



BT's response to Ofcom's consultation document "Review of Wholesale Broadband Access Markets"

Non Confidential Version

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Contents

Executive Summary.....	3
Section A: Introduction	5
Section B: Market Definition & Market Power	5
Section C: Remedies.....	14
Section D: Charge Control framework for WBA Market A services.....	18
Annex 1: The impact of 4G/LTE network on WBA market definition	32
Annex 2: Further analysis regarding data used to define Market A and Market B.....	39
Annex 3: BT's legal assessment of the imposition of Equivalence of Inputs.....	42
Annex 4: Analysis of the Efficiency of BT's Regulated Operations. A report by Deloitte.	45

Executive Summary

The competitive landscape and regulation in wholesale broadband access

The UK is among the world leaders in delivering broadband to its citizens with one of the most competitive and dynamic telecoms markets. Uniquely as a former incumbent, BT competes against strong, scale broadband providers all with market shares comparable to our own. Customers in around 90% of the UK can now choose from at least two of the three major broadband providers as well as BT.

To maintain the UK's leading position it is vital that Ofcom creates the right regulatory environment and ensures that regulation is applied in a fair and balanced way. The time is now right for Ofcom to consider whether it is appropriate to impose SMP regulation at all or if lighter touch and less intrusive measures could be used.

If SMP regulation is to be imposed, then it is crucial that Ofcom's review reflects the reality of competition and is properly forward looking. This is key to encouraging broadband providers to continue to invest in delivering better broadband services to UK consumers.

Market definition and market power

Ofcom's proposed definition better reflects the spread of competition to more rural areas as broadband providers continue to roll out their networks. We strongly support the proposal to withdraw regulation from all exchanges where three major providers are present including BT. This is underpinned by economic evidence which clearly demonstrates that the presence of three major broadband providers including BT truly delivers a competitive wholesale broadband market.

However, there are some aspects of the analysis and conclusions which Ofcom need to address to improve the market definition so that it gives a truer reflection of today's market:

- The 65% exchange coverage threshold for Virgin Media is too high. Ofcom's method of counting Virgin Media as present only when they pass 65% of homes in an exchange understates their true competitive impact in the market. We present evidence which shows that Virgin has a similar competitive impact when they pass 30-65% of homes as entry by an LLU operator. This supports our view that a threshold of 50% would be more appropriate.
- Understating the potential for additional LLU rollout. For Ofcom's analysis to be properly forward looking as required by the European regulatory framework it needs to be based on the latest available information from all providers. Ofcom's proposed approach does not achieve this as it is clearly inconsistent with public announcements made by other operators such as Sky and TalkTalk.
- Reducing the number of Principal Operators. There is no justification for Ofcom to remove Vodafone/C&W from the list of Principal Operators given that their LLU network covers in excess of 60% of UK premises and the potential for them to expand from their current low base.
- The impact of mobile broadband with 4G/LTE rollout. With the speed of 4G services being similar to many of the existing broadband products, Ofcom's analysis should recognise that mobile broadband services will exert a significant constraint in Market A during the lifetime of this review.

Remedies in Market A

We broadly agree the intent of the general access and non-discrimination remedies in Market A are appropriate. However we have some concerns with the detail of Ofcom's proposed remedies:

- Ofcom have failed to justify imposing an Equivalence of Input requirement. Ofcom proposes to introduce a harsher form of non-discrimination than in previous market reviews without

having identified any competition problem to justify this change. This runs counter to Ofcom's stated regulatory aims to intervene only where necessary and operate with a bias against intervention.

- Ofcom should refine the notifications obligations. For example by reducing the 90 day notification requirements for technical changes so we can introduce enhancements more quickly where all customers agree.
- Given a charge control in Market A, a fair and reasonable charges obligation is unnecessary to protect consumers. Ofcom should follow a similar approach to that taken in the Fixed Access Market Review and remove this additional layer of regulation.

Price regulation

According to Ofcom's 2012 International Benchmarking Report, the UK has the lowest retail landline and broadband prices among the largest developed economies, as well as the second highest broadband penetration.

Continued investment in broadband is essential to meet the increasing demands of UK consumers and businesses. This is especially true in rural areas where the investment case is most challenging.

The imposition of a charge control in such a small proportion of the UK is disproportionate in light of the extensive level of competitive entry that already exists. A return to voluntary safeguards, such as those in place before 2010, or a safeguard cap, would be far more proportionate solutions.

However, if there is to be a charge control, BT supports Ofcom's approach to one set on the basis of an anchor product, with a single basket and sub caps. BT also agrees that it is proportionate to use a simplified model on this occasion. However, there are a number of issues with the detail of Ofcom's proposals:

- Ofcom should be clear on the range of X they are consulting upon. We do not understand the relevance of the question on a 'plausible' range. This appears to be asking if the range of outputs provided by every combination of inputs is 'plausible'. There is always an element of uncertainty in forecasts and Ofcom should use their judgement to produce a base case for X on which to consult.
- RPI is the more relevant inflation index than CPI. The RPI continues to be published and is more relevant to key input costs such as pay, accommodation and energy. If CPI is to be used as a reference for prices then additional adjustments need to be made to accommodate costs that increase more in line with RPI rather than CPI e.g. Labour related cost.
- Efficiency adjustment is too large. An efficiency challenge in the range of 1.5-3.5% is more appropriate than 3.5-5% at this stage of the product life cycle and in line with the external benchmark evidence produced by Deloitte. A single year's analysis of cost information should not be allowed to outweigh previous assessments and external comparisons.
- The model should be based on the latest available information. The starting point for volume forecasting must take into account the latest known information for IPStream in the market under consideration. Any starting cost adjustments should also use the best available information: correcting known errors, recognising changes to the network construction and adopting changes to treatment of costs that reflect improved knowledge of cost drivers.

Once these factors are taken into account Ofcom's base case range should be RPI+5% to RPI-5%.

Section A: Introduction

- 1 This document is BT's response to Ofcom's consultation "Review of the wholesale broadband access markets"¹ published on 11 July 2013. In this response we answer Ofcom's specific questions and is structured as follows:
 - Section B deals with Ofcom's market definition and market power analysis
 - Section C comments on Ofcom's proposed remedies
 - Section D addresses Ofcom's proposed charge control for WBA Market A services
- 2 The document also includes the following annexes in support of our response:
 - Annex 1 deals with the impact of 4G/LTE on market definition
 - Annex 2 addresses various anomalies regarding data used to define Markets A and B
 - Annex 3 sets out BT's legal views on the introduction of an Equivalence of Input condition; and
 - Annex 4 is a report by Deloitte on efficiency.

Section B: Market Definition & Market Power

- 3 We believe Ofcom should give serious consideration to possible alternatives to SMP regulation for very small groups of consumers such as Market A, which will also decline over time.
- 4 To the extent that any consumer protection measures continue to be required we believe alternative less intrusive and complex solutions should be implemented. At a minimum Ofcom should consider whether it is appropriate to limit remedies to general access and non-discrimination requirements to mirror the light touch regulation currently applied to Hull.
- 5 However, if Ofcom is to continue to regulate wholesale broadband access services, then we broadly agree with Ofcom's product market definition and market power proposals which try to address the issues we previously highlighted in our response to Ofcom's Call for Inputs².
- 6 In this section we set out our responses to Ofcom's questions on market definition and market power in sections 3, 4 and 5 of the consultation. We believe there are three areas which still need to be addressed in Ofcom's analysis prior to the final WBA Statement:
 - Forecasting the Market Boundary – Ofcom's proposals do not adequately capture the size and impact of Virgin Media's network presence and LLU operators' publically announced rollout plans
 - It is inappropriate for Ofcom to remove Vodafone/Cable & Wireless from the list of Principal Operators (PO)
 - The growth of 4G/LTE should be fully taken into account in Ofcom's product definition

¹ Review of the wholesale broadband access markets: Consultation on market definition, market power determinations and remedies. (11 July 2013) http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/summary/WBA_July_2013.pdf

² BT's response to Ofcom's Call for inputs on the Review of the wholesale broadband access markets (7 January 2013) <http://stakeholders.ofcom.org.uk/binaries/consultations/review-wholesale-broadband/responses/BT.pdf>

Question 3.1: Do you agree with Ofcom's proposed product market definitions? If not, please explain why.

- 7 Ofcom proposes to keep the same product market definition as in its 2010 market review. This includes cable, LLU and fibre based services to both residential and business customers, but excludes narrowband internet access, symmetric broadband access, mobile, fixed wireless and satellite internet access.
- 8 We agree with Ofcom that broadband services at all speeds offered to end-users should be included in a single retail broadband market, which includes both fibre and copper-based products.³ The rollout of fibre based broadband products is at an early stage and there is no significant evidence to suggest that distinct retail product markets⁴ are likely to exist before the end of the period covered by this review. This is in line with the NGA Recommendation.
- 9 However, we believe that Ofcom has not fully considered the impact that 4G/LTE services will have on the fixed broadband services, as this technology is now a reality in the market.
- 10 To date the cost/speed advantage of fixed broadband services has been a key factor in customers keeping a fixed access line. However, the rollout of 4G services changes the underlying cost/speed advantage that fixed services have historically enjoyed and therefore will be a constraint over the period of the current WBA market review⁵.
- 11 4G/LTE services deliver similar functionality to fixed broadband and can be seen as an effective alternative particularly as they will be available to nearly all end users by the end of this market review period. A detailed analysis of the potential impact of 4G/LTE on fixed broadband services is provided in Annex 1.
- 12 We believe that the speed of 4G services being offered are similar to many of the existing broadband products. It is therefore important that Ofcom's analysis recognises that mobile broadband services are likely to exert a significant constraint in Market A during the lifetime of this review.

Question 4.1: Do you agree with Ofcom's view of the relevant criteria for assessing the geographic market boundaries? If not, please explain why.

- 13 Ofcom's conclusions on geographic market assessment are strongly supported by our own analysis but we disagree in two key areas:
 - Virgin Media exerts a competitive constraint at thresholds lower than the 65% used by Ofcom
 - Ofcom's forward look with regard to future LLU footprint is inadequate which may be judged by the fact that all but 3% of Ofcom's forecast 3% exchanges are already active

³ Ofcom consultation document, paragraph 3.4

⁴ defined either by reference to differing download speeds or to differing delivery technologies

⁵ Given statements by Ed Richards that 4G coverage will extend to 98% of the UK population indoors.

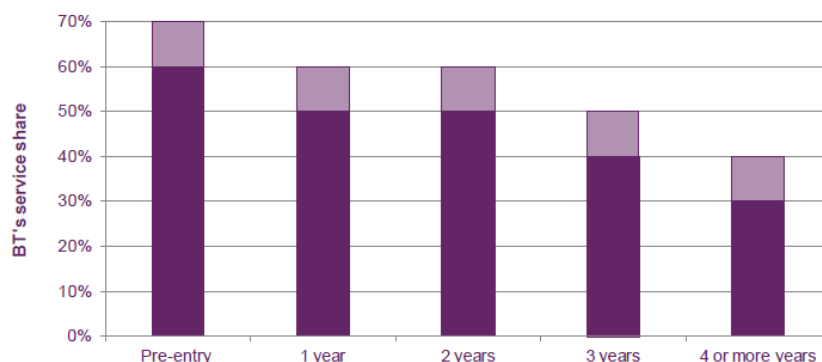
<http://media.ofcom.org.uk/2013/02/20/ofcom-announces-winners-of-the-4g-mobile-auction/>

(a) Accounting for Virgin Media

- 14 We believe Ofcom's 65% threshold is too high as it underestimates Virgin's competitive impact in the market. Ofcom states that *'BT's submission does not show that the choice of a 65% threshold should be changed.'*⁶
- 15 However, Ofcom's own choice to retain the current 65% threshold appears to be based on the view that changing it *'does not substantially impact our market definition in terms of allocation of exchanges across markets.'*⁷
- 16 We do not agree with Ofcom's conclusion⁸ that this has an immaterial impact. The results of Ofcom's sensitivity analysis have been redacted from the published consultation, making it effectively impossible for us to identify it precisely, but Ofcom does state that changes in the threshold for counting Virgin Media have an impact of *'less than 1%'*.
- 17 As Market A is less than 10% of UK premises, this could still have a material impact on the size of Market A. This is a sufficiently significant number of exchanges to affect our ability to compete in the wholesale market.
- 18 We asked Professor Hughes to extend his two analyses of 27th March 2013⁹ and 18th April 2013¹⁰ specifically to consider the issue of the impact of Virgin Media where it has less than the 65% coverage threshold with reference to Ofcom's analysis of exchanges with three POs as shown in Figure 1 below.

Figure 1 (Figure 4.5 from the Ofcom Consultation)¹¹

Figure 4.5: BT's service share in BT+2 exchanges, by number of years three POs have been active, December 2012



⁶ Ofcom Consultation document *'Review of the wholesale broadband access markets; Consultation on market definition, market power determinations and remedies'* paragraph 4.39 [to be called Ofcom consultation document going forwards]

⁷ Ofcom Consultation document paragraph 4.42

⁸ Ofcom Consultation document paragraph 4.41

⁹ *'Econometric modelling of broadband penetration in the UK An updated analysis for 2008-2012'*, 27th March by Professor Gordon Hughes, School of Economics, University of Edinburgh

¹⁰ *'Econometric modelling of broadband penetration in the UK; The influence of fibre and competition on changes in BT's market share'*, 18th April by Professor Gordon Hughes, School of Economics, University of Edinburgh

¹¹ We have confirmed with Ofcom that where the consultation refers to "4 or more years" that in fact Ofcom's analysis includes any exchanges where three POs have been present for more than 36 months.

- 19 Professor Hughes estimated how BT's market share of broadband connections evolves following entry into an exchange at different levels of coverage of Virgin Media's cable network¹².
- 20 The results from his analysis are illustrated in Figure 2 below. The different reaction curves show the impact of two different levels of Virgin Media coverage against two DSL LLU operators. This shows how in exchanges where Virgin Media has only 30-65% coverage, the impact on market share is very similar to where there are two DSL operators. In comparison with Ofcom's estimates in Figure 1 (Ofcom's Figure 4.5), BT's share similarly falls to the 40-50% range.
- 21 This illustrates the powerful impact of Virgin Media and that an exchange with limited Virgin Media presence but just one DSL operator has a similar effect to that of two DSL LLU operators on BT's market share.

Figure 2 – Evolution of BT's market share following entry into an exchange
(Based on coefficients estimated from data on all markets)

[> figure 2 redacted]

- 22 As we do not have access to the detailed data that Ofcom has gathered, this analysis is of necessity more limited¹³. However, we believe it is sufficiently robust to justify a reduction in the threshold for counting Virgin Media's presence from 65% to 50% of homes passed. At a minimum Ofcom should split up the 30-65% cohort into two groups to assess their separate impacts.

(b) The forward look view of PO presence and shares

- 23 We consider that potential for additional LLU rollout is actually greater than Ofcom is indicating even though the absolute number of new PO LLU deployments is clearly falling¹⁴. The biggest impact on the market review will be the roll-out of a third PO into an exchange area which would shift it from Market A to Market B.
- 24 Entry by a third PO is most likely going to be the result of one of the following:
- Sky entering an exchange currently served by BT and TTG. Although TTG has more extensive coverage than Sky it is reasonable to make the assumption that Sky would go to the largest of this cohort of exchanges over the course of this review period, and therefore move them into Market B.
 - TTG entering exchanges where BT and Sky are present. Although there are relatively few of these exchanges, given their size, it is likely that TTG will enter these areas.
- 25 Less likely to impact the geographic boundary are: (a) the rollout plans of Virgin Media (nevertheless it is still important to collate and analyse them properly) and (b) Vodafone's plans in the market are as yet unclear following their acquisition of Cable & Wireless.
- 26 An accurate assessment of the forward looking element of LLU and cable network rollout is therefore key to defining the boundary between Markets A and B. This places a great deal of

¹² Professor Hughes analysis is based on an econometric model which takes into account (i) path dependency - ie BT's share at any exchange depends on the history of entry by competitors into the exchange and (ii) expected differences between Virgin Media and DSL operators in the time profile of their impact - i.e. entry of a new operator has an immediate impact followed by a further adjustment which is phased over a period of 2-3 years. The data covers the period May 2008 to April 2013 and includes exchanges in all areas. If helpful to Ofcom's analysis we can provide the detailed models underlying Professor Hughes' results on request.

¹³ Professor Hughes' analysis is based on three Virgin Media thresholds of below 30%, between 30 and 65% and above 65%.

¹⁴ As seen in Figure 4.9 Ofcom Consultation document

importance in the methodology that Ofcom choose to match the rollout plans to public statements. At present Sky have committed to rollout to 90% by 2015¹⁵ and TTG have announced plans to rollout to 95% by April 2014¹⁶.

- 27 It is therefore apparent that Ofcom's proposed Market A is larger than that implied by the public announcements relating to LLU rollout plans. So there is an obvious gap between the planned reality and the regulatory forward look.
- 28 Part of the shortfall in Ofcom's forward look results from Ofcom's reliance on the Openreach plan and build process to determine which exchanges LLU operators intend to rollout to. This only provides a very short-term view of immediate rollout 3<.
- 29 We are also concerned that this creates the opportunity for operators to 'game' Ofcom's market definition process in the period running up to the WBA Statement. This could be achieved by delaying the progress of LLU orders in the planning pipeline (say at stage 1 or 2) until after Ofcom has conducted its final data collection exercise. This would distort the number of exchanges where LLU is planned to be rolled out to.
- 30 To avoid this gap in Ofcom's forward view, as well as to neutralise any gaming distortions, we support TTG's suggestion¹⁷. This proposes that in addition to exchanges at stage 3 of Openreach's plan and build process, Ofcom's forward look should also include any exchanges internally identified for rollout within the next 12 months based on a letter of confirmation from a company director.
- 31 This would have the advantage of bridging the gap between Openreach orders and the public announcements that have been made from the source of those announcements. It would mean Ofcom was the most up-to-date available data to build the best forward looking view possible in order to define the boundary between Markets A and B.
- 32 We recognise that Ofcom has reviewed its market boundaries in the light of empirical information on the impact of additional entry on BT's share and that there will always be some uncertainty in taking a forward look of this kind.
- 33 Our position is that the experience of multiple market reviews since 2004 provides overwhelming evidence that Ofcom can take this step with full confidence; indeed there seems to be a general industry consensus on this matter amongst most the major players. If a forward look of up to 12 months is taken then on average it will involve entry around 6 months. Within a 3 year market review period, Ofcom [Figure 1 above, Ofcom Figure 4.5] shows a substantial impact on BT's share and this is fully corroborated by BT's own analysis conducted by Professor Hughes¹⁸.

Question 4.2: Do you agree with Ofcom's proposed set of Principal Operators (POs)? If not, please explain why.

- 34 Whilst BT agrees that competition in the consumer market today is largely represented by four major players, as a matter of principle, we do not see why Ofcom should drop other POs from the market definition purely based on their historic performance in the downstream retail market.

¹⁵ Sky's broadband announcement:

http://www.uswitch.com/broadband/news/2012/08/sky_aiming_for_90_uk_broadband_coverage/

¹⁶ Talk Talk's announcement:

<http://www.talktalkgroup.com/~media/Files/T/TalkTalk/pdfs/presentations/2012/13-11-2012-interim-pres.pdf>

¹⁷ From TTG's call for inputs response proposal as referred to by Ofcom in the consultation document, paragraph 4.65

¹⁸ At a minimum we would anticipate a share loss in this period of the order of 15-20 percentage points absolute.

- 35 Specifically Vodafone/C&W whose LLU network covers 60% of UK premises and the implications of the acquisition of C&W by Vodafone are yet to be played out in the market; Vodafone is now a cash-rich telecoms giant and well able to expand into consumer and business markets. Even at this stage the UK wide reach of this company is significant in the WBA market and therefore should not be ignored in terms of assessing POs. Their reach is greater than Virgin Media¹⁹ and more akin to that of Sky and TTG than other the smaller CPs whose coverage of UK premises is below 20%²⁰ and so have been excluded as POs.
- 36 The takeover of C&W by Vodafone means that exchanges where business end-users are dominant are not particularly well represented by an accurate assessment of POs; Annex 2 provides examples in the City of London.
- 37 It is therefore BT's view that Vodafone/C&W should be included Ofcom's proposed set of Principal Operators.

Question 4.3: Do you agree with Ofcom's geographic market definitions? If not, please explain why.

- 38 In addition, to our views set out in response to Question 4.1 above, we have a number of further issues regarding Ofcom's geographic market definition. These relate to specific issues with the data used by Ofcom to determine whether an exchange meets the appropriate criteria to be in either Market A or B.
- 39 First of all we think that Ofcom should investigate the coverage data supplied to Ofcom by Virgin Media, with particular attention on the exchanges that have fallen out of the "65% to 90%" band. The data provided to Ofcom indicates there has been a 3% reduction in the number of homes passed by Virgin Media since the last market review²¹. This equates to an estimated reduction of between 350,000 and 400,000 premises.
- 40 Something has clearly gone wrong in Ofcom's data collection exercise as there is no evidence to suggest that Virgin Media has been withdrawing service from customers since 2010. On the contrary, during this period Virgin Media have publically reported increases in their footprint on at least two separate occasions²².
- 41 Separately, we also think that Ofcom's dismissal of Virgin Media's plans for network expansion as not to have a material impact is incorrect. As Ofcom states, expansion is most likely to be close to its current network. This could in fact have an impact on whether Virgin Media is counted as present in some exchanges.
- 42 A more detailed exploration of the inconsistencies in further exchange level data issues is provided in Annex 2. This covers both Virgin Media data and anomalies relating to BT exchange information. Our concerns fall into the following areas:
- "Phantom" exchanges which should be removed from the list.
 - Ofcom have underestimated the potential coverage from a number of sites with multiple distribution frames, and should correct these errors

¹⁹ Ofcom Consultation document: Indeed Table A10.2 of the consultation document shows Vodafone's coverage (60%) in December 2012 exceeded Virgin Media's coverage (45-50% [actual number redacted]).

²⁰ Ofcom Consultation document: Table A10.2 of the consultation document shows coverage for Updata (18%) and Zen (16%)

²¹ Ofcom Consultation document, paragraph A10.28.

²² Virgin Media announcement: <http://about.virginmedia.com/press-release/8564/100000-more-homes-able-to-get-virgin-media-fibre-optic-services> and Q2 2013 selected Operating & Financial Results (2 August 2013) <http://investors.virginmedia.com/phoenix.zhtml?c=135485&p=irol-irhome>

- Ofcom should investigate whether the exchange size uplift factor has an impact on market definition
- Issues with postcode mis-matching between BT and Virgin Media's data may impact the presumed Virgin Media coverage in specific exchange areas
- Ofcom's dismissal of data errors which result in an underestimate of Virgin Media's coverage

43 It is important that Ofcom address these data issues prior to completing their analysis and the publication of the final WBA Statement.

Question 4.4: Do you agree with Ofcom's proposals to update the geographic market boundaries? If not, please explain why.

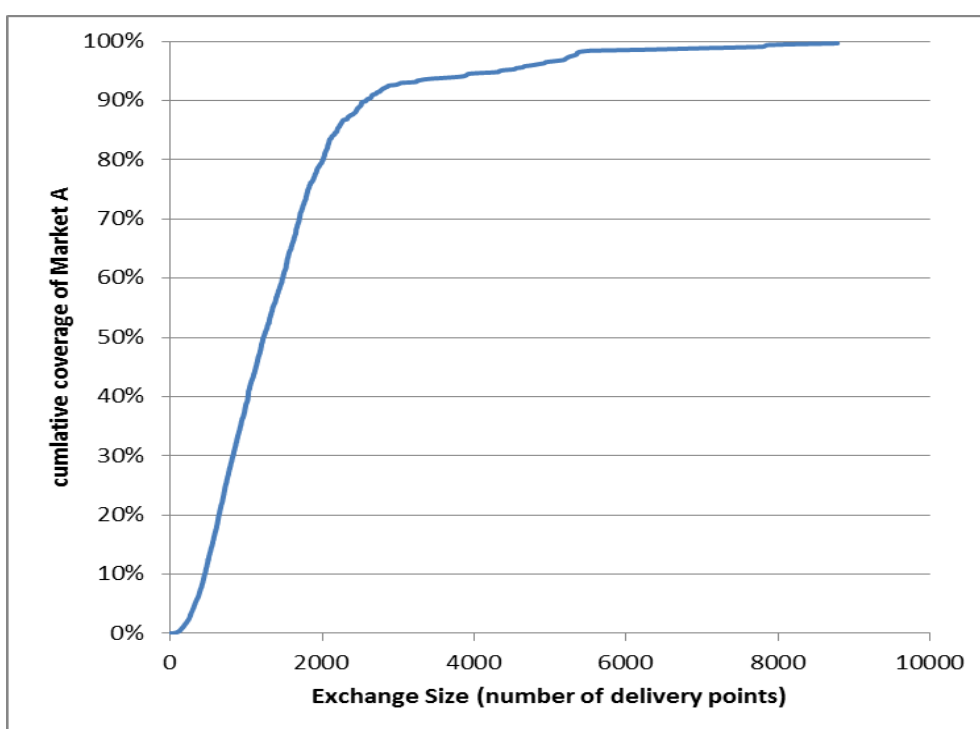
44 In order for Ofcom's analysis to best reflect the state of competition, Ofcom's market definitions need to be properly forward looking and based on the latest available information from all providers.

45 Therefore it is vital that Ofcom updates the geographic market boundaries before issuing the final statement to take into account developments in LLU entry plans. Not to do so would mean that Ofcom's market boundaries are at least 12 months out of date and not forward looking at all.

Question 5.1: Do you agree with Ofcom's proposal that BT holds SMP in Market A? If not, please explain why.

- 46 With BT's national market share of the wholesale broadband access market having now fallen to around 40%, we do not believe it is appropriate to separately identify such a small area of the UK as having SMP.
- 47 Indeed, even within Market A there are clearly different conditions of competition between exchanges where only BT is present and those where another PO is present. Furthermore, whilst there are many very small exchanges where LLU entry is unlikely, there are still a substantial number of exchanges of a size comparable to the smaller exchanges in Market B.
- 48 Figure 3 below shows the cumulative distribution of premises in the proposed Market A. This shows that the largest 200 exchanges²³ cover more than 20% of Market A. In comparison, Market B contains about 50 exchanges smaller than 2,000 premises.

Figure 3: Cumulative distribution of premises in Market A



- 49 It is reasonable to expect LLU entry to occur in these exchanges within the period of this market review.

Question 5.2: Do you agree with Ofcom's proposal that no operator has SMP in Market B? If not, please explain why.

- 50 We agree that no operator has SMP in Market B as the economic evidence clearly points towards the presence of three operators being sufficient to ensure a competitive wholesale broadband access market (i.e. Ofcom's proposed definition for Market B).

²³ exchanges with more than 2,000 premises

51 In our Call for Inputs²⁴ response we provided a body of economic evidence which supported this view:

- LLU entry continues to extend the reach of competition as lower backhaul and core bandwidth charges improve the economics and evidenced by Sky and TalkTalk public plans to reach 90% and 95% respectively.
- Measures of market concentration²⁵ in today's Market 2 continue to fall towards Market 3 levels.
- Retail bundling and "on net" pricing has strengthened the position of competitors leveraging their strengths from adjacent markets and networks, so they are able to gain significant market share over time once present in an exchange.
- Evidence from a study of US broadband competition which supports the view that three competitors are sufficient for effective competition²⁶.
- Analysis of the timing of LLU entry shows a significant decline in BT's market share in Market 2 exchanges since the 2010 market review.
- The Portuguese regulatory authority has already defined two geographic markets, and deregulated one on the basis that three operators are present – in line with Ofcom's proposals in this review.

52 We also provided further evidence in a two reports by Professor Hughes²⁷ which demonstrated that the gap between BT's market share for BT + 2 and BT + 3 exchanges was narrowing to very low levels.

53 These findings are confirmed by Ofcom's own analysis in Figure 4 (reproduced below) which shows BT's market share is between 40% and 50%²⁸ in exchanges with BT plus 2 POs in an exchange.

²⁴ BT's response to Ofcom's Call for Inputs on the review of the wholesale broadband access markets; dated 7th January 2013.

²⁵ Such as the Herfindahl-Hirschman Index (HHI, which measures the size of firms in relation to the industry as an indicator of the amount of competition among them

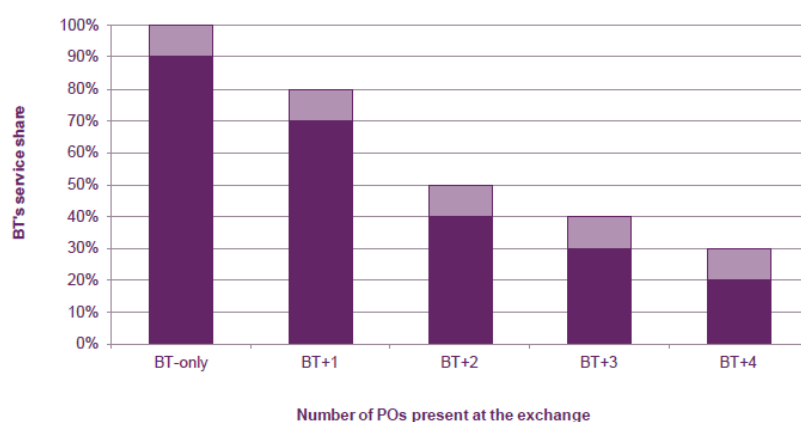
²⁶ Xiao, M and Orazem, P.F. (2011) 'Does the fourth entrant make any difference: Entry and competition in the early U.S. Broadband Market' in International Journal of Industrial Organisation No. 29 547-561

²⁷ 'Econometric modelling of broadband penetration in the UK An updated analysis for 2008-2012', 27th March by Professor Gordon Hughes, School of Economics, University of Edinburgh and 'Econometric modelling of broadband penetration in the UK; The influence of fibre and competition on changes in BT's market share', 18th April by Professor Gordon Hughes, School of Economics, University of Edinburgh

²⁸ Actual number redacted

Figure 4 – Figure 4.3 in Ofcom's Consultation document

Figure 4.3: BT's service share by number of POs present at the exchange (December 2012)



Source: Ofcom calculation from data provided by Openreach and Virgin Media. ¹⁷³

Question 5.3: Do you agree with Ofcom's proposal that KCOM holds SMP in the Hull Area? If not, please explain why.

- 54 We agree that KCOM has SMP in the Hull area. KCOM has a 100% market share of the services in this market at both retail and wholesale levels, and there are no known plans for expansion of cable coverage or LLU roll-out in the Hull area during the period of the review.

Section C: Remedies

- 55 In this section we set out our responses to Ofcom's questions on remedies set out in section 6 of the consultation.
- 56 Ofcom proposes a range of SMP remedies on BT in Market A. Notwithstanding our views on Ofcom's proposed market definitions as outlined in section B we broadly agree that the intent of Ofcom's proposed general access and non-discrimination remedies are appropriate. However we have a number of concerns about the detail of Ofcom's proposals which we address in our response to question 6.1 below.

Question 6.1: Do you agree with the general access, non-discrimination and transparency obligations we propose to impose on BT in relation to the market for WBA in Market A? If not, please explain why.

- 57 We disagree with the detail of Ofcom's proposed remedies in relation to three specific areas:
- (a) Equivalence of Input (EOI);
 - (b) Obligation for charges to be fair and reasonable; and
 - (c) Notification timescales.

(a) Equivalence of Input (Eoi)

58 In section 6 of the consultation²⁹, Ofcom propose to introduce tighter form of non-discrimination remedy in the form of Equivalence of Inputs (Eoi) in Market A³⁰. Ofcom justifies the imposition of SMP EOI the grounds that it is “not unduly onerous” given that BT already has an EOI obligation under the Undertakings and would therefore not have to change its systems and processes to comply with the requirement³¹.

59 We disagree with Ofcom’s position. BT’s contention is that that Ofcom should rely on the “conventional” discrimination remedy in its current form. Ofcom’s proposal to impose a complete prohibition of discrimination as an SMP remedy is unjustified and disproportionate and therefore does not meet the criteria set out in section 47(2) of the Communications Act 2003 (“the 2003 Act”). Furthermore, Ofcom’s has failed to follow the Commission’s Recommendation on the consistent application of the non-discrimination obligation³² (“the Commission Recommendation”) which, in essence, requires Ofcom to provide positive justification for an EOI remedy over and above a conventional discrimination remedy. In particular:

- Ofcom’s proposal is not objectively justified. Ofcom proposes to introduce the strictest form of non-discrimination on the basis of the same competition concerns and evidence that justified imposing the requirement not to unduly discrimination as a SMP obligation. Ofcom has failed to provide adequate justification for a more onerous remedy on BT and this is inconsistent with the Commission’s requirement to specifically justify why Eoi should be imposed over and above the non-discrimination obligation.
- Eoi as an SMP remedy is disproportionate. Ofcom needs to ensure that regulation imposed on BT is proportionate: i.e. it should consider whether “any lesser measure will suffice”. Ofcom has not demonstrated the need for an obligation that is more onerous than the current obligation, or that the current regulatory obligation has in any way been inadequate to address Ofcom’s concerns.

60 If, notwithstanding our submissions above, Ofcom is still minded to so impose an SMP EOI remedy, then we request that Ofcom amends it current proposals to ensure that the SMP obligation is indeed no more onerous than the Undertakings EOI obligation. That is not the case and the SMP EOI obligation proposed would potentially prohibit behaviours that are currently permitted by the Undertakings. There are two alternative ways to remedy this:

- Ofcom can amend the definition of Eoi in Condition 2 so as to expressly allow for differences that are permitted by the Undertakings; or alternatively
- Ofcom can build in a provision for Ofcom to grant BT consent (at the time the SMP condition comes into effect) to any differences that are allowed by the Undertakings.

We have set out our position on these issues in more detail in annex 3 to this response. We invite Ofcom to note that our submissions in relation to changes to the EOI condition are made without prejudice to our view that no SMP EOI condition should be imposed.

²⁹ Ofcom consultation document paragraphs 6.121 to 6.134

³⁰ Draft SMP Condition 2

³¹ Paragraph 6.126 of the WBA consultation

³² Commission Recommendation of 11.09.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, C(2013) 5761 Final

(b) Obligation for charges to be fair and reasonable under Condition 1

- 61 Under the proposed Condition 1 BT is required to provide network access on fair and reasonable terms, conditions and charges³³. However, Market A services will also be subject to a charge control under draft Condition 7.
- 62 In the Fixed Access Market Review³⁴ Ofcom identify the purpose of a fair and reasonable charges requirement as being to address concerns *'of adverse effects arising from a price distortion if BT or KCOM (as applicable) fixes and maintains its prices at an excessively high level for these existing and future services'*³⁵
- 63 In the FAMR Ofcom go on to specifically exclude the charges element of condition where a charge control or basis of charges obligation is present on the basis that these are *'sufficient to address our competition concerns in relation to excessive pricing such that additional price regulation is not required'*.
- 64 Given services in Market A will also be subject to a charge control, this should similarly address any competition concerns in the WBA market in relation to excessive prices.
- 65 We believe Ofcom should apply a consistent approach in this market review to that proposed in the Fixed Access Market Review and exclude the requirement for fair and reasonable charges from Condition 1.

(c) Requirement to publish pricing and technical notification

- 66 Ofcom's notification periods are too narrow in scope and have become unduly restrictive. Draft Conditions 4 and 6 requires BT to provide minimum notification periods of 28 and 90 days respectively for price and changes to technical information. There are two specific caveats that we believe should be added to the notification requirements in these conditions.
- 67 First of all, whilst the 28 day pricing notification is appropriate in some circumstances i.e. price rises but this should be reduced to a 14 day period for price reductions. In other regulatory areas Ofcom allows price notifications to be asynchronous with reductions to be notified in fewer days than other price changes. For example Condition 9 imposed in the recent Business Connectivity Market Review³⁶ imposes a notification requirement of 28 days for price reductions and 90 days for price increases³⁷.
- 68 We see no reason why Ofcom should not adopt the same approach in the WBA market and allow greater flexibility in introducing price changes. Reducing the notification requirements for price reductions would enable our customers to benefit from lower prices sooner than might otherwise be the case. Customers would still have the protection of 28 days notification where prices were increasing.
- 69 We therefore suggest that Ofcom revise Condition 4³⁸ as follows (with additions underlined):

'An Access Charge Change Notice must be sent not less than 28 days before any such amendment comes into effect. However, in the case of an Access Charge Change relating

³³ Draft condition 1.2(b)

³⁴ Fixed Access Market Review Consultation documents;
<http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

³⁵ Fixed access Market Review Consultation document, paragraph 10.35

³⁶ Business Connectivity Market Review Statement (28 March 2013)
<http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

³⁷ Business Connectivity Market Review Statement on 28 March 2013, 7.4 on page 222

³⁸ Ofcom consultation document, paragraph 4.4,

solely to a reduction in the price of existing network access (including, for the avoidance of doubt, a Special Offer), be sent not less than 14 days before any such amendment comes into effect.'

- 70 Similarly the 90 day technical changes notification required by Condition 6 should also be revised to provide BT with the flexibility to introduce technical changes in fewer than 90 days in circumstances where all purchasers to a product agree to the change.
- 71 The 90 day technical notification relates to several aspects of product development:
- Technical characteristics, such as information on network configuration
 - The locations at which network access will be provided or
 - Technical standards
- 72 BT accepts the need for a requirement to ensure all downstream providers have sufficient notice to change their systems or processes in response to technical changes in the underlying wholesale product, as outlined above.
- 73 However, where there is universal demand from all purchasers of a product for a particularly change to be introduced in less than 90 days, then the regulatory requirement to provide 90 days notification could unintentionally lead to consumer harm in the form of delayed improvements or enhancements to service.
- 74 In such situations BT could submit a request to Ofcom seeking a waiver to the notification obligation. In practice, when we have done so in the past, Ofcom has sought to consult on such requests. However, the consultation process has extended beyond notification timescale itself, thereby making the waiver redundant. This seems a cumbersome and unwieldy solution to this issue.
- 75 To avoid such unintended consequences, Condition 6 should be amended as outlined below (with suggested revisions underlined) to allow a reduction in the 90 day notification requirement in circumstances where all existing purchasers of a wholesale broadband access product agree to such a change.

'...the Dominant Provider must publish a written notice (the "Notice") of the new or amended terms and conditions within a reasonable time period but not less than 90 days before either the Dominant Provider enters into an Access Agreement to provide the new network access or the amended terms and conditions of the existing Access Agreement come into effect. However, in the case of a technical change where all of the recipients of the written notice agree to a shorter time period, then the time period can be less than 90 days and will be of a time period to be agreed by all of the recipients of the relevant product or service with the Dominant Provider on a per occasion basis.'

Other issues

- 76 Ofcom has stated that it currently intends to complete the current market review in early 2014. Should Ofcom's timescales for publication of the final statement be delayed for any reason such that it extends beyond February 2014, then Ofcom should ensure there are no other regulatory obstacles preventing BT from implementing prices determined by Ofcom.
- 77 Ofcom should therefore ensure that the final statement allows BT sufficient time to notify and implement price changes BT is required to make in order to comply with the proposed charge control.

Question 6.2: Do you agree with our proposal not to require a period of notice for the withdrawal of existing regulatory obligations in respect of the exchanges that move from Market 1 or Market 2 (which are currently subject to regulation) to Market B (which we are proposing not to be subject to regulation)? If not, please explain why.

- 78 We agree with Ofcom's proposal not to impose transitional arrangements on exchanges which Ofcom are proposing to deregulate as a result of this market review.
- 79 In the 2010 market review Ofcom imposed transitional arrangements requiring BT to continue to provide network access to such exchanges for a period of 12 months following the final statement³⁹.
- 80 The aim of such arrangements is to ensure continuity of supply to existing customers. We do not believe these are necessary as evidence from both the 2008 and 2010 market reviews is that BT continued to supply broadband services in deregulated exchanges even after transitional arrangements fell away.

Question 6.3: Do you agree with the general access and non-discrimination remedies Ofcom proposes to impose on KCOM in relation to the market for WBA in the Hull Area? If not, please explain why.

- 81 No comment

Question 6.4: Do you agree with Ofcom's approach to price remedies in the Hull Area? If not, please explain why.

- 82 No comment

Question 6.5: Are there other remedies that, if imposed by Ofcom, would promote entry into the market in the Hull Area by other providers?

- 83 No comment

Section D: Charge Control framework for WBA Market A services

Summary

- 84 The imposition of a charge control in such a small proportion of the UK is disproportionate in light of the extensive level of competitive entry that already exists, and the small number of customers not already in competitive areas. A return to voluntary safeguards, such as those in place before 2010, or a safeguard cap are far more proportionate solutions.
- 85 However, if there is to be a charge control, then BT supports Ofcom's approach to one set on the basis of an anchor product, with a single basket and sub caps. BT also agrees that it is proportionate to use a simplified model on this occasion. However, we have a number of issues with the detail of Ofcom's proposals:
- Ofcom should be clear on the range of X they are consulting upon. We do not understand the relevance of the question on a 'plausible' range. This appears to be asking if the range of outputs provided by every combination of inputs is 'plausible'. There is always an element of

³⁹ Ofcom Review of the wholesale broadband access markets Statement (3 December 2010), paragraph 5.158

uncertainty in forecasts and Ofcom should use their judgement to produce a base case for X on which to consult.

- RPI is the more relevant inflation index than CPI. The RPI continues to be published and is more relevant to key input costs such as pay, accommodation and energy. If CPI is to be used as a reference for prices then additional adjustments need to be made to accommodate costs that increase more in line with RPI rather than CPI e.g. Labour related cost.
- Efficiency adjustment is too large. An efficiency challenge in the range of 1.5-3.5% is more appropriate than 3.5-5% at this stage of the product life cycle and in line with the external benchmark evidence produced by Deloitte. A single year's analysis of cost information should not be allowed to outweigh previous assessments and external comparisons.
- The model should be based on the latest available information. The starting point for volume forecasting must take into account the latest known information for IPStream in the market under consideration. Any starting cost adjustments should also use the best available information: correcting known errors, recognising changes to the network construction and adopting changes to treatment of costs that reflect improved knowledge of cost drivers.

86 Once these factors are taken into account Ofcom's base case range should be RPI+5% to RPI-5%.

Question 7.1: Do you agree that an Inflation-X type of control is the appropriate form of charge control?

87 Our comments are made notwithstanding our recorded argument that a charge control is unnecessary. If there is to be a charge control, inflation-X is the most appropriate form of charge control. It is a well-established mechanism that has been used successfully by Ofcom across a range of products because it provides the best incentives to improve efficiency and deliver benefits for the consumer. It remains important not to combine it with cost orientation which could create overlapping and overly complex and intrusive regulation.

Question 7.2: Do you agree that CPI is the most appropriate inflation index?

- 88 BT remains of the view that RPI is a more appropriate inflation index as the input costs can be expected to broadly increase in line with RPI and RPI-X enables recovery of these costs. Further, Ofcom should be consistent by adopting RPI as recently proposed for the Narrowband Market Review⁴⁰.
- 89 Ofcom is required to take into account how input prices are expected to change compared with the chosen inflation index. As the Ofcom model uses a $(1 + \text{inflation})$ factor to apply to operating cost, it is important to consider how the input costs change in comparison with the chosen inflation index.
- 90 Where costs move in line with RPI, a CPI index will under-estimate the forecast costs. BT suggests addresses this issue by including an additional factor of $(1 + \text{relative input price change})$ into the forecasting model. The relative input price change here is the difference between the expected nominal input price change and the chosen inflation index.
- 91 In particular, pay, accommodation and energy costs are expected to increase as least as quickly as RPI. Each of these costs is examined in detail below.

⁴⁰ Ofcom Review of the fixed narrowband services markets – draft statement , 20th August 2013:
http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Draft_Statement.pdf

- 92 Ofcom justifies the use of CPI on the basis of cost causality, principally on the basis that historic pay settlements have recently been below the rate of CPI. However, this analysis looks at a very crude measure of pay costs that takes no account of the lag between pay settlements and inflation and takes no account of the changing labour mix employed by BT. Pay is typically set by reference to RPI. The linkage between pay and inflation can be seen by examining wage settlements agreed between BT and the Communications Workers Union (CWU). The pay settlements in the past have typically been very close to the rate of RPI at the time the agreement was reached.

Figure 5: BT pay settlements 2008 to 2013

Year	Pay Settlement	RPI in Previous March
April 2008	4.3%	3.8%
April 2009	0.0%	-0.4%
April 2010 (3 year deal)	3.0% + 3 month backdate	4.4%
April 2011	3.0% (part of 3 year deal)	
April 2012	3.0% (part of 3 year deal)	
April 2013	2.8% + £200 lump sum	3.3%

- 93 Recent pay settlements were reached against the backdrop of a very weak labour market in recent years as the UK has been either in recession or in a period of very weak economic growth. As the economy recovers, BT's future pay deals can be expected to increase by more than RPI. This is supported by the Office of Budget Responsibility's forecast of wage growth which is expected to recover to exceed RPI from 2013 onwards as the economy recovers as show in in figure 6 below.

Figure 6: Wages and salary growth compared with inflation⁴¹

	Percentage change on a year earlier, unless otherwise stated						
	Outturn	Forecast					
	2011	2012	2013	2014	2015	2016	2017
CPI	4.5	2.8	2.8	2.4	2.1	2.0	2.0
RPI	5.2	3.2	3.2	2.8	3.2	3.6	3.9
Wages and salaries	2.7	2.8	2.4	3.1	4.3	4.8	4.8

- 94 BT expects accommodation costs (including power consumed) to increase at close to RPI. Accommodation rental costs are expected to increase at 3% per annum, a rate below RPI but above CPI. However, BT is one of the largest users of electricity and power costs are expected to increase at considerably more than RPI. Overall, accommodation costs (including power consumed) will track RPI more closely than CPI.

⁴¹ Office for Budget Responsibility, (March 2013) Economic and fiscal outlook, page 82
<http://budgetresponsibility.independent.gov.uk/category/topics/economic-forecasts/>

Figure 7: Real Energy Price forecasts (2012 prices)⁴²

	2012	2013	2014	2015	2016	2017
Industrial electricity p/kwh	7.5	8.6	9.7	10.2	11.1	11.0
Real Terms Percentage increase		15%	13%	5%	9%	-1%

- 95 Similarly Figure 7 shows how electricity prices are forecast to increase rapidly over the next three years. When combined with future wage inflation and increases in accommodation costs, BT's input prices are likely to increase at a higher rate than RPI inflation. This means RPI is a more appropriate index than CPI to use for input prices.
- 96 It is essential that proper allowance is made for differences in input cost changes relative to the chosen inflation index as explained above.
- 97 In summary, we think that there is little justification for a move to CPI as the inflation index. RPI continues to be published by the ONS and has many different uses. BT notes that Ofcom also proposes to use the RPI index as an inflation index in the NCC commencing 1 October 2013⁴³ – as set out in the draft statement *Review of the fixed narrowband services market* dated 20 August 2013.
- 98 This is consistent with Ofcom's position in the Leased Lines Charge Control Consultation in July 2012. There Ofcom continues to use RPI as the price inflation measure in the PPC and Ethernet price controls. Given this history, we question the need for a change and for these reasons BT continues to believe the RPI is the most appropriate inflation index to use for any WBA charge control.

Question 7.3: Do you agree that an upstream input CPI-X approach still remains the most appropriate form of control?

- 99 BT agrees that an upstream input CPI-X is the most appropriate form of control as opposed to an end to end approach. Openreach's charges are regulated on a national basis and subject to a charge control. To include this Openreach input in the WBA charge control would be imposing a charge control on a charge control.

Question 7.4: Do you agree that a charge control duration of three years is appropriate?

- 100 BT remains of the view that longer charge controls have better incentive properties and offer more certainty. However, we acknowledge that the European Framework prescribes that market reviews should normally be undertaken by national regulators every 3 years and that this has now become the norm.

Question 7.5: Do you agree that IPStream Connect and the relevant ancillary services are the appropriate services to charge control?

- 101 IPStream Connect is the overwhelmingly dominant product in the proposed Market. IP Stream Connect pricing will necessarily act as a constraint on WBC pricing for the reasons outlined by Ofcom, principally that BT has an obligation to provide network access on fair and reasonable terms which would be assessed in relation to the regulated IPStream prices. This is the underlying principle of anchor product pricing where the interests of the consumer are protected by a benchmark product with a regulated price.

⁴² Department of Energy and Climate Change. (15 October 2012). DECC Updated Energy & Emissions Projections - October 2012. [Annex F: Price and Growth Assumptions](https://www.gov.uk/government/publications/2012-energy-and-emissions-projections)
<https://www.gov.uk/government/publications/2012-energy-and-emissions-projections>

⁴³ Ofcom Narrowband Market review Draft Notification

Question 7.6: Do you agree that all the services should be placed in one single basket and sub-caps applied to certain services?

102 BT agrees that the single basket approach adopted for these services in the 2011 charge control should continue. Setting separate controls would be disproportionate and unnecessarily constrain BT's ability to price efficiently.

Question 7.7: Do you agree that the cease charge should continue to be set to £0 and excluded from the main basket?

103 No comment

Question 7.8: Do you agree with our adjustments to BT's base year costs?

104 The majority of Ofcom's proposed adjustments to BT's base year costs such as the Hypothetical Ongoing Network adjustments and treatment of DSLAM costs are acceptable, and one-off (non-recurring) costs should be excluded. However, further adjustments are justified to reflect a number of corrections to the treatment of costs in 2012/13 regulatory financial statements and explained in further detail below.

105 Ofcom's adjustments to reflect a hypothetical on-going network with assets reflective of a "steady state" are correct. It is necessary because a number of the assets used in the WBA market 1 are fully depreciated or nearly fully depreciated. As a result, asset values and depreciation costs are below the level consistent with what would occur in a "steady state" scenario. Specifically it is assumed that, on average, assets in a steady state network will be half way through their economic lives. This is consistent with the treatment of these assets in the last WBA market review. The HON approach sends the appropriate investment incentives in that it gives the costs that would apply if the network were in an on-going environment which can be used to correctly price IPStream Connect. The decision to invest in new technology can then be taken efficiently without distortion.

106 Ofcom's treatment of DSLAM costs in re-allocating a proportion of DSLAM costs to bandwidth services is appropriate because it is justified on the basis of cost causality. It is also necessary to ensure costs and revenues are aligned to the services being controlled.

107 Ofcom should use the most recent audited data available for its cost modelling. An approach which uses superseded rather than most recent data cannot give proper effect to Ofcom's statutory duties, nor will it achieve the benefits which Ofcom seeks to achieve by moving to a new RFS-based cost model. Ofcom will be provided with an itemised explanation of the nature and effect of the methodological changes which are reflected in the up to date RFS. In those circumstances, there can be no proper justification for Ofcom departing from the most recent audited data. In particular, Ofcom must correct the DSLAM costs, Core Directors and Specialised Accommodation.

108 The revised allocation of accommodation costs align RFS reporting with planning rules and BT's engineering practice for allocating space in BT's exchanges consistent with BT's external LLU pricing. The previous allocation methodology looked at a fixed multiple of the footprint of the racks occupying exchange space when allocating space. However, this does not take into account the maximum power density of 500W per square metre that is allowed in BT's exchanges. This means more space is occupied by WBA services than reflected in the 2011/12 cost allocations. This methodology change improves the cost causality of the allocation of accommodation costs and more accurately reflects the exchange space actually used.

109 The inclusion of 21cn core transmission equipment is required because it is now being used to replace the ATM switch network and convey WBA traffic across BT's core network. The allocation of these costs into the WBA markets reflects the use the IPStream services make of these assets.

110 The revised allocation of DSLAM costs more closely reflects cost causality. BT has identified part of the DSLAM costs varies with the number of end-users. In the past DSLAMs were allocated to each market based on the number of DSLAMs. However, power consumption, customer line-

cards and customer service costs are more closely related to the number of customers. For these reasons BT believes that a proportion of the DSLAM cost (3% of capital costs and 3% of operating costs in 2012/13) should be allocated by reference to the number of IPStream end-users whilst the non-customer related cost should continue to be allocated based on the number of DSLAMs in each market.

Question 7.9: Do you agree to our proposed simplified modelling approach and the use of anchor pricing?

111 BT supports Ofcom's simplified modelling approach⁴⁴ and finds it appropriate and proportionate for a Market A size which is 9.7% of UK's. We, however, consider that the latest available information, as set out in response to question 7.8 above, should be used to update the model and the parameter values are chosen to calibrate the model

112 BT generally supports the use of anchor pricing proposed by Ofcom as the most appropriate way of providing appropriate incentives for investment.

113 We consider that Ofcom⁴⁵ has made a fair assessment of the merits of an anchor approach given the particular circumstances of what is a residual group of customers who are in fact likely on the cusp of much wider choice in service from both fibre and potentially wireless solutions. Further, there is still considerable potential for LLU entry in Market A.

114 The arguments for anchor pricing, which Ofcom has previously set out back in 2007 - are as relevant now as when this approach was first proposed. Specifically, it remains the case that it will have appropriate incentive properties and it is these properties which are of most importance in balancing the different objectives which Ofcom⁴⁶ is obliged to do:

- Those investing in new networks must not be faced with prevailing prices which are too low and not reflective of on-going costs of capital facing specific risks.
- Consumers should not be faced with a choice at the retail level which inappropriately disincentivises them to switch to alternatives which will have superior features.

Question 7.10: Do you agree with our volume assumption analysis?

115 Ofcom should rebase its input volumes on the 2012/13 published regulatory financial statements. Further migration to WBC beyond this starting point should be ignored in line with the anchor pricing approach.

116 Ofcom should use their low forecast volume assumptions for both rental and bandwidth for reasons explained below.

Rentals

117 Ofcom should use the lowest of their three rental volume scenarios because:

- LLU roll out is continuing in Market 1/A with LLU already at 397 market A exchanges and is expected to go to 849 (27% of market A) which will drive down volumes. June 2012 data shows that where LLU is at an exchange IPstream ceases average 3% and WBC ceases 3%

⁴⁴ Ofcom Consultation document, paragraphs 7.104 to 7.107

⁴⁵ Ofcom Consultation document, paragraphs 7.108 to 7.118

⁴⁶ Ofcom Consultation document, paragraph 7.51

- Taking account of these factors, BT's best estimate of the combined market 1 rental IPS plus WBC is lower than Ofcom's lowest forecast for most of the period
- In addition this most closely aligns with Ofcom's proposed treatment of BDUK volumes outlined in paragraph 7.114 in the consultation.

Figure 8: Market A Rental Forecasts

[✂ figure 8 redacted]

Bandwidth

118 BT's volume forecast for bandwidth is below Ofcom's low case. Furthermore, the assumptions Ofcom have already made for the NBMR are for much slower growth than even their current low case. Ofcom must ensure consistency between assumptions produced concurrently and use the lowest of their three bandwidth growth scenarios.

Figure 9: Bandwidth Forecasts

	13/14 vs 12/13	14/15 vs 13/14	15/16 vs 14/15	16/17 vs 15/16
Ofcom Medium	29%	26%	23%	20%
Ofcom low	25%	20%	15%	10%
BT's 135 M1 IPS (April to April)	✂	✂	✂	✂
Ofcom NBMR Medium	14%	14%	14%	14%

Question 7.11: Do you agree with our asset and cost volume elasticities assumption analysis?

119 The AVE and CVE used for bandwidth are appropriate, but BT considers that Ofcom should use a lower AVE of 0.32 and a lower CVE of 0.49 for end-user rentals. These have been derived using the DSLAM cost structure and distribution of DSLAM numbers per exchange.⁴⁷

120 BT considers that where volumes are expected to grow, it is a reasonable approach to use the AVE and CVE consistent with the LRIC model as this describes the relationship between costs and volumes over the long term, using the assumption that all costs can be varied. This means that the AVE and CVE applicable to bandwidth services are reasonable estimates.

121 The LRIC model output is less useful where volumes are declining because in the time-horizon of a charge control, the inherent assumption that all costs may be varied is unrealistic because some costs can be sticky downwards. The end-user AVE and CVE used by Ofcom suggest that only 18% of the total costs are fixed which seems to be unreasonably low given the "tail" of a large number of exchanges in Market A where costs will be largely fixed.

122 As end user volumes decline, each exchange will continue to require at least one DSLAM with the associated exchange and power costs. It is therefore the case that BT believes that the LRIC-based AVEs and CVEs for end-user rentals are over-estimated and considerably lower values should be used. This is particularly the case for Market A, where many exchanges will be single-DSLAM exchanges and so a high proportion of costs will be fixed compared to the WBA market in aggregate.

Question 7.12: Do you agree to the use of the "rest of BT" rate for the cost of capital assumption?

⁴⁷ ✂

123 BT's comments on Ofcom's cost of capital assumptions provided in section 5.3 of BT's response to Ofcom's consultations on the Fixed Access Market Reviews and charge controls.

Question 7.13: Do you agree to our proposed operating cost efficiency improvements of between 3.5% to 5%?

124 BT believes that the operating cost efficiency improvements should be set at a maximum of 3.5% per annum and a lower value of 1.5% per annum should be adopted to ensure consistency with the TI charge control which uses the same SDH technology as the services within the WBA charge control. BT's therefore believes operating cost efficiency improvements should be assumed to be in the range 1.5% to 3.5% per annum.

125 Ofcom use recent charge controls, unit cost analysis and a BT Group presentation about future cost reductions to assess potential efficiency gains. We show below that this data does not support Ofcom's the 3.5% to 5% level of efficiency improvement assumptions used in the consultation.

126 Where possible exogenous data should be used to evaluate the potential to achieve efficiency gains because this does not distort the incentives to achieve efficiency gains.⁴⁸ BT has addressed this lack of exogenous data by commissioning an update to the Deloitte efficiency study examining the relative efficiency of BT's network operations compared with that of major EU operators and which evaluates the trend rate of efficiency improvement over time.

Deloitte Study⁴⁹

127 Deloitte has updated their comparative efficiency study of major EU operators to evaluate how efficient BT is compared to its European peer-group and to quantify the trend rate at which efficiency is improving.

128 Deloitte's key findings are that:

- BT is the most efficient operator within the sample,
- There is not a shift in the cost frontier through time in nominal terms.

129 As BT is the most efficient operator within the sample, this indicates there is no reason why Ofcom should apply a "catch-up" efficiency challenge as BT's costs are at an efficient level when benchmarked against peer companies. The efficiency improvement should therefore be set by reference to the trend rate at which efficiency can be expected to improve over time, otherwise known as the "frontier shift" in efficiency studies.

130 Deloitte's study indicates that the frontier shift is broadly equal to inflation (as this is consistent with a finding that time trend in costs is flat in nominal terms or not significantly different from zero). Deloitte's study is therefore consistent with a trend rate of efficiency improvement of around 3% per annum.

131 Deloitte also refer to an EU KLEMS initiative estimate of EU telecommunications and postal sector. This shows Total Factor Productivity growth of 1.9% per annum across the EU. To set a higher rate than this requires Ofcom to have evidence that BT is inefficient and that catch-up of circa 3% a year is justified. It has presented no such evidence.

132 An examination of efficiency studies using exogenous benchmarking data suggests that the trend rate of efficiency improvements (or "frontier shift") has been in the range 1% to 3% depending on

⁴⁸ The reasons for this are set out in the Openreach Response to question 7.5 of the Fixed Access Market Review consultation

⁴⁹ Annex 4 - Deloitte report for BT, 2013, 'Analysis of the efficiency of BT's regulated operations'.

which methodology is adopted. The following table from Deloitte 2011⁵⁰ summarises evidence from past econometric studies showing the trend rate of total factor productivity in telecommunications network businesses.

⁵⁰ Deloitte 2011, WBA Consultation Response, 29 March 2011,
<http://stakeholders.ofcom.org.uk/binaries/consultations/823069/responses/BT2.pdf>

Figure 10: Network Total Factor Productivity - econometric studies

Measure	Range	Source
BT's real unit cost reduction (including distance-related costs and volumes)	0.9% to 2.6%	Ofcom (2009)
Standard TFP analysis	1.0%	Deloitte (2010)
Econometric TFP	1.1% to 2.4%	Deloitte (2010)
Econometric TFP (Ofcom's Törnqvist index)	2.8%	Deloitte (2011)
Stochastic frontier analysis (Deloitte)	0.6% to 1.0%	Deloitte (2011)
Stochastic frontier analysis (NERA)	2.5% to 3.0%	NERA (2008)
Econometric TFP (NERA)	~2.0%	Deloitte (2010)
Implied range from above measure	0.6% to 3.0%	

Recent Charge Controls

133 The most relevant recent charge control that is Traditional Interface (TI) services charge which concluded an efficiency assumption of 1.5% should be used. The TI services are run on SDH technology and this is the same technology as is used for the IPStream services subject to the WBA charge control.

134 The Ethernet charge control is not relevant because these services are delivered on a different, newer IP technology so this control has limited relevance to efficiency gains achievable on legacy SDH TDM technology.

135 The EOI Openreach inputs are excluded from the revenues subject to the WBA charge control as these are separately regulated, and the efficiencies to be achieved by Openreach are already included in the input prices. Therefore, they have no direct relevance to the BT Wholesale costs which are subject to the WBA charge control.

BT's unit costs from the Regulatory Financial Statements

136 Ofcom uses unit cost changes between 2010/11 and 2011/12 to suggest that BT's unit costs have reduced more rapidly than forecast, although Ofcom does accept there are shortcomings to this analysis and *'the changes over one year may not be representative of what future efficiency gains might be over the charge control period'*. It is also highlighted that economies of scale contribute to unit cost reductions as volumes grow. This data therefore has limited relevance to the charge control.

137 2012/13 data can be included in this table, together with volume changes over the past two years. This shows the total rental and bandwidth volumes and the weighted average unit costs for these services. It can be seen that whilst the unit cost reduced significantly in 2011/12 there were increases in 2012/13. This supports Ofcom's conclusion that *'a change over one year may not be representative of what future potential efficiency gains might be over the charge control period'*, especially once the factors Ofcom go on to describe⁵¹ are also taken into account.

138 It can be seen that the end user rental unit costs are virtually unchanged over the two years taken together, whilst the bandwidth unit costs have reduced significantly but this is almost entirely due to the increase in volumes rather than reductions in costs.

⁵¹ Ofcom Consultation document, paragraph A12.69

Figure 11: Changes in IPStream unit costs and volumes

Ipstream Connect		2010/11	2011/12	2012/13	% Change 2010/11 to 2011/12	% Change 2011/12 to 2012/13
EU Access Rentals	unit cost	77.73	62.65	77.22	-19.4%	23.3%
Bandwidth	unit cost	129.82	56.05	63.17	-56.8%	12.7%
EU Access Rentals	volumes	2,073,012	2,205,140	1,801,382	6.4%	-18.3%
Bandwidth	volumes	1,125,159	1,613,468	1,819,625	43.4%	12.8%

BT's stakeholder presentation, May 2013

139 We evaluated BT's stakeholder presentation extensively in the Openreach response to the Fixed Access Market Review.⁵² In summary BT said that:

- BT needs to reduce costs by circa £1bn out of £15bn (just under 7%) to be in the top quartile in every cost type of European Telcos; and that savings need not stop here as the sector itself has room for further gains.
- Cost reduction programmes would continue to deliver benefits "in the next two to three years" (up to 2015/16) but no overall estimate of the total "opportunity" was given, except that the £1bn (7%) was identified as being clearly within scope, and could even be exceeded.

140 The presentation does not support an interpretation that the rate of reductions would be 5% in real terms until 2016/17 – on £15bn of total costs - this would amount to circa £2.8bn⁵³. Nor were the quartile comparisons (which Ofcom describes as '*External Benchmarks*') based on comparisons of '*total factor productivity*' (the type of efficiency sought by Ofcom) but gave weight to financial measures of performance, such as Opex Cost relative to exchange line revenue earnings.

141 Any evaluation of the possibility to achieve efficiency gains needs to take into account any impact that changes to volumes has on costs. This can either be due to costs avoided by no longer needing to provide a service or through smaller volumes being provided, as well as the contribution that economies of scale and scope make to future cost savings.

142 Ofcom is at risk of double-counting efficiencies arising from economies of scale as these are already incorporated into the cost modelling through the use of CVEs and AVEs.

143 For these reasons, BT believes that the evidences indicates that 3.5% is the maximum value of efficiency gains that is reasonable to include in the charge control modelling and there is evidence to support the use of a 1.5% efficiency value and this should be adopted at the 'low' efficiency assumption in the charge control modelling.

Question 7.14: Do you agree with our proposal not to make one off adjustments to WBA prices at the start of the control?

⁵² Openreach Response to question 7.5 of the Fixed Access Market Review

⁵³ £15bn less 0.95^4 times £15bn = £2.8bn.

144 Ofcom's proposed remedies of a charge control with no one-off adjustments to starting prices provide the appropriate incentives to improve efficiency as demonstrated in numerous other charge controls. It corresponds most closely to the operation of a competitive market and provides continuity and certainty.

Question 7.15: Do you agree that the range of plausible X values is -10% to 0%?

145 We do not understand the relevance of the question on a 'plausible' range. This appears to be asking if the range of outputs provided by every combination of inputs is 'plausible'. There is always an element of uncertainty in forecasts and Ofcom should use their judgement to produce a single base case range of possible values for X upon which to consult. Ofcom have to be clear on the range of X they are consulting on and not the 'plausible' range. Ofcom's assumptions for their model are certainly not the only 'plausible' range - a range of -10% to +10% is equally plausible depending on the assumptions made.

146 The current range does not take into account the impact of the issues raised in this response. These are summarised below.

147 Ofcom should update the charge control model with the latest available information from the 2012/13 published regulatory financial statements. This shows much lower volumes of IPStream in 2012/13 than were assumed in Ofcom's model. Given the sensitivity of Ofcom's forecast of unit costs to volumes, it is key that Ofcom updates its model to reflect the latest available information.

Figure 12: 12/13 RFS Volumes

	2012/13 RFS	2012/13 BT	2012/13 Ofcom	
	Market 1	Market A	Market A	Overstatement
Rentals	1,801,382	1,634,512	1,979,936	21%
Bandwidth	1,819,625	1,651,065	2,019,024	22%

148 An efficiency challenge of between 1.5% and 3.5% per annum would be more appropriate. BT has explained in the response to question 7.13 above that the efficiency challenge of 5% is excessive for a service provided over legacy technology.

149 Ofcom should correct the weighted average bandwidth price over the period 1 April 2013 to 31 March 2014 from £70.61 to £68.55 to take into account the reduction in bandwidth price to £61.30 in July 2013 (Ofcom used £64.05 in error).

150 Ofcom should use lower elasticities for end-user rentals to take into account the large proportion of fixed costs in Market A as explained in response to question 7.11.

151 Ofcom should use their low forecast volume assumptions for both rental and bandwidth for reasons explained in response to question 7.10.

152 Ofcom should take into account the methodology revisions set out in the 2012/13 RFS as explained in response to question 7.8, in particular the adjustments relating to specialised accommodation, which aligns RFS reporting with the planning rules, DSLAM costs and 21C transmission equipment.

153 Ofcom is required to take into account how input costs change in comparison with the chosen inflation index. In particular, pay and accommodation costs are expected to track RPI more closely and BT suggests Ofcom recognise the difference in forecast costs by incorporating a (1+relative input price change) factor as explained in response to question 7.2.

154 BT believes that Ofcom should correct their model to take into account all of the above.

Question 7.16: Do you agree with our base case range of X values and the assumptions underlying this range?

155 Ofcom should be consulting on a single base case range for X and not hedging its bets by including two ranges in its consultation. As outlined in our response to question 7.15, there are a number of assumptions Ofcom can make which will affect what can be considered a reasonable base case range. In our view, the base case range should be revised to RPI+5% to RPI-5%

Question 7.17: Do you agree with the proposed levels of the sub-caps?

156 BT agrees in principle that the use of sub-caps to constrain BT's pricing flexibility within the basket are a more appropriate way of addressing concerns with the structure BT's prices than a cost orientation requirement. However, the tighter sub-cap imposed on bandwidth of CPI + (X+3) unduly restrictive.

157 In July 2013 BT rebalanced the rental and bandwidth prices with the bandwidth price being reduced by 50%. It should be recognised that bandwidth prices are now closely aligned with costs and therefore a sub-cap of Inflation + (X+6) would be more appropriate. The concern over volume growth in bandwidth is overstated as the control is over total bandwidth and not bandwidth per end user and the price of bandwidth has now been aligned with underlying cost.

158 BT will still be obliged to meet the requirements of the charge control basket and the extent to which BT can rebalance charges will be constrained by the need to meet the overall basket requirements.

Question 7.18: Do you agree with our proposals on cost accounting?

LRIC and DSAC information

159 We welcome Ofcom's proposals⁵⁴ to remove the publication of DLRIC and DSAC information, consistent with its decisions in other market reviews such as the 2013 BCMR Statement and 2013 NMR Statement. However, we continue to question the proposed requirement to maintain such data.

160 Although this requirement would be consistent with other market reviews, we do not believe that Ofcom has sufficiently justified its reasoning for the preparation and supply of such information in the absence of a cost orientation obligation and would welcome further clarification. In the 2013 NMR statement Ofcom has expressed the view that: '*...such cost data informs our market reviews, in particular our assessment of SMP and our analysis of appropriate remedies where such SMP is present*'⁵⁵ but did not provide further detail as to exactly how such data would be used.

Publication of FAC information where no charge control in place

161 Ofcom proposes that '*For avoidance of doubt BT would still be required to publish FAC.*'⁵⁶ However, we should expect this proposal to exclude WBC and DataStream services, for consistency with the decision in the recent NMR.

162 In the 2013 NMR statement Ofcom noted that: '*We will also continue to require BT to publish FAC information for wholesale call origination services at the market level, but not at the service level. We consider that publication of FAC at a service level is not proportionate in the context of price regulation which will now be based on hypothetical NGN cost modelling.*'⁵⁷ A similar conclusion

⁵⁴ Ofcom Consultation document, paragraph 7.151

⁵⁵ Ofcom Narrowband Market Review Statement, paragraph 5.404

⁵⁶ Ofcom Consultation document, paragraph 7.151

⁵⁷ Ofcom Narrowband Market Review Statement, paragraph 5.406

was reached for call termination⁵⁸. We assume that if the publication of FAC information at a service level is not required where a charge control is based on hypothetical network modelling, it must also be the case where no charge control (or cost orientation obligation) is imposed at all. We should thus expect the publication requirement to relate only to services where a charge control would be in place (i.e. IP Stream Connect) rather than to all services within the market.

Preparation of FAC information at a service level

163 Although preparation of FAC at a service level (and its publication where a charge control, based upon top down modelling, is imposed) would be consistent with other recent market reviews we do not believe that Ofcom has sufficiently justified its reasoning for the preparation and supply of such information in the absence of a cost orientation obligation and would welcome further clarification. In the 2013 NMR statement Ofcom has expressed the view that: ‘...such cost data informs our market reviews, in particular our assessment of BT’s performance, our assessment of SMP, and our assessment of the extent to which BT has been able to recover costs under the charge control.’⁵⁹ We consider that the preparation and provision cost information at the market or, where smaller, the level of the charge control basket would satisfy such requirements and should like clarification as to the benefits of additional granularity requirements.

⁵⁸ Ofcom Narrowband Market Review Statement, paragraph 6.195

⁵⁹ Ofcom Narrowband Market Review Statement, paragraph 5.407

Annex 1: The impact of 4G/LTE network on WBA market definition

1 Whilst we appreciate that 4G/LTE is a new broadband product, we believe that it will be a significant constraint within the WBA market that will be felt over the lifetime of this market review (to 2017). Therefore we believe that Ofcom should fully take into account the impact 4G services will have in the product market definition in this market review.

2 First of all we assessed whether there is any potential requirement for 4G/LTE and we found there is clearly pent up demand for 4G as evidence from Ofcom's Consumer Market Research Report⁶⁰:

'The proportion of consumers who are aware of 4G already appears to be high. According to Ofcom research conducted in April 2013, 79% of adults with a mobile phone from which they could access the internet said that they were aware of 4G services (Figure 5.3). Eight percent of the same sample said they were already a subscriber to EE's 4G service, while a further 12% said that they were likely to purchase 4G services within the next 12 months.'

3 The demand for 4G is likely to have a slight time lag due to mobile smartphone users seem to have to finish with their existing contracts before upgrading services. As the broadband choices website states⁶¹, there are some contractual restrictions to moving but these are not prevalent with all operators:

'Existing customers with a 4G-compatible smartphone can upgrade to 4G without having to sign a new contract - unlike EE customers, who are tied in for at least 15 months.'

4 In effect we can surmise the full extent to the movement to 4G is unlikely to be seen until next year and will no doubt continue through the current WBA market review:

'30% of smartphone users intend to upgrade to 4G at the end of their current contract.'

5 According to the same Ofcom research, three in ten smartphone users said they would like to upgrade to 4G when their contract expires (Figure 5.4). These users may wish to wait until the end of their contract because of the early termination charges that they might incur if they leave their contract before its minimum term has elapsed."

6 In Ofcom's consultation document mobile broadband access was not considered a sufficient constraint on fixed access due to a combination of the following factors:

- a. Speed & Quality of Broadband isn't as good as fixed and is lower than fixed broadband
- b. Future uncertainty of 4G rollout, with contention ratios likely to be an increasing limiting factor and growth in WiFi/ Femtocells likely to undermine 4G and bolster fixed BB
- c. Data allowances a significant constraint
- d. Smartphones have the same issues as those outlined in points 1 to 3, and in addition use WiFi a lot
- e. International comparison

⁶⁰ http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/UK_5.pdf , pages 313 to 315

⁶¹ Broadband Choices website: <http://www.broadbandchoices.co.uk/news/2013/08/o2-4g-tariffs-prices-140813>

- 7 We believe that the 4G is a significant threat to fixed access, especially fixed broadband over the next few years.

1/ Speed/Quality

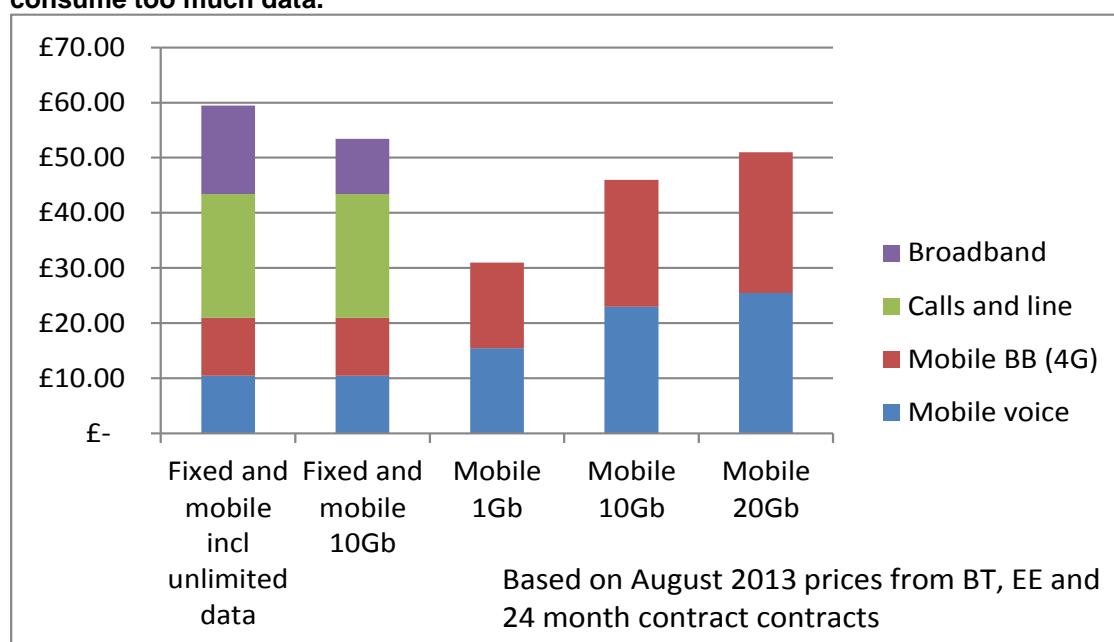
- 8 4G reaches speeds of between 4 and 30Mbps (recently upgraded by EE in July⁶²) which means that this is now a viable substitute that can compete against, and indeed exceed, the comparable broadband speeds that IPStream and ADSL2+ are capable of (up to 8Mbps). Our research has shown that our copper broadband customers are at risk from 4G, as the following chart and table shows.

Figure 13: LTE can target fixed broadband customers wanting a higher speed than they get today and who are outside the 90%+SFBB footprint

[> figure 13 redacted]

- 9 Customers using broadband lines and who are getting much less than 8Mbps and who are price sensitive/low usage customers are most open to substitution and to 'cutting the cord' from a fixed broadband service. The following chart shows that there is an existing base of fixed customers who are vulnerable to this sort of movement away from fixed.

Figure 14: LTE can target customers seeking to cut the cord who are price sensitive and don't consume too much data.



- 10 Furthermore Ofcom's concerns about the quality of indoor signals appear to be rapidly receding with the launch of 4G services. Indeed Vodafone commit to 98% indoor coverage⁶³:

'98% indoor coverage in the UK - we commit to doing this in the next few years as our 4G will travel further indoors than our signal ever has before.'

- 11 One argument against a potential case for LTE substitution is the likelihood of network congestion which would follow its success. In their study of LTE substitution for fixed broadband in rural

⁶² Daily Telegraph article : <http://www.telegraph.co.uk/technology/mobile-phones/10156938/4G-speeds-doubled-as-EE-takes-aim-at-rivals.html>

⁶³ Vodafone's website : <http://www.vodafone.co.uk/4g/ready-for-4g/>

areas⁶⁴, Analysis Mason estimated that, on a rural 20 Mhz cell sites with a typical 10km radius, a maximum of 126 customers could be supported at 5Mbps by 2017.

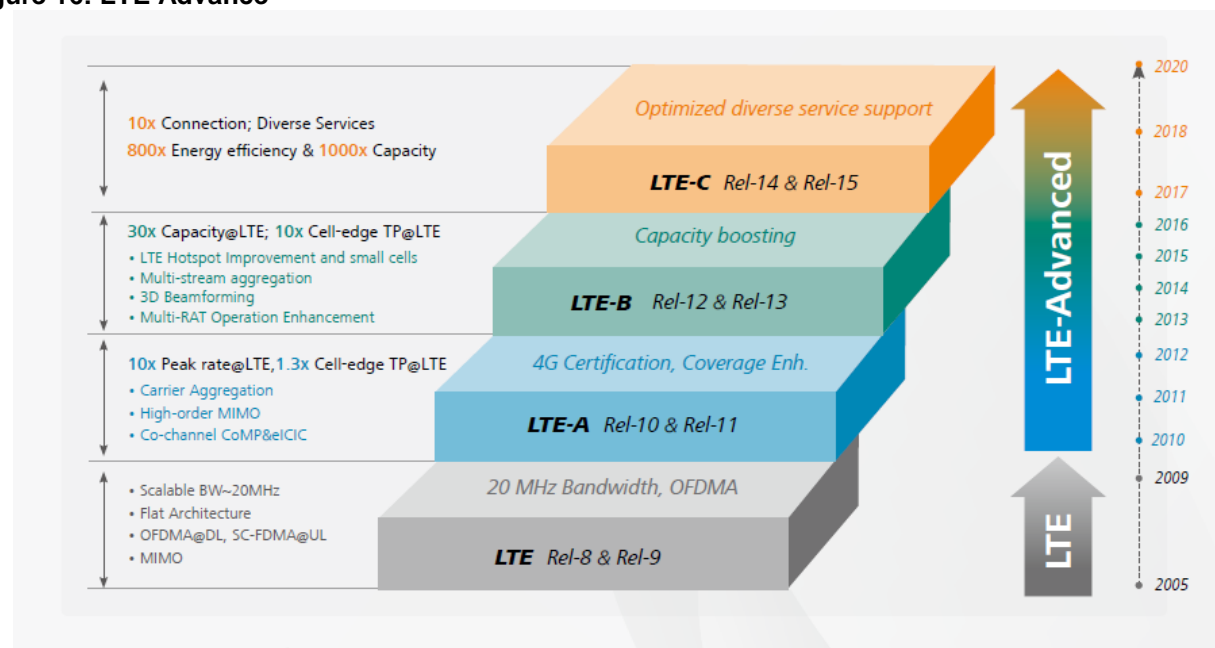
Figure 15: LTE Network Congestion

Figure 8: Maximum LTE fixed-replacement subscribers per month per LTE cell site, 20MHz, by access speed, 2012–2017 [Source: Analysys Mason, 2013]

Access speed (Mbps)	Maximum number of subscribers					
	2012	2013	2014	2015	2016	2017
15	149	110	82	60	45	33
10	240	178	132	97	72	53
5	565	418	310	229	170	126

- 12 However this does not take into account technology developments in the next few years. With carrier aggregation, sectoring and MIMO, BT estimates that these cells could support ~10 times⁶⁵ more customers. Assuming 150 inhabitants per square km⁶⁶, on average 2 inhabitants per home, 80% broadband penetration, this could allow up to 7% broadband substitution with LTE.
- 13 Huawei is even more optimistic and believes that “LTE Advanced” could support as much as 30 times more customers per cell; this could support ~20% fixed broadband substitution.⁶⁷

Figure 16: LTE Advance



⁶⁴ LTE as an NGA platform in rural markets- cost-benefit analysis, July 2013. Assumes 5:1 contention ration 2012 decreasing with increased usage over time

⁶⁵ Carrier aggregation will allow up to 100MHz of bandwidth. This would give up to a 5 times increase in capacity but closer to 4 times if some carriers were at a higher frequency. Six sectorised sites could give theoretically around 1.6 times the capacity. Using 4x4 MIMO could give 1.58 times the capacity. Hence 10 times the capacity of dual 20Mhz cell as deployed today.

⁶⁶ OECD definition of “rural”

⁶⁷ Huawei website: www.huawei.com/ilink/en/download/HW_259010

- 14 Therefore the technology impact of 4G/LTE is likely to be on a par with fixed line broadband services over the next few years.

2/ 4G Rollout

- 15 Everything Everywhere (EE) is already rolling out services to 98% of the UK by the end of 2014 and, according to Ofcom's Communications Market Report⁶⁸ EE announced in June 2013 that its 4G network footprint had exceeded more than 55% of the UK population.
- 16 EE has a 12 month head start on other mobile network providers but it already seems clear that Vodafone and O2⁶⁹ are accelerating their planned rollout to compete with EE, and Three will be on track to launch in Q4 (and plan to offer 4G at no extra charge)⁷⁰. Clearly then LTE will be fully rolled out to almost 100% of the UK during the upcoming charge control.
- 17 Once 4G/LTE rolls out into Market A exchange areas, where lower broadband speed services such as IPStream are prevalent, then the likelihood that mobile operators will be a collective additional constraint to the existing Principal Operator(s) is possible.
- 18 Therefore 4G/LTE must be actively considered by Ofcom as a possible constraint in the regulated geographic market in the WBA market review, either this time around or in the next review.

3/ Data Allowance

- 19 Ofcom's focus on mobile broadband tariffs data allowance caps by looking at the average throughput for fixed users (23GB in June 2012⁷¹) compared to the data allowance caps in the mobile world (0.5GB to 20GB a month).
- 20 Even if we assume mobile operators continue limiting usage with low usage caps, broadband substitution by LTE could suit customers using broadband lightly (i.e. mostly web-surfing, E-Mails, IM). LTE will be attractive to customers with poor line speeds, and/or looking to save money by stopping their fixed voice and broadband line. BT customers on the entry level packages, 3% of our customers, currently consume on average 3% /month and even with 30% increase YoY, they would still consume less than 3% / month by 2017.
- 21 EE has already launched a 20Gb usage plan. Now that other mobile operators are joining Everything Everywhere in offering 4G, the likelihood is that the mobile data usage allowance will increase with time and price will reduce as competitive differentiators.
- 22 In terms of the supply side factors that underpin the competitiveness of 4G networks have been investigated by Plum Consulting⁷². It is interesting to note that in this report Plum consulting have quoted Verizon's view of 4G costs in the US: *'...the 4G network is a less costly network to operate, at least 5 times less costly than the 3G network.'*
- 23 Furthermore Plum Consulting's reports shows that early indications in the UK indicate that LTE will deliver a substantially more competitive service versus fixed, and further modelling suggests that the incremental costs of mobile networks will fall substantially – to less than £1/GB and potentially to around 20 pence/GB.

⁶⁸ http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/UK_5.pdf, page 312

⁶⁹ Techradar website: <http://www.techradar.com/news/phone-and-communications/best-4g-network-ee-vs-o2-vs-vodafone-1172045>

⁷⁰ Mobile Market Magazine website: <http://mobilemarketingmagazine.com/content/3-go-4g-q4#v0dWIJyoC1RAfp0j.99>

⁷¹ Ofcom Infrastructure Report 2012

⁷² Plum Consulting report for BT; 'Future regulation of fibre broadband' dated 17th September page 22 (attached as an Annex to the BT response to the Fixed Access Market Review Consultation).

- 24 If mobile unit data prices fall below £1/GB then re-directing fixed line and broadband expenditure of around £30 per month to mobile would buy a very significant amount of data – an amount that should be sufficient for the needs of at least a segment of the fixed broadband market.⁷³

4/ Smartphones and the move away from fixed broadband (including international comparisons)

- 25 Smartphone devices in themselves certainly favour data broadband growth on either fixed (through WiFi) or mobile networks. In effect they accelerate the move towards a network that suits the cost/speed requirement of that particular user and as we have outlined already, we believe the increase ubiquity of smartphones means that 4G networks could be actively considered as a constraint on for fixed broadband with the WBA market review.
- 26 Total Telecom Plus published an article on Tuesday August 20th, 2013. The published research, carried out by TNS in May as part of EE's first Mobile Life Index, a combination of data gleaned from its 4G network during the first seven months of 2013 and a survey into the habits of 1,000 customers.

'Unsurprisingly the research found that users spend more time on the Internet on 4G compared to 3G, and that faster connection speeds are encouraging people to make more use of streaming video services. In fact, video services comprise 26% of EE's total 4G network traffic, with a third of customers streaming more video via 4G than they did on 3G. Meanwhile, 43% of customers said they use fewer or no public WiFi hotspots since upgrading to 4G, and 23% use their home broadband less.'

- 27 One further factor regarding the attractiveness of mobile only usage are the changes in the voice market with unlimited voice bundled with LTE plans, the shift to HD voice and the shift to VoIP over LTE (VoLTE). This should reduce or remove differences in voice cost and quality as a barrier to adoption of mobile only.
- 28 The rapid rise in smartphone ownership currently around 60% in the UK and increasing at a rate of around 10 percentage points per annum. This will transform smartphone data into a near ubiquitous default by 2017, with fixed broadband being perceived by consumers as the incremental add on (depending on capacity needs at home).
- 29 Adoption of devices and price plans that enable shared use of mobile including Mi-Fi, smartphone Wi-Fi tethering and shared data plans. This ability to carry smartphones and tablets from place to place allows large downloads (e.g. content or software updates) to be managed without a home broadband connection and outside of mobile data caps via public Wi-Fi or at work.
- 30 Furthermore the Plum report on the future regulation of fibre broadband⁷⁴, looked at the demand side constraint of mobile networks, including the reduced requirements for speed and/or capacity:
- Increased use of smaller screens which require lower speeds/less capacity
 - A step change in compression to HEVC which will halve video data/speed requirements
 - Growth in streaming - which reduces demand for high speeds to minimise download times
 - Smart devices will manage downloads so they make optimal use of available connectivity and occur in anticipation of user needs, thereby minimising peak speed requirements
- 31 And Plum Consulting go on to say: *'The fact that mobile broadband access will be near universal in future (reflecting smartphone adoption), will be sharable (via Wi-Fi tethering and/or shared data*

⁷³ Plum Consulting report

⁷⁴ Plum Consulting report page 13

plans) and will represent the baseline from which fixed access will be assessed as an incremental add-on will also be important considerations in assessing scope for mobile substitution.'

- 32 An important driver of bandwidth-economising innovations is the global shift to mobile broadband relative to fixed, with Ericsson forecasting 7 billion mobile broadband connections by 2018, but less than 1 billion fixed broadband connections.
- 33 This shift has seen a wide number of application providers including Google and Facebook adopt "mobile first" development strategies, which puts an emphasis on improvements to compression and smart connectivity management.
- 34 Furthermore, market data from those Western European countries where LTE has launched (principally Austria, Denmark, Finland, Germany and Sweden) all show a negative trend for fixed line household penetration since LTE market introduction.⁷⁵ In particular, in Germany LTE was launched in December 2010 and by December 2012 LTE connections totalled just under 1.5m. Over the same period fixed voice household penetration in Germany dropped by 3% to 77% (decline of 1.5% p.a.), an acceleration on the previous 1% p.a. rate of decline observed between December 2008 and 2010.⁷⁶
- 35 Finally, to assess the possible impact of LTE on fixed line household penetration (which directly impacts the fixed broadband market) in the UK, BT commissioned a survey from the research agency Sweeney Pinedo⁷⁷. Using an online and telephone sample of c. 2,500 GB adults (18+) in August 2013, the survey aimed to quantify the likelihood of consumers substituting their fixed voice line in favour of LTE. The consumer decision was analysed under different scenarios, and the drivers behind any such decision were identified.
- 36 The research found that between 3% and 10% of the total sample was likely to consider taking up a mobile broadband service for in-home use and substitute their fixed broadband connection. Under the scenario where a mobile broadband service can deliver equivalent speed and price to existing fixed broadband connections, 7% of the total sample was likely to consider taking up a mobile broadband service for in-home use and substitute their fixed broadband connection. Even in the scenario where a mobile broadband service delivers an equivalent speed to existing fixed broadband connections but is priced £5 higher per month, 3% of the total sample were likely to consider taking up a mobile broadband service and substitute their fixed broadband connection.
- 37 Beyond those respondents who indicated that they were likely to adopt a mobile broadband service for in home use, an additional 18% to 26% of the total sample was undecided on their intention to take up mobile broadband in future but had not dismissed the possibility. This not only emphasises the uncertainty surrounding LTE in the market but importantly reveals that a substantial proportion of consumers could subscribe to mobile broadband and substitute their fixed broadband connection as the market matures and real-world performance is apparent.
- 38 The combination of the Plum analysis, the Sweeney Pinedo market research, the learning from other international markets, with the 'mobile first' approach and the reduced importance of speed per se in end users consuming broadband services, highlights the change in the balance between fixed and mobile broadband services in the near future –either through mobile only households replacing fixed broadband services or through mobile broadband services constraining fixed broadband prices and services.
- 39 Specifically, we estimate that about 3% of end users could move away from IPStream in Market A which relates to approximately 10% of broadband lines in Market A. This is based on our views

⁷⁵ Analysys Mason - Western European telecoms market: trends and forecasts 2013–2018

⁷⁶ Analysys Mason - Western European telecoms market: trends and forecasts 2013–2018

⁷⁷ Sweeny Pinedo report for BT - attached as an Annex to the Openreach response to the LLU/WLR Charge Control Consultation

that 3% of slow (<2Mbps) broadband connections and 3% of other copper connections will be substituted by LTE.

- 40 This estimate is also broadly consistent with the market research data. Of these customers, we expect many to be in rural areas and thus the impact in the regulated WBA market will be an increase of 3% in mobile only homes over the market review period (increasing from 15% in 2011/12 to 18% by 2016/17). This equates to a similar figure of 3% households across the UK taking LTE and deciding there is not sufficient incremental value in also retaining a fixed line connection by 2016/17.
- 41 Based on all of this information, we suggest that Ofcom update their analysis to take the impact of 4G into account in the final Statement next year and certainly we expect 4G/LTE to be a significant constraint in Market A by the next WBA Market Review.
- 42 We believe that Ofcom has not fully taken account the constraint that the rollout of 4G networks will have on fixed broadband over the upcoming market review period.

Annex 2: Further analysis regarding data used to define Market A and Market B

- 1 This annex addresses five additional issues regarding BT's exchange data and further issues regarding Virgin Media data. As highlighted in our response to questions 4.1 and 4.3 in Section B we believe that there are a number of issues relating to data used by Ofcom to determine whether an exchange meets the appropriate criteria to be in either Market A or B.
- 2 We believe that there are a number of issues relating to data used by Ofcom to determine whether an exchange meets the appropriate criteria to be in either Market A or B. These fall into a number of distinct areas:
 - a. Some "phantom" exchanges should be removed from the list.
 - b. Ofcom have underestimated the potential coverage from a number of sites with multiple distribution frames, and should correct these errors
 - c. Ofcom should investigate whether the exchange size uplift factor has an impact on market definition
 - d. Postcode mis-match may have an impact on the presumed VM coverage in specific exchange areas
 - e. Ofcom have dismissed data errors which result in underestimating VM's coverage.
- 3 Ofcom should fully take these issues into account prior to completing their analysis prior to the publication of the WBA Statement and we suggest that the BT exchanges listed in this annex should be changed from Market A to Market B. Furthermore we suggest that Ofcom should correct the data inconsistencies with Virgin Media that we have highlighted.
- 4 Please note that this is in addition to the overarching point we made in Section B that Virgin Media's rollout plans do not match the data that Ofcom is relying on as part of the WBA Market Review.

BT Exchange Data

- 5 Ofcom have included 3 exchanges where there are no live circuits, and has placed these arbitrarily into Market A. As there are no customers recorded (and presumably not delivery points associated with them), putting them into market A will have no impact in either the size of the market or the volume of regulated circuits. BT believes they should be removed from the lists as they are not true exchanges.
 - a. EACTP – this is not a discrete exchange area, but is an area within the Caxton (EACAX) that was severed by TPON. As such, broadband was not available when Caxton was enabled, and was therefore given a separate ID. All customers are now recorded as connected to Caxton.
 - b. LNDZ2 – (London Docklands Zone 2) is a not a discrete exchange area. London Docklands is served from Popular exchange.
 - c. STTOLRY – We believe this may have once been a separate exchange and hence persists in some systems, but it is now part of the Handley (STHANLY) exchange
- 6 In addition to these "phantom" exchange codes, there are other instances where there is not a one to one matching between an exchange building and an "exchange area". This has led to Ofcom underestimating the number of POs that can potential serve customers in some exchange areas.
- 7 The most complex of these situations has been caused by is due to BT has centralising and consolidating some exchange equipment for services in the City of London as exchange buildings have been redeveloped. This has meant that certain exchange buildings provide service to more than one exchange area. In this case the Wood Street exchange shares the same building as the Faraday exchange (they are both located in the Baynard building) and Fleet exchange area

shares the same building as the Moorgate exchange area (they are both located in the Faraday building).

- 8 In both of these cases the co-located exchange area is listed as being in an unregulated area (both Faraday and Moorgate exchange areas are in Market B⁷⁸). In practice therefore customers who want LLU service from both Wood Street and Fleet could be provided relatively easily via a tie cable from the MUA used to serve respectively Faraday (3<) and Moorgate (3<) exchange area customers.
- 9 3<.
- 10 Another example is that of Canary Wharf exchange area (LNCNW), which has always been served from a separate distribution frame within Poplar exchange build. Thus as 3< all have a presence in Poplar build they could easily serve customers in the Canary Wharf area, so LNCNW should fall within market B.

Exchange Size Calculation

- 11 Although we accept that in any postcode-text matching process there will be a percentage of postcodes that will not match, often due to differing dates of the input postcode lists, we are concerned that the mis-match in this case was so great, accounting for 5% of UK delivery points. It is also often the case that mis-matches are not evenly distributed across the UK and can be concentrated in areas where postcode changes have been implemented.
- 12 This could result in a few areas where Ofcom may have significantly underestimated the number of delivery points, and slightly inflated (by up to 5%) the number of delivery points everywhere else. The allocation of all delivery points from a postcode that spans a boundary between two or more exchanges to a single exchange (rather than a random allocation) will also create a systematic bias.
- 13 As part of the Section 135 request to BT, we supplied two coverage estimates for all exchanges based a geographic join, rather than text matching. As a sensitivity analysis, we suggest that Ofcom should use these alternative exchange size estimates to check for anomalies which can be investigated further.

Virgin Media Data Issues

- 14 The two types of inconsistencies in the data supplied by Virgin Media is surprising. The first issue is postcodes that do not match onto BT's local exchanges. This was for both network coverage and served customers. As for the exchange size calculation, it is likely that this mis-match will not be spread evenly across the UK, but will be clustered in areas where postcodes have changed and the BT and VM systems are using postcode lists from separate dates.
- 15 Using an average uplift for customer numbers is probably sensible as the clustering is unlikely to have a great effect on the split over the two proposed markets so is unlikely to affect the SMP assessment.
- 16 However, the same is not true for the treatment for the market definition; Ofcom does not publish the scale of the mis-match for coverage, but if it was of a similar order to the customer mis-match of 1.5%, this is equates to almost 200,000 delivery points, and a cluster of mis-matched homes in an exchange area of 1,000 to 3,000 (the sort of size exchange on the fringe of the Market boundary) could have a great effect on the calculated exchange coverage, and hence the market in which it is placed.

⁷⁸ Ofcom Consultation document, Appendix 1

- 17 The second inconsistency is the presence of “*active connections for which the premises is not recorded as being passed*”.⁷⁹ As Ofcom has obtained the coverage data at postcode level⁸⁰ it is only identifying a portion of these errors i.e. where Virgin Media have stated zero coverage in a postcode. This shows that the Virgin Media coverage data supplied to Ofcom is incomplete, and we therefore suggest that areas just below any threshold set by Ofcom should be investigated more closely.

⁷⁹ Ofcom Consultation document, paragraph A10.27

⁸⁰ Ofcom Consultation document, paragraph A10.25

Annex 3: BT's legal assessment of the imposition of Equivalence of Inputs

As highlighted in our response to question 6.1, we disagree with Ofcom's proposal to introduce an EOI obligation within the wholesale broadband access market review. BT's contention is that that Ofcom should rely on the "conventional" discrimination remedy in its current form. In this annex we set out our position on these issues in more detail.

- 1 Draft SMP condition 2 proposes imposition of a regulatory obligation on BT to supply wholesale broadband access on an EOI basis in Market A, as the most onerous variant of the traditional undue discrimination obligation⁸¹.
- 2 BT's position is that this proposal is fundamentally flawed because it is not a proportionate remedy, and there is no objective justification for a condition of this type. Hence, Ofcom's proposal to impose EOI as an SMP remedy does not meet the criteria set out in section 47(2) of the 2003 Communications Act. We note also that Ofcom's approach to determining remedies is inconstant with the Commission's Recommendation on the consistent application of the non-discrimination obligation⁸² ("the Commission Recommendation"). We therefore invite Ofcom to reconsider this decision and instead to impose only the "conventional" undue discrimination obligation.
- 3 We are also concerned that, in the event that Ofcom does not agree to the request above, unless Ofcom amends the definition of EOI as an SMP remedy or gives BT consent, the SMP EOI obligation will be more onerous than the Undertakings' EOI regime, contrary to Ofcom's assertions to the contrary. We identify ways to address this.
- 4 In the following paragraphs, we explain why it is inappropriate to impose EOI as an SMP remedy, and then set out our proposals that should be adopted in the event that Ofcom determines that it will impose an SMP EOI remedy. Our submissions in this regard are without prejudice to our primary argument that no SMP EOI condition should be imposed.

Ofcom's proposal is not objectively justified

- 5 Ofcom proposes to depart from the current formulation of the undue discrimination remedy and impose a stricter form of non-discrimination without clear and robust justification of the competition problems Ofcom seeks to address and that cannot be addressed without imposing on BT a more onerous remedy given Ofcom's experience of BT's behaviour in the preceding market review and the efficacy of the Undertakings and hence its expectations of BT's behaviour in the coming market review period.
- 6 In paragraph 6.34 and 6.37 Ofcom describes the competition problems that serve as the justification to impose a stricter remedy on BT. Ofcom's focus is BT treating its downstream divisions more favourably for example in terms of prices, quality or product functionality. It is striking that this is not a new concern. These have been highlighted as concerns in the previous reviews. There is nothing new in conceptually that did not form part of the justification for the remedy of no undue discrimination that is currently imposed on BT.⁸³ Ofcom now finds that the most onerous form of non-discrimination is necessary on the basis of the same competition concerns without additional justification why this is the case. BT contends that in the absence of any further identified problems, or a clear explanation of why the existing remedy is insufficient to

⁸¹ Paragraphs 6.47 to 6.51 of the WBA Consultation (11 July 2013)

⁸² Commission Recommendation of 11.09.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, C(2013) 5761 Final

⁸³ See for example paragraphs 5.31, 5.42, 5.43, 5.201, 5.203, 5.205 in Ofcom's Review of the w -wholesale broadband access markets – Statement on market definition, market power determinations and remedies, dated 3 December 2010.

address its potential concerns, Ofcom has no justification for an increase in the intensity of the remedy imposed on BT.

- 7 Similarly, Ofcom has not provided any evidence about the issues that the existing remedy failed to address and hence to demonstrate that it is justified to impose on BT the strictest form of the non-discrimination. BT is not aware of any CP's complaints that BT has engaged in discriminatory behaviour in the wholesale broadband access market and there have certainly been no Ofcom investigations or adverse findings so far. Absent specific problems that have arisen during the current market review, BT finds that the most onerous form of non-discrimination remedy is unjustified.
- 8 Ofcom has also failed to meet the justification standard set out in Article 7 of the Commission Recommendation. Article 7 says that the NRA must first establish that it is appropriate, proportionate and justified to impose non-discrimination as a SMP remedy to address the nature of the problem identified in the relevant market as Article 8(4) of the Access Directive requires. The NRA should then examine as a second step whether it would be proportionate to require SMP operators to provide services on an EoI basis taking it account all relevant factors including a number of factors expressly set out in Article 7. Ofcom has not taken that second step of showing why EOI is needed over and above a conventional non-discrimination remedy.

EoI as an SMP remedy is disproportionate

- 9 It would be disproportionate for Ofcom to impose EoI as an SMP remedy as currently proposed for the following reasons.
- 10 Firstly, building on our comments in the paragraphs above, Ofcom has not shown that no lesser measure will suffice. BT's contention is that in the absence of an identifiable "problem" that cannot be addressed by a conventional non-discrimination remedy, it is disproportionate to impose an obligation which is more onerous.
- 11 Secondly, Ofcom also make the argument that the obligation will not be disproportionate because it is no more onerous than the Undertakings obligation which has already been imposed. BT makes two points in response to this:
 - It is inappropriate for Ofcom simply to argue that because EOI is an Undertakings obligation, it is automatically not disproportionate as an SMP remedy. It is for Ofcom to demonstrate, in the context of the market review, that it is a proportionate SMP remedy. For the reasons given above, it has not made out that case.
 - BT disagrees with Ofcom's contention that, as currently drafted, the current obligation is no more onerous than the Undertakings EOI obligation. The definition of the SMP conditions does not align with that of the Undertakings. There is a very real risk that some activities that may be allowed by the Undertakings could be seen as a breach of the SMP obligation.
- 12 The Undertakings contain a panoply of rules that create a complex, balanced and intertwined system where EoI is one provision amongst numerous others. The EoI SMP obligation however does not contain any of the checks and balances found in the Undertakings: for example, special provisions about systems, processes and information sharing. Similarly, it does not afford BT the protection in circumstances where Exceptional Incidents occur, which is provided for in the Undertakings. Nor does it contain the safeguard built into the Undertakings which allows BT to apply for Exemptions from EOI where this may be appropriate.
- 13 In conclusion, in a market where the economic evidence shows that competition is increasing, the introduction of an additional layer of regulation such as an EoI obligation is neither justified nor proportionate and contrary to Ofcom's principles to operate with a bias against intervention.

Ensuring a consistent and coherent approach to EoI

- 14 We now turn to the approach Ofcom should take, if despite BT's submissions above, it is minded to impose EoI as an SMP remedy. The first part highlights some examples of obvious differences

between the two regimes that could lead to diverging outcomes. The second part deals with possible alternatives to address the risk of inconsistent interpretation of EoI between the Undertakings and SMP requirements.

- 15 The first and key difference lies in the wording of the EoI definition in the two legal instruments. In particular, the explicit prohibition in the SMP remedy that the Undertakings are not an objective justification for differences in the provision of an EOI service absent Ofcom's consent.
- 16 Whereas the definition of EoI in Part 2 of Schedule 1 mirrors the definition of EoI in the Undertakings (bar some minor differences), there is a striking omission. The EoI SMP definition does not include point (d) of the Undertakings definition which provides that in the context of EoI in the Undertakings "the same" means exactly the same subject only to:

"(d) such other differences as are specified elsewhere in these Undertakings, including where Commercial Information is provided in accordance with these Undertakings to any of the nominated individuals occupying the roles and functions areas (and their relevant external advisers, subcontractors and agents) listed in Annex 2."

- 17 The differences between the two texts raise the obvious question of whether the EoI SMP remedy prohibits "differences" that the Undertakings allow. Our understanding is that Ofcom does not intend that SMP EoI should be any more onerous than Undertakings EoI. So, if that is indeed the case, the Condition will need to be modified to ensure parity. If on the other hand Ofcom does intend the SMP condition to be prohibit differences that are permitted by the Undertakings, then this totally undermines Ofcom's argument that the SMP condition is not a disproportionate remedy because it does not require us to do anything more than we do at present.
- 18 By way of example, the Undertakings permit in clearly defined instances individuals performing certain roles need to share information in order for the company to fulfil its statutory duties (like the annual finance accounts) or perform legitimate business needs (strategic steer and management). The SMP condition as is currently drafted does not mention such differences permitted by the Undertakings. If the intention is that it does, then this should be made explicit. If that is not the intention, then the SMP condition is more onerous than the Undertakings, and hence Ofcom's contention that the SMP EOI condition is no more onerous than the current situation would fall.
- 19 As a further example, does the SMP condition prohibit the differences that are allowed by means of an exception, exemption or a variation to the Undertakings? Again, BT would contend that if the SMP obligation is to be no more onerous than the Undertakings obligation, the SMP obligation should recognise these.
- 20 We note paragraph 6.50 of the consultation document that it is not Ofcom's intention that EoI as an SMP condition would require BT to reengineer existing systems and processes in order to comply with the proposed condition. We stress however BT's processes and systems did change following the Undertakings and among others accommodate the Annex 2 provisions of the Undertakings. Does BT need now to review and change those systems and processes because the SMP definition does not make clear that differences permitted under the Undertakings are also permitted under the SMP condition? If we need to do this, the SMP condition is more onerous than the Undertakings.
- 21 If Ofcom is minded to impose EoI as an SMP condition, but will stand by its assertion that the SMP EOI condition should be no more onerous than the Undertakings, then the wording of the EoI SMP definition should mirror that of the Undertakings and acknowledge that differences permitted under the Undertakings are not a breach of the SMP condition.
- 22 Alternatively, BT requests that Ofcom at the time Ofcom publishes its final statement, Ofcom grants its consent that any existing differences that are specified in the Undertakings including their exemptions and variations as relevant to the existing BT products that fall within the WBA markets and are presently subject to an EoI Undertakings obligation.

Annex 4: Analysis of the Efficiency of BT's Regulated Operations. A report by Deloitte.