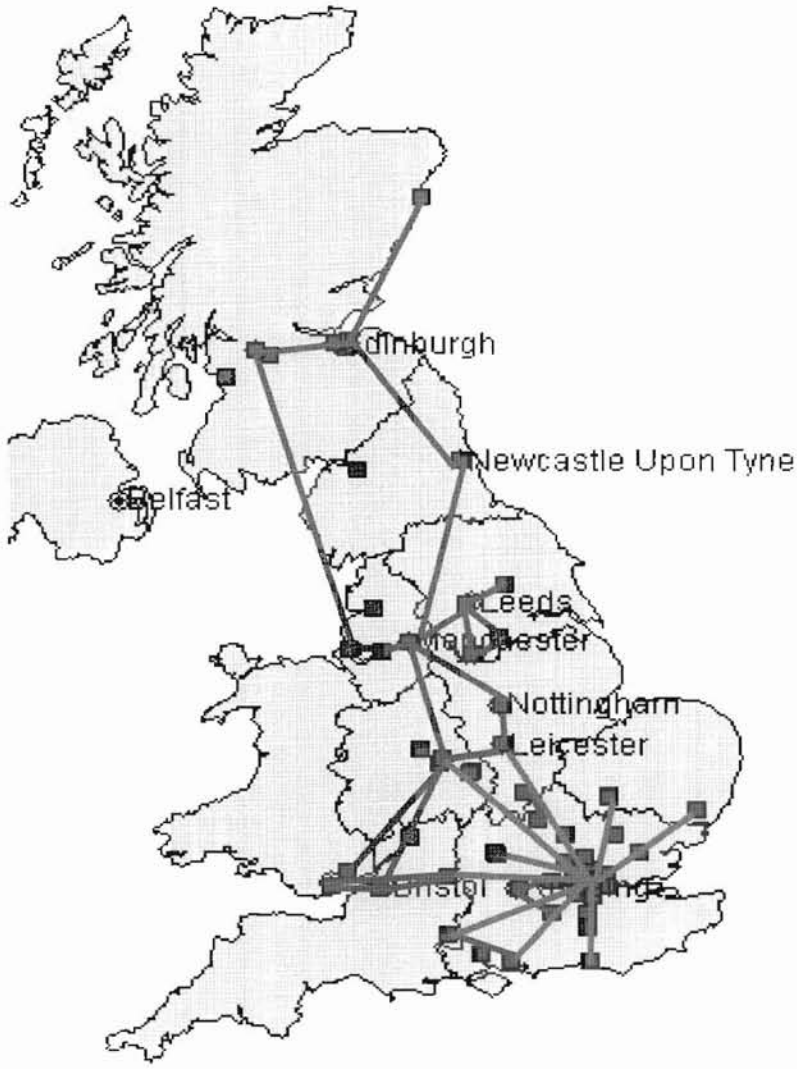
6.140 The number of routes identified as potentially competitive usiong our screening criteria is less than 10% of the possible 780 routes between aggregation nodes. However, the routes identified by the above analysis represent about 60% in terms of total trunk circuits' counts. This suggests that we will have included many of the most important trunk routes. Therefore, the materiality of the "potentially competitive" trunk routes is relatively high in terms of the total numbers of circuits actually sold on those routes.

6.141 Although we excluded a relatively large number of routes, many of the routes excluded account for a small number of circuits. For 82 routes (out of the total of 780 routes analysed) there were no circuits sales recorded at all (including BT sales). A further 255 routes only have 10 or less trunk circuits required for that route.

Geographic reach

6.142 We have also mapped out the above potentially competitive routes in Figure 6.3 to show the geographic coverage of these routes. For clarity, in Figure 6.3, we have not shown all of the potentially competitive routes from London. However, if these 35 routes from the London node to other UK aggregation nodes were included, it would tend to show that our identified routes would result in a highly interconnected trunk network.

Figure 6.3: Geographic of coverage of "potentially competitive" routes (NB: does not show all routes from London)



6.143 We might be concerned if the potentially competitive routes we identified did not correlate very closely with CPs' likely network configurations. However, Figure 6.3 suggests that the trunk routes we identified would provide a good geographic coverage. In particular, it would enable the main routes between urban centres to be addressed. Indeed, it can be seen that the above routes gives quite a close match to the "double figure of eight" network configuration that might be expected within the SDH trunk market[47].

6.144 Therefore, in terms of geographic coverage our identification of potentially competitive routes seems to fit quite well with the design of many CPs' networks.

Trunk coverage by different CPs

[47] This network configuration enables the network provider to build resilience into its trunk network by ensuring that it is not liable to a single point failure.

6.145 In addition, we also looked at the number of routes on which an individual CP would be able to offer capacity. This is to see whether a CP with limited network reach could achieve greater trunk coverage by interconnecting with an operator other than BT to meet their trunk needs. We found that often the same alternative providers are supplying trunk on each of the potentially competitive routes we identified. This suggests, that for the potentially competitive routes, at least in terms of trunk coverage, OCPs interconnecting with one of these alternative trunk providers could potentially serve a large proportion of customers requiring trunk.

6.146 Therefore, it appears as if the trunk routes we identified provide a good indication as to where CPs are likely to be most actively competing. We think that the proposed identification of potentially competitive routes appears broadly correct for the purpose of our geographic analysis.

6.147 Our conclusion is that our second criterion used to identify potentially competitive routes is appropriate. We therefore discuss below BT's concerns over the materiality threshold that we also applied as one of our three criteria.

Materiality threshold

6.148 BT suggested that applying a materiality threshold as one of our criteria was not appropriate, as it is not an indicator of competitive conditions. We discuss below why we think it was necessary to apply this criterion in the context of our geographic analysis. In any case, it is important to note that the application of this criterion – when applied alongside the other criteria we used to identify competitive routes- would not have a significant impact on the number of routes excluded.

6.149 Looking at the routes where there are fewer than 10 circuits sold (the threshold proposed in the January document), there is quite a large number of routes with only a small number of trunk circuits.[48] At first glance, this would potentially suggest that the materiality threshold would exclude a large number of routes. However, when taken together with our other criteria, the application of the materiality threshold has an insignificant impact on the number of additional routes excluded. This is because we would have already excluded routes with low circuit counts based on the other criteria we applied.[49]

6.150 As we explained in the January 2008 consultation, we applied this criterion because we were concerned that our service share analysis could be subject to data reliability issues associated with low circuit numbers. This could create problems if we sought to assess variations in competitive conditions based on data derived from very low circuit numbers. We therefore did not want to put too much weight on the results of trunk routes with very low circuit counts.

6.151 One concern might be that particular threshold we applied to exclude circuits was potentially too high. However, moving to a threshold of 5 circuits or fewer would only reduce the number of circuits excluded to 248 (compared to 255). In other words, the choice of a lower materiality threshold would not have significantly affected the number of potentially competitive routes we identified.

[48] Overall for nearly 82 routes (out of the total of 780 routes) there are no circuits sales recorded at all. A further 255 routes only have 10 or less trunk circuits required for that route. If we applied a lower threshold (for example excluding trunk routes with only 5 or less circuits – this would entail excluding 166 routes (or 248 including zero circuit routes).

[49] In particular, there is only one route out of total of 780 where there are less than 10 circuits and there are three of more CPs (including BT) "present" (i.e. based on third party sales).

6.152 There was also a range of other factors that justify excluding "smaller" routes, which were not explicitly set out in the document. As set out at the beginning of this section, competition in trunk markets is likely to be influenced by aggregation opportunities. In particular, we would expect that OCPs would construct their own infrastructure only where they are able to achieve a certain level of scale to be in a position to compete with BT's economies of scale. Therefore, it is unlikely that the smallest sized routes (in terms of the number of circuits) would be the most competitive.

6.153 In this respect, it is interesting to note that the routes we have excluded (on the basis that CPs are not present) tend to correlate quite well with "low materiality" routes. This is consistent with the view that most CPs would be unlikely to compete where there are more limited aggregation opportunities (i.e. a very small number of circuits on that route). Therefore, this gives us further comfort that our proposed criteria used to assess potentially competitive routes are correct.

BT's proposed alternative criteria

6.154 In BT's response, it suggested that we should only identify potentially competitive routes based on CP presence at both ends of a trunk route. We have explained above why we think that our proposed criteria are appropriate for identifying potentially competitive routes. We also explained why routes with very low circuit counts are unlikely to be competitive or provide a sufficiently reliable picture of potential variations in competitive conditions. Nevertheless, we have also considered below the implications of BT's proposals to identify potentially competitive routes based solely on CP presence at both ends.

6.155 As stated above, one reason why we did not rely solely on CPs' points of presence is that it does not necessarily follow that a CP could provide trunk over the route between two ends. Nevertheless, we have presented below information on the trunk routes where three or more CPs (including BT) are present at both ends.

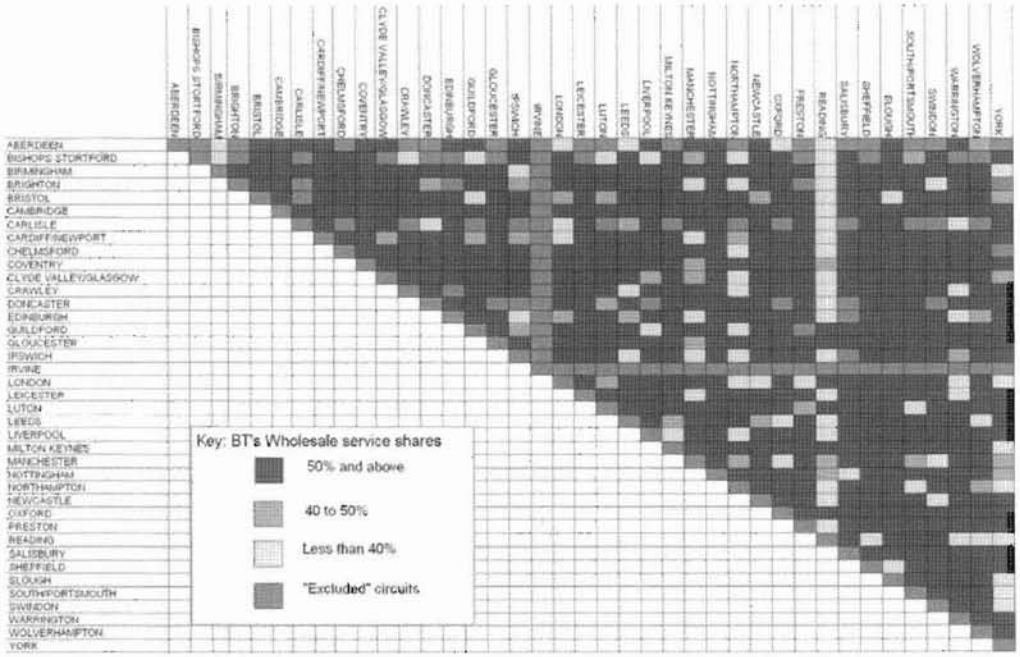



Figure 6.4: Routes likely to be "excluded" based on "limited" CP presence at both ends