# Anticipated acquisition by BT plc of EE Limited

## Ofcom's Phase 2 submission to the CMA

Non confidential version

Submission to the CMA

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# About this document

The Competition and Market Authority (CMA) is currently undertaking an in-depth Phase 2 investigation in relation to the anticipated acquisition by BT plc of EE Limited (later referred to as “the merger”).

With reference to the issues identified in the CMA’s Statement of Issues of 17 July 2015, this document provides a short overview of the relevant markets potentially affected by the merger and a description of Ofcom current and future regulation within those markets. The document also comments on the possible competition concerns arising from the merger and on some of the issues raised by stakeholders in their submissions to the CMA.

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Section 1

# Summary

## Introduction

1.1 Ofcom welcomes the opportunity to share its view with the CMA in relation to the anticipated acquisition of EE Limited by BT plc (collectively, the Parties), following the CMA's decision on 9 June 2015 to refer the merger case for an in-depth Phase 2 investigation.[1]

1.2 This document provides an overview of key information about the markets potentially affected by the merger as identified by the CMA in its Statement of Issues published on 17 July 2015, with particular focus on Ofcom current regulation within those markets and where appropriate the future developments of such regulation. The document also sets out Ofcom's comments in relation to some of the issues raised by the CMA and by stakeholders in their submissions to the CMA.

1.3 Sections 2 to 6 provide a summary of Ofcom regulation of communications markets and comments on the first eight of CMA's theories of harm. We have not commented on the last two theories of harm, relating to coordinated and conglomerate effects, as the CMA considers it is unlikely that these will lead to any concerns over and above the theories of harm identified. We have also responded separately to specific questions the CMA has put to us in information requests.

## Retail mobile market

1.4 The CMA has set out the concerns in relation to the loss of BT as a potential competitor in the retail mobile market (theory of harm 1) and the loss of dynamic competition (theory of harm 2).

### Loss of BT as potential competitor

1.5 We consider that retail mobile competition has delivered good consumer outcomes in terms of innovation, investment and prices, principally as a result of end-to-end competition between at least four national MNOs.

1.6 BT has offered mobile services in the business segment for a number of years, and re-entered the consumer mobile segment in March 2015. BT has a number of attributes that would support its growth in the retail mobile market including the potential to cross-sell to its existing fixed customers, and to bundle services including use of its Wi-Fi network and content such as sports rights. However, we note that although BT has greater scale, some other companies (such as Sky and TalkTalk) also have some of these attributes.

[1] https://assets.digital.cabinet-office.gov.uk/media/558a835ded915d1592000001/BT-EE_full_text_decision.pdf

1.7 The attribute that arguably makes BT stand out as a potential competitor in the retail market, and distinguishes it from other MVNOs and potential operators, is its 2.6 GHz spectrum acquired in the 4G auction.

1.8 BT's own plans were for an aggressive market entry using this spectrum, and if successful this could have had a positive and potentially disruptive effect on competition. However, we note that the Parties have now set out a number of technical and commercial factors that may have limited its effectiveness. Furthermore, we also note that BT would have faced a number of challenges and risks in achieving its plans, including the absence of a national network and reliance upon MVNO supply agreements.

1.9 We also note that the importance of BT as an independent competitor could depend upon the outcome of the proposed H3G/O2 merger (which has not yet been notified).

1.10 For the purposes of the counterfactual, the CMA has identified three possible outcomes for the H3G/O2 merger:

- The transaction proceeds as currently proposed, with the Commission's investigation not resulting in any competition remedies.
- The transaction proceeds subject to remedies (with a wider range of possible remedies).
- The transaction does not proceed, due to prohibition by the Commission or for any other reason.

1.11 For the first possible outcome, i.e. in the absence of remedies, the role of BT as independent competitor contributing to retail mobile competition may be more important.

1.12 As regards the second possible outcome, we note that recent horizontal mobile mergers in Europe have been approved subject to remedies (e.g. in Austria, Ireland and Germany). In these cases remedies have included the parties offering wholesale access (MVNO remedies) and measures to assist entry by new mobile operators (MNO remedies), including through the divestment of spectrum.

1.13 If in the H3G/O2 merger there were broadly similar remedies, BT may be well placed to take up the MNO remedies and provide a stronger competitive force, absent the BT/EE merger. It is the only holder of mobile spectrum in one of the main bands currently being used for 4G services (2.6 GHz) that is not currently a national MNO.

1.14 In the third possible outcome (i.e. the H3G/O2 merger does not go ahead), there would not be significant concerns about the loss of BT as an independent mobile retailer unless the other MNOs were constrained in their ability to offer services in the future due to capacity constraints.[2] Additional capacity is needed to meet the continuing rapid growth in mobile data. MNOs have added significant capacity in

[2] If other MNOs were capacity constrained, this could also raise concerns for the first and second possible outcomes. Assessing this would need to consider a hypothetical merged H3G/O2 rather than each of H3G and O2 independently.

the past and continue to do so. There would only be a concern with the BT/EE merger if the other MNOs were unable to meet increasing demand on a sustained basis. Longer term, we do not consider this problem would arise, as all MNOs will have a reasonable opportunity to increase capacity. In terms of whether the other MNOs would struggle to meet demand in the shorter term, we are happy to assist the CMA to assess the detailed evidence from the MNOs on this, but we note that there are a number of ways for MNOs to increase their capacity.

### Loss of dynamic competition

1.15 The CMA sets out the concern that BT/EE will (in the medium to long term) weaken competitors to EE and BT such that they will impose less competitive constraint than they would have done otherwise. In relation to the higher peak speeds that BT/EE will be able to provide, we note that even though the addition of BT's spectrum may increase the peak speeds BT/EE could offer, on its own EE is already able to provide higher peak speeds than other MNOs. We also note that it is unclear how much peak speeds matter to consumers (as those peak speeds are not often experienced in practice). For potential advantages in terms of Wi-Fi hotspots, access to backhaul and opportunities for cross-selling and bundling, we do not consider these are sufficient to create competition concerns.

## Wholesale mobile market

1.16 The CMA has set out the concern that, as a result of the merger, the merged entity would have both the ability and incentive to refuse to supply, or offer worse terms for, wholesale mobile services to those MVNOs with which it competes in relation to the retail supply of fixed/mobile bundles (theory of harm 3). It is suggested that this would lead to reduced choice of wholesale mobile supplier for affected MVNOs, and potentially worse terms, which could in turn affect retail competition.

1.17 MVNOs' market share of retail subscribers was [✂].

1.18 In Ofcom's mobile sector assessment and the competition assessment carried out in 2009 and 2012 respectively we highlighted the importance of national wholesale competition with at least four credible competitors in supporting both direct competition at the retail level between vertically integrated providers and competition to supply MVNOs which then compete in the retail market. However we note there are several factors that may constrain the effect of MVNOs on competition at the retail level including:

- Difficulties that MVNOs face in switching MNO suppliers which may impact their buyer power;
- Usage pricing in wholesale supply agreements which provides MVNOs with different incentives to MNOs in the retail market and may be a cause of MVNO's focus on lower revenue and lower data usage customers; and

- MNOs may consider the risk of substitution of existing customers and revenue as well as the potential for new customers when responding to MVNO tenders, and this may limit the extent to which MNOs would compete to supply MVNOs. [✂][3].

1.19 Retail fixed/mobile bundles are currently offered by Virgin Media, TalkTalk and EE. BT has launched a SIM-only mobile package and Sky is set to launch its own fixed/mobile bundles next year. Vodafone recently launched its fixed mobile service, and has announced its intention to add TV services.[4] Nonetheless, take-up of quad-play (or bundles including both fixed and mobile) has so far been limited to 2% of households. This may be due to the fact that fixed and mobile operators have largely remained distinct in the UK until now. In some EU countries, the adoption of fixed/mobile bundles has been higher where these bundles have been actively marketed to consumers, and the BT/EE merger may presage significant growth in the importance of quad-play in the UK.[5]

1.20 The merger may reduce the incentive for the merged entity to supply wholesale mobile services to fixed/mobile bundle MVNOs, as the impact of retail bundle customers substituting to the MVNO may be greater than it would be absent the merger. However, we note that MNOs already take account of a potential substitution effect when entering MVNO supply agreements.

1.21 All four national MNOs are present in the wholesale market, albeit they may not all tender for all contracts or provide all services (e.g. absence of 4G from some MNO wholesale offers). However, we note that the number of competitors at the wholesale level could be impacted by the outcome of the proposed H3G/O2 merger.

1.22 We have not to date defined a separate market for fixed/mobile bundled services and would expect that the pricing of the components of bundled services, when offered outside fixed/mobile bundles, will constrain the pricing of bundles. However, we note that recent market developments may presage a rapid increase in the importance of bundles and the importance of competition between providers of bundles.

## Mobile backhaul

1.23 The CMA has set out the concern that, as a result of the merger, the merged entity would have both the ability and incentive to engage in partial input foreclosure (theory of harm 4) or customer foreclosure (theory of harm 5) in the supply of its mobile backhaul products:

- **Input Foreclosure.** I.e. BT using its position in provision of backhaul to reduce competition in the downstream retail mobile market. This could be effected by, for example:

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[3] [✂]
[4] Ofcom, *Strategic Review of Digital Communications: Discussion document*, paragraph 4.76, http://stakeholders.ofcom.org.uk/binaries/consultations/dcr_discussion/summary/digital-comms-review.pdf
[5] In October 2014, 6% of French consumers and 8% of Spanish consumers reported as taking quad play bundles. See International Communications Market Report, December 2014, p.34: http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr14/icmr/ICMR_2014.pdf

- increasing the prices of products supplied to competing MNOs;
- lowering the quality of products supplied to competing MNOs; and/or
- frustrating innovation in backhaul products that could benefit competing MNOs.

- **Customer Foreclosure.** I.e. MBNL (EE and H3G) move all their backhaul purchases to BT making it harder for non-BT backhaul providers (e.g. Virgin, CityFibre) to compete.

## Input foreclosure

1.24 MNOs use mobile backhaul services to provide connectivity between the radio access network and the mobile core network in order to allow them to deliver downstream retail mobile services.

1.25 MNOs purchase mobile backhaul services largely in the form of managed services solutions, which integrate a number of underlying components. Leased lines (which the CMA refers to as 'unmanaged backhaul services') are essential components of such solutions. Competition in their provision has been reviewed in detail in the Business Connectivity Market Review 2013 (BCMR 2013) and we have identified that BT has SMP for the provision of leased lines in most of the UK. As such these are subject to regulation set as part of BCMR 2013. The next such review (BCMR 2016) will determine what regulation will apply from 1 April 2016 and is currently at the consultation stage. Beyond this we will continue to conduct forward-looking reviews every three years as required by the EU regulatory framework for communications.

1.26 We recognise that, as a vertically integrated firm, BT may have the incentive to discriminate in favour of its downstream divisions, and we impose regulation to address such concerns. We believe the current and future proposed regulation that we apply to BT will limit BT's ability to discriminate over price, quality and innovation in the provision of leased lines.

1.27 While we believe that regulated access to dark fibre (which is proposed as a remedy in our 2016 BCMR consultation) would have the ability to limit any potential attempts to discriminate over product innovation in mobile backhaul, this will only be the case if all MNOs have opportunities to take up dark fibre. Given that the MNOs currently have long-term contracts with BT Wholesale which include volume commitments, the effect of these contracts may be to limit the extent of dark fibre MNOs can take up in the short term. This could be particularly concerning if BT were to choose to release EE (or MBNL) from its contractual commitments post-merger.

1.28 The provision of managed backhaul services has not been reviewed in detail to date under the BCMR, but we expect it to be constrained by regulated access to upstream inputs and therefore have not imposed regulation at this level. However, we would keep this under review in accordance with our duties under the European regulatory framework. Where leased lines used for mobile backhaul services are provided by Openreach, they are also subject to legally binding Undertakings given by BT to Ofcom in 2005.

1.29 BT Wholesale (BTW) is by far the largest wholesale provider of managed solutions for mobile backhaul. It provides a range of products including managed

services based on Openreach inputs and benefits from scale and scope from providing wholesale services to downstream customers including BT retail businesses. There are alternative suppliers of mobile backhaul (including Virgin Media and Cable & Wireless Worldwide).[6] However, the on-net services for these operators are in general limited in geographic scope and if these CPs wished to provide a national service they would need to rely on at least some of the Openreach inputs (and potentially long-distance transmission services through other CPs' national core networks).

1.30 Under the BCMR we have expressed a view that access to the regulated upstream inputs should constrain the managed level. Therefore the level of pricing and quality should be constrained by other suppliers using the regulated Openreach inputs e.g. Virgin Media or self-supply, subject to limitations arising from MNOs' current long-term contracts with BTW.

1.31 We also note that the managed component of mobile backhaul solutions supplied by BT Wholesale represents a small proportion of the total costs of providing retail mobile services. Furthermore, although the demand for mobile data is growing rapidly, and this and mobile network innovations may require a significant increase in the backhaul bandwidth required, falling bandwidth prices will offset this and overall we do not expect a substantial increase in the proportion of costs that managed backhaul accounts for.

### Customer foreclosure

1.32 We do not believe that there is a strong risk of customer foreclosure, primarily because many of the inputs used by rival suppliers to provide mobile backhaul could be used for other purposes (with the possible exception of the last link to an aerial site), which makes the exit of these rival suppliers less likely even if they were not supplying MBNL.

## Fixed broadband

1.33 The CMA set out a number of concerns relating to wholesale and retail fixed broadband markets: wholesale broadband input foreclosure (theory of harm 6), rural retail broadband unilateral effects (theory of harm 7), and retail superfast broadband unilateral effects (theory of harm 8).

### Wholesale broadband input foreclosure

1.34 Stakeholders have expressed concern that the regulation of superfast broadband inputs (particularly VULA) will be undermined as a consequence of the transaction and the resulting increase in complexity in assessing BT's compliance with its obligation to maintain a minimum VULA margin. We will be considering the regulation of superfast broadband inputs in the WLA review which we are about to launch. This review will consider whether the current regulation of VULA remains appropriate or whether changes in market circumstances, including any merger between BT and EE, mean that an alternative approach is necessary. It is difficult to be certain about the extent to which the BT/EE merger will increase the complexity of the current regulation. That said, Ofcom has extensive experience in

[6] Cable & Wireless Worldwide was acquired by Vodafone in 2012 and is now a wholly owned subsidiary of Vodafone.

cost modelling and applying regulation in complex environments. Therefore, we do not anticipate that any added complexity arising out of the merger would make our VULA margin regulation unworkable.

1.35 Stakeholders have also raised concerns that BT/EE will have increased incentive and ability to disadvantage downstream competitors by shifting additional costs onto regulated products or products purchased by downstream competitors. If BT's purchase of EE led to possible changes in the way it allocated its costs to regulated markets, BT would first need to show that the proposed treatment in its Regulatory Financial Statements was appropriate, then we would need to decide if and how those changes should be reflected in regulated prices. When we set charge controls, we also consider the potential for competitive distortions. We therefore do not consider that the merger gives rise to any such risks that cannot be addressed through our regulation.

1.36 Stakeholders also mentioned concerns that BT will have the incentive and ability to disadvantage downstream competitors by reducing the quality of products purchased by downstream competitors. We strengthened the quality of service requirements BT is obliged to meet for several inputs into fixed and retail broadband products in the 2014 WLA market review, in part as a result of stakeholder comments on this issue. We now impose obligations on BT to address concerns in relation to the quality of service delivered by BT (through Openreach) in the supply of regulated wholesale fixed access services.

1.37 We also acknowledge that vertically integrated CPs have an incentive to favour their own downstream business over third party CPs. One form of discrimination is in relation to the handling of requests for new forms of network access. We have therefore imposed statement of requirement (or "SoR") regulation to support access seekers in ensuring that there is a fair, reasonable and transparent process for assessing reasonable requests for new forms of network access. Again, we therefore do not consider that the merger gives rise to any such risks that cannot be addressed through our regulation.

## Rural retail broadband and superfast broadband unilateral effects

1.38 Stakeholders have raised concerns in relation to the elimination of competition in the retail broadband market, specifically in rural areas and in the superfast broadband market. We have not conducted a detailed analysis of these concerns. EE does not appear to have a large share of supply in the broadband market in any market segment, although we note that BT is by far the largest supplier of retail broadband in rural areas.

Section 2

# Ofcom regulation of communications markets

## Introduction

2.1 Ofcom regulates communications networks and services. Its powers to do so derive from a number of different legal instruments, notably the Communications Act 2003 ("CA03") and the European Regulatory Framework that underpins many of the provisions of that Act. The European Regulatory Framework harmonises the regulation of electronic communications by Member States across the European Union. It comprises a package of five EC Directives, including the following[7]:

- Directive (2002/21/EC) on a common regulatory framework for electronic communications networks and services ("Framework Directive")
- Directive (2002/19/EC) on access to and interconnection of electronic communications networks and associated facilities ("Access Directive")
- Directive (2002/20/EC) on the authorisation of electronic communications networks and services ("Authorisation Directive").

2.2 Ofcom also has concurrent competition powers under the Competition Act 1998 and the Enterprise Act 2002.

2.3 The legal instruments and regulatory powers which are most relevant to the BT/EE merger are those that relate to Ofcom's market review functions and the regulatory conditions that we have imposed through the exercise of these functions, and the undertakings that were given by BT to Ofcom under section 154 of the Enterprise Act 2002 and that apply to BT's Openreach business ("the Undertakings"). Many of the competition issues that are potentially raised by the BT/EE merger are either covered by the existing regulatory measures we have taken or fall within the scope of these regulatory powers. This section sets out these regulatory functions and the measures that we put in place in more detail and is referred to throughout this document in relation to the issues raised in relation to the merger.

## Market Review Obligations

2.4 As required by Article 16 of the Framework Directive and sections 84 and 84A CA03, we review competition in certain communications markets every three years. The purpose of a market review is to determine whether or not the market in question is effectively competitive and, where it is not, to impose appropriate remedies. Where remedies are already in place, we are required to consider

[7] The Directives were subsequently amended on 19 December 2009. The amendments have been transposed into the national legislation and applied with effect from 26 May 2011 and any references in this document to the CA03 should be read accordingly.

whether they remain appropriate and proportionate in the light of changing market conditions.

2.5 Our market review process involves three analytical stages. First, we define each relevant market in terms of its product and geographic scope. Then we assess whether any Communications Provider (CP) has a position of SMP (broadly equivalent to dominance) in any of the relevant markets. Finally, where we find SMP, we impose regulatory conditions (known as "SMP conditions") on the CP concerned to address the competition concerns arising from such SMP.

2.6 In terms of the communications markets that we review, these derive primarily from the Commission's Recommendation on Relevant Markets and SMP Guidelines, which sets out a list of markets which are susceptible to ex-ante regulation.[8] In defining relevant markets, Ofcom is required to take utmost account of the Commission's Recommendation. However, NRAs are able to regulate communications markets that differ from those identified in the Recommendation on Relevant Markets in specific circumstances where this is justified by national circumstances. In line with the Commission's Recommendation, when identifying markets other than those set out in the Recommendation, Ofcom would have to ensure that the following three criteria are cumulatively met:

- The presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature;
- A market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of competition behind the barriers to entry; and
- The insufficiency of competition law alone to adequately address the market failures concerned.

## Openreach Undertakings

2.7 In addition to the market review process, the Undertakings given by BT are also relevant. These are legally binding Undertakings given by BT to Ofcom in 2005 following Ofcom's strategic review of the telecommunications sector.[9] They were given under the Enterprise Act 2002, in lieu of a reference to the Competition Commission. The Undertakings, among others, require Openreach to provide its products and services on an Equivalence of Input (EoI) basis. This means that when providing access BT must provide the same products and services to all customers (including its own downstream divisions) on the same terms, which means at the same prices; using the same processes and systems; and to the same timescales. It may provide different service levels at different prices and

[8] *Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services* (2002/C 165/03), 11 July 2002. Available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF

[9] A summary of the Undertakings is available here: BEREC, Guidance on Functional Separation, Annex I, February 2011, http://berec.europa.eu/eng/document_register/subject_matter/berec/download/1/195-berec-guidance-on-functional-separation-_1.pdf

Service Level Guarantees, but the availability of these must be the same for all CPs.

## Other regulatory powers

2.8 Under the Authorisation Directive, Member States are required to ensure the freedom to provide electronic communications networks and services. Further, the provision of such networks and services may only be subject to a general authorisation (as opposed to the obtaining of an individual licence or other authorisation before being able to provide an electronic communications network or service). The general authorisation may only be subject to the conditions which are specified in the Annex to the Authorisation Directive. These cover a range of matters, notably the obligation to negotiate interconnection with other communications providers under the Access Directive and consumer protection rules (including measures to ensure the transparency of services and consumer contracts under the Universal Service Directive). There are currently 23 General Conditions which Ofcom has set under its powers in Part 2 CA03 and which apply either generally to all communications providers or to a class of communications provider.

2.9 Ofcom is also involved in giving consumers access to information such as monitoring and reporting on mobile coverage and speeds by operator.[10] These are strengthened by measures to allow consumers to assess and act on information. For example, for consumer broadband markets, Ofcom has introduced a voluntary Code of Practice for internet service providers under which they agree to enable consumers to leave their broadband contract when speeds fall below specified levels.

2.10 Ofcom also has functions in relation to the licensing of spectrum under the Wireless Telegraphy Act 2006. The exercise of these functions is one of the means we have to promote competition in the mobile sector. In particular, the auction of 3G spectrum in 2000 was used to facilitate the entry of a new network operator to the market. Furthermore, the auction of 4G spectrum[11] in 2013 was used to maintain four national wholesalers, as we considered UK consumers will be likely to benefit from better services at lower prices in future if following the auction there continued to be at least four credible national wholesalers of mobile services.[12]

[10] For a fuller description of Ofcom's activities see Section 12 of the Digital Communications Review: http://stakeholders.ofcom.org.uk/binaries/consultations/dcr_discussion/summary/digital-comms-review.pdf

[11] http://stakeholders.ofcom.org.uk/binaries/consultations/award-800mhz/statement/Statement-summary.pdf

[12] This concern might have arisen if, as a result of the auction, fewer operators had access to sufficient spectrum to compete credibly at the wholesale level in the future.

Section 3

# Retail mobile market

## Introduction

3.1 This section considers the CMA's theories of harm 1 and 2 in relation to retail mobile services:

- Unilateral effects arising from loss of potential competition (loss of BT as a potential competitor); and
- Loss of dynamic competition (efficiency offence).

3.2 We first provide a brief overview of the retail mobile market, relevant regulation already in place and any anticipated changes to regulation. We then set out our comments on the concerns.

## Ofcom's regulation currently in place and market overview

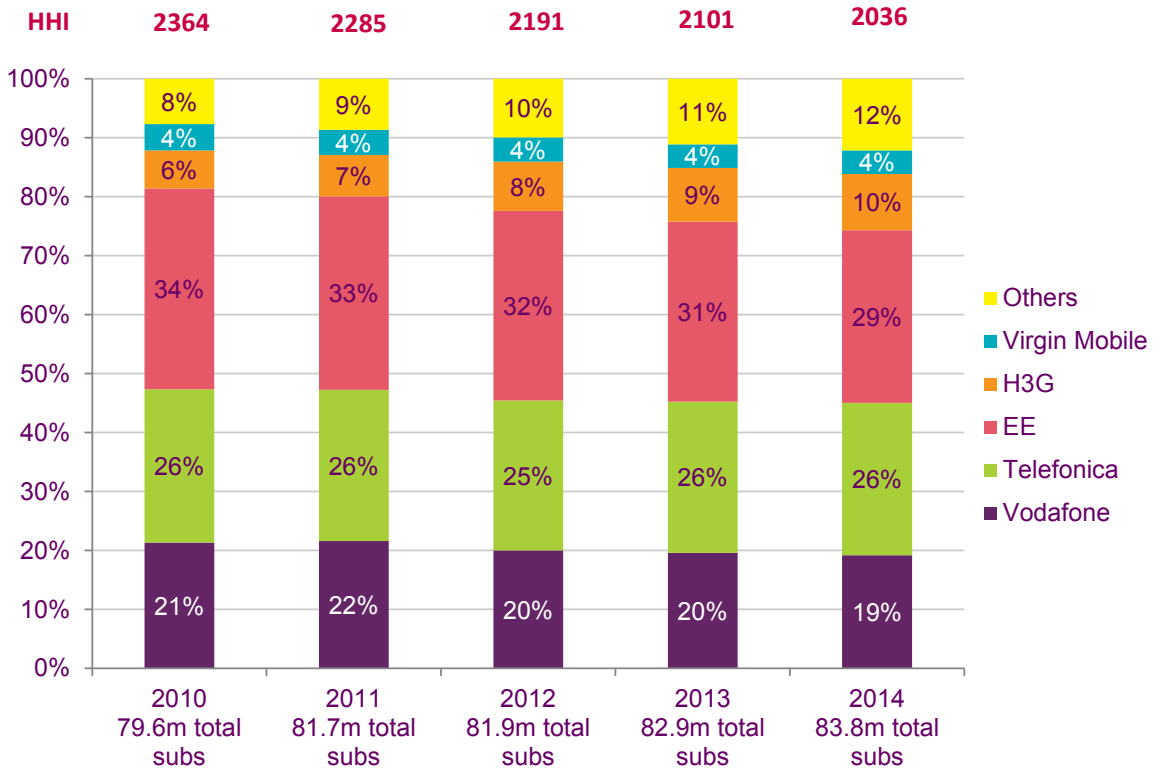
### Market overview

3.3 Competition in the retail mobile market is between the four national mobile network operators (MNOs), sub-national operators and a large number of MVNOs that provide retail services to customers using commercially negotiated wholesale services provided by MNOs.[13]

3.4 We consider that this has resulted in strong end to end competition in the retail mobile sector.[14] The market shares and the Herfindahl-Hirschman Index (HHI) are shown in Figure 1. This shows that each of the national MNOs now has over 10% market share of subscribers, and there has been movement in market shares. In particular, H3G increased its market share by 4 percentage points between 2010 and 2014, and EE's share declined by 5 percentage points. In this period the HHI decreased by 328 points from 2364 to 2036, though we note that under merger guidelines this would still be regarded as a highly concentrated market.[15]

[13] In our competition assessment of mobile we typically refer to national MNOs as national wholesalers, reflecting their role as suppliers to MVNOs as well as their role as end to end competitors.
[14] For a recent overview of mobile competition, see paragraphs 4.26 to 4.30 of the Strategic Review of Digital Communications discussion document, http://stakeholders.ofcom.org.uk/binaries/consultations/dcr_discussion/summary/digital-comms-review.pdf
[15] According to the Merger Guidelines (Footnote 64), any market with a post-merger HHI exceeding 1,000 may be regarded as concentrated and any market with a post-merger HHI exceeding 2,000 as highly concentrated. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284449/OFT1254.pdf

**Figure1: Evolution of market shares of subscribers**




Source: Mobile call termination market review 2015-18, Statement on the markets, market power determinations and remedies, page 124.

3.5 In the Strategic Review of Digital Communications discussion document, we specifically noted the role that H3G has played to help further sustain competition as, following entry, it acted as a key market disruptor through its pricing and packaging strategies e.g. all you can eat data and free international roaming. We also referred to the benefits that consumers derive from being able to access services from MVNOs.

3.6 BT has offered mobile services in the business segment for a number of years, and re-entered the consumer mobile segment in March 2015. It planned to offer an "inside out" mobile service that would involve small cells using its own 2.6GHz spectrum acquired in the 4G auction in combination with wholesale services it buys from EE under an MVNO type agreement (for when BT's consumers are outside areas covered by its own sub-national mobile network).

## Current regulation

3.7 There is currently no regulation of retail mobile markets related to a finding of SMP. However, we do regulate upstream wholesale mobile voice call termination services (i.e. the service needed by a communications provider to connect a voice call to the network of a mobile operator) as each mobile operator has SMP in the provision of call termination services associated with its number ranges.

3.8 Our management of spectrum does influence the retail mobile market. For example, when we auction mobile spectrum, we consider the possible implications

of that auction for competition. In particular, the auction of 3G spectrum in 2000 was used to facilitate the entry of a new MNO to the market. Furthermore, the auction of 4G spectrum[16] in 2013 was used to maintain four national wholesalers, as we considered UK consumers would be likely to benefit from better services at lower prices in future if following the auction there continued to be at least four credible national wholesalers of mobile services.[17]

## Future developments in Ofcom's regulation

### SMP-related regulation

3.9 Ofcom does not have any current proposals to impose SMP regulation for retail mobile services given that no MNO has been found to have SMP in the provision of retail mobile services either individually or jointly.

3.10 However, we would keep this under review in accordance with our ongoing duties under the Common Regulatory Framework and the Communications Act 2003.

### Future spectrum awards

3.11 In November 2014, we consulted on auctioning spectrum which is currently held by the Ministry of Defence which would make a significant amount (190 MHz) of further spectrum available for civil use by 2020.[18] This is known as the Public Sector Spectrum Release, or PSSR, award. This spectrum may provide additional capacity for MNOs. We issued a further Statement and Consultation on some aspects of the auction in May 2015.[19]

3.12 Further spectrum, currently held by Qualcomm, has recently been put up for sale and it could be acquired by one or more of the MNOs. Following a request from Qualcomm, we have varied its licence to allow this spectrum to be used for Supplemental Downlink ("SDL"), which can provide additional mobile download capacity. We have also made this spectrum subject to the Mobile Trading Regulations, which means that Ofcom would be able to consider the impact on competition of any sale before deciding on whether to approve that trade.

3.13 We consider the impact of these releases further in paragraph 3.34 below.

## Ofcom's comments on concerns

3.14 We refer to the two main theories of harm as identified in the CMA's Phase II Issues Statement:

1. Unilateral effects arising from loss of potential competition (loss of BT as a potential competitor); and

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[16] http://stakeholders.ofcom.org.uk/binaries/consultations/award-800mhz/statement/Statement-summary.pdf
[17] We expressed concern if, as a result of the Auction, fewer operators had access to sufficient spectrum to compete credibly at the wholesale level in the future.
[18] We consulted on this in November 2014, before the BT/EE and H3G/O2 mergers were announced, http://stakeholders.ofcom.org.uk/consultations/2.3-3.4-ghz-auction-design/
[19] http://stakeholders.ofcom.org.uk/binaries/consultations/2.3-3.4-ghz-auction-design/statement/statement.pdf

2. Loss of dynamic competition (efficiency offence)

## Loss of BT as a potential competitor

3.15 The CMA's Phase II issues statement notes that the merger could remove the constraint on mobile operators, including EE, that BT would have exercised in the counterfactual.

3.16 We believe that end to end competition (i.e. between national MNOs) has been important in delivering good outcomes in terms of investment, innovation and prices. We also believe that competition between four national MNOs is sustainable: each of the four national MNOs is cash generative (i.e. generating more EBITDA than is invested in capex) and in general the sector is earning returns above its cost of capital, and in some cases mobile operators are earning returns significantly higher than the cost of capital.

3.17 BT has access to a number of attributes that would support its growth in the retail mobile market including the potential to cross-sell to its existing fixed customers and bundle services including use of its Wi-Fi network and content such as sports rights. However, we note that, although BT has greater scale, some other companies (such as Sky and TalkTalk) also have some of these attributes.

3.18 BT's extensive fixed network provides potential locations for macro cells and small cells. For example, the roofs of some local exchanges are used for macro cells and BT offers a product for locating small cells on poles. However, we note that these potential sites mostly involve Openreach's assets, and anything provided with Openreach assets has to be provided to others on an Equivalence of Inputs basis. Other MNOs are therefore able to obtain access to these assets.

3.19 The attribute that makes BT stand out as a potential competitor in the retail market, and distinguishes it from other MVNOs and potential operators, is its 2.6 GHz spectrum acquired at the 4G auction.

3.20 BT's own forecasts suggested it would achieve [5-10%][✂] of mobile subscribers by 2019/20. To put this into context, H3G's share of subscribers was 7% in 2010 having launched in 2003. Even with a relatively low market share, H3G was seen as a disruptive competitive force. For example, it was first to launch 'all you can eat' tariffs in the UK in 2010. As other stakeholders have highlighted, BT's proposed 'inside-out' network could have provided innovative and potentially quite disruptive services to the market.

3.21 However, we note that the Parties have now set out a number of technical and commercial factors that may have limited its effectiveness. We also note that BT would have faced a number of challenges and risks in achieving its plans, including the following:

- BT was not planning national mobile coverage using its own spectrum (in Ofcom's terms it would not have been a national wholesaler). We set out the minimum spectrum portfolios for the fourth national wholesaler in our competition assessment ahead of the 2013 4G auction and each of these portfolios included either low frequency 800 MHz or 1800 MHz spectrum and none relied solely on

higher frequency 2.6 GHz spectrum.[20] As most consumers want national coverage, without the merger BT would therefore need to rely on a wholesale access agreement with an MNO to be able to offer mobile services.

- Usage pricing in wholesale supply (MVNO) agreements generally limits the ability of MVNOs to compete effectively for high value, high use customer segments, for instance constraining their ability to compete with 'unlimited' or very high data volumes tariffs. We note that no MVNO has achieved 5% market share of subscribers and that MVNOs typically target lower value and voice customers. While BT may face this challenge, it may have been better placed than other MVNOs if it developed its own small cell network capable of carrying a large proportion of data, as this would tend to reduce the importance of the pricing terms of the wholesale access contract with the MNO.

- MNOs rely heavily on high street distribution to generate sales of both prepaid and post-paid mobile services. BT has no significant retail presence and it can take several years to establish a significant presence in a retail environment where high street and shopping centre landlords can be resistant to having too many mobile retail stores in close proximity. We note however that BT's financial results for the quarter to end June 2015 report that its mobile plans have progressed well in that quarter.[21]

3.22 We also note that the importance of BT as an independent competitor would depend upon the outcome of the proposed H3G/O2 merger (which has not yet been notified).

3.23 For the purposes of the counterfactual, the CMA has identified three possible outcomes for the H3G/O2 merger:

- The transaction proceeds as currently proceeds, with the Commission's investigation not resulting in any competition remedies.

- The transaction proceeds subject to remedies (with a wider range of possible remedies).

- The transaction does not proceed, due to prohibition by the Commission or for any other reason.

3.24 In the first possible outcome, i.e. in the absence of remedies, the number of competitors would be reduced, both at the wholesale level, which may make it more difficult for other new entrants to launch similar MVNO propositions to BT, and at the retail level, which may increase the importance of maintaining BT as an independent competitor.[22]

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[20] See Table 1.1, page 4, *Assessment of future mobile competition and award of 800 MHz and 2.6 GHz*, Ofcom, 24 July 2012, http://stakeholders.ofcom.org.uk/binaries/consultations/award-800mhz/statement/statement.pdf

[21] Gavin Patterson, BT CEO, said that: "Our mobile plans have got off to a good start with more than 100,000 consumer mobile customers signed up in the first three months", http://www.btplc.com/Sharesandperformance/Quarterlyresults/2015-2016/Q1/Downloads/Newsrelease/q115-release.pdf

[22] However, we note that we would expect the European Commission to have taken this into account in conducting its assessment of the H3G/O2 merger.

3.25 As regards the second possible outcome, we note that recent horizontal mobile mergers in Europe have been approved subject to remedies (e.g. in Austria, Ireland and Germany). In these cases remedies have included the parties offering wholesale access (MVNO remedies) and measures to assist entry by new mobile operators (MNO remedies), including through the divestment of spectrum.

3.26 If in the second possible outcome for the H3G/O2 merger there were broadly similar remedies, BT would be well placed to take up the MNO remedies and provide a stronger competitive force, absent the BT/EE merger. It is the only holder of mobile spectrum in one of the main bands currently being used for 4G services (2.6 GHz) that is not currently a national MNO, and has other attributes mentioned above that would support its entry into the mobile market.

3.27 In the third possible outcome (i.e. the H3G/O2 merger does not go ahead), there would not be significant concerns about the loss of BT as an independent mobile retailer unless the other MNOs were constrained in their ability to offer services in the future due to capacity constraints, which we consider below. If they were materially constrained, then competition could be weaker with the BT/EE merger. Absent the merger, BT might either have provided an additional retail constraint itself (if its mobile plans had progressed well) or could have wholesaled mobile capacity in urban areas or even sold its spectrum (if its retail plans did not progress well). If other MNOs were capacity constrained, this could also raise concerns for the first and second possible outcomes. Assessing this would need to consider a hypothetical merged H3G/O2 rather than each of H3G and O2 independently.

## Capacity constraints if the H3G/O2 merger does not go ahead

3.28 Some MNOs have argued that they face capacity constraints, which might increase the importance of competition from BT.

3.29 In particular, Vodafone stated the following:

- "BT/EE will have an unmatchable advantage in terms of its spectrum holdings. The combined BT/EE will hold c. [✂] of all 4G ready spectrum, providing it with significant spare capacity. Vodafone and the other MNOs will face significantly greater capacity constraints with regard to spectrum thereby constraining their ability to compete effectively with EE. In the counterfactual, BT would likely have used its full spectrum capacity in providing a competing retail offer."[23]

3.30 There has been and continues to be rapid growth in mobile data. MNOs have therefore added significant capacity in the past to cope with this, and will need to continue to do so in the future. There are a number of ways for MNOs to increase their capacity, including:[24]

i) deploying additional spectrum on cells;

ii) refarming existing spectrum for more efficient technologies, i.e. 4G;

[23] Vodafone 3rd party submission, paragraph 3.2.
[24] For further detail see the 2012 Real Wireless Report for Ofcom: http://www.ofcom.org.uk/static/uhf/real-wireless-annex1.pdf

iii) increasing number of cell sectors;

iv) cell splitting; and

v) deploying small cells.

3.31 This issue would only be likely to raise a concern with the BT/EE merger if the other MNOs were unable to meet increasing demand on a sustained basis (as transitional capacity shortages that will soon be addressed are unlikely to pose a significant threat to competition). Longer term, we consider it unlikely this problem would arise. The different ways for MNOs to increase capacity may vary in terms of the speed which they can be deployed and the amount of capacity they add. But, longer term, MNOs have available the full range of options for increasing capacity, including acquiring additional spectrum (as discussed below), and we therefore consider that every MNO will have a reasonable opportunity to increase capacity.

3.32 It is therefore only in the shorter term that there is a question over whether other MNOs may be unable to increase capacity sufficiently to keep pace with increasing demand and result in a sustained capacity shortage, despite the range of options to add capacity which can be deployed in the relevant timeframe. The other MNOs would have to provide the evidence to substantiate the concern that they have a sustained problem meeting demand in the shorter term. We are happy to assist the CMA to assess the detailed evidence from the MNOs on this question. We describe below in more detail how capacity can be added.

*Deploying additional spectrum*

3.33 MNOs can continue to increase their capacity by deploying spectrum they already hold that is currently not fully utilised. In particular, we understand that the MNOs are not yet fully utilising the 800 MHz and 2.6 GHz spectrum they acquired in the 4G auction in 2013. We expect this spectrum to play a large part in increasing capacity over the next few years.

3.34 There will also be opportunities to acquire additional mobile spectrum, such as:

- **2.3 GHz and 3.4 GHz spectrum**: Through the Public Sector Spectrum Release (PSSR) award, we plan to auction 40 MHz of 2.3 GHz spectrum and 150 MHz of 3.4 GHz spectrum, which is currently held by the Ministry of Defence.[25] In terms of when this spectrum will be useful to mobile operators for adding capacity, the situation is different for the two bands:
    - 2.3 GHz will be useful relatively soon after it is made available. There is already a wide range of user devices available globally that can use 2.3

[25] We consulted on this in November 2014, before the BT/EE and H3G/O2 mergers were announced, http://stakeholders.ofcom.org.uk/consultations/2.3-3.4-ghz-auction-design/ and also published a statement and further consultation on this award in May 2015, http://stakeholders.ofcom.org.uk/binaries/consultations/2.3-3.4-ghz-auction-design/statement/statement.pdf

GHz.[26] There are also a small number of user devices already in use in the UK that can use 2.3 GHz spectrum, including the iPhone 6 and 6+.

- 3.4 GHz may take longer to be useful because the equipment ecosystem for this band is less well-developed. There is some uncertainty around how long it will take, but we consider that it is likely to be 2-3 years before there is a reasonable selection of *mobile* devices using 3.4 GHz spectrum (however we note that UK Broadband is offering a *fixed* broadband service using this band today). We understand that multiband chipsets covering the main mobile bands listed above as well as 3.4 GHz will become available during 2015 from at least one of the major suppliers. It will take longer for the installed base of user devices that can use 3.4 GHz to build up.

- **1.4 GHz spectrum**. Qualcomm currently holds the licence for 40 MHz of spectrum in the frequency range from 1452 to 1492 MHz. Following a request from Qualcomm, we have varied its licence to allow this spectrum to be used for Supplemental Downlink ("SDL"), [27] which can provide additional mobile download capacity.[28] In June, Qualcomm put the spectrum up for sale, and it could be acquired by one or more of the MNOs.[29] While this spectrum may be sold to an MNO relatively soon, as with the 3.4 GHz spectrum, there are not currently user devices (e.g. mobile handsets) that can make use of the 1.4 GHz spectrum. We consider that it may take 1-3 years before there is a reasonable selection of devices using 1.4 GHz.

  We have also made this 1.4 GHz spectrum (and the 2.3 GHz and 3.4 GHz spectrum) subject to the Mobile Trading Regulations, which means that Ofcom would be able to consider the impact on competition of any sale of 1.4 GHz before deciding on whether to approve that trade.[30]

- In the longer term other mobile spectrum will become available, such as the 700 MHz band.

*Refarming existing spectrum for more efficient technologies*

3.35 Newer generation mobile technologies make use of spectrum more efficiently, meaning that more data can be carried for a given amount of spectrum. Hence, MNOs can increase their capacity by 'refarming' their existing spectrum to use the latest technology. For example, operators could change from using 2G technology to 3G or 4G technology (which have much higher spectral efficiency).

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[26] The GSA reports that there were 696 user devices out of a total of 2,646 globally that can use 2.3 GHz as at February 2015. See *Status of the LTE Ecosystem*, GSA, 16 February 2015, http://www.gsacom.com/downloads/pdf/GSA_lte_ecosystem_report_160215.php4

[27] SDL is a new mobile broadband technology which, using a mobile base station transmitter network provides additional bandwidth to deliver improved capacity for consumer mobile broadband services. Improved capacity can help service providers send more data to consumer devices, such as smartphones, tablets and laptops, at faster speeds.

[28] http://stakeholders.ofcom.org.uk/binaries/consultations/licence-variation-1.4ghz/statement/Statement_on_1.4_ghz_licence_variation.pdf

[29] http://www.theregister.co.uk/2015/06/09/qualcomm_to_sell_1_4ghz_spectrum_band/

[30] http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-trading-regs-apr-15/statement/Statement_making_of_trading_regs_1.4-2.3-3.4_ghz.pdf

3.36 The feasibility and timing of refarming depends partly on the volume of traffic carried on user devices capable of using the new technology (which operators can influence to some extent). MNOs need to ensure that the spectrum that remains on the old technology is sufficient to serve consumers who only have legacy user devices (and so cannot use the new technology). This is to some extent within the control of MNOs whose commercial polices can determine whether customers continue to use devices that cannot make use of newer technologies. MNOs' commercial decisions on refarming may also depend on the value consumers place on services provided with the different technologies and the attractiveness of their technology mix to consumers compared to competitors.

3.37 Table 1 summarises how the four national MNOs in the UK are currently using their spectrum holdings. For example it shows that Vodafone has available 20 MHz of paired spectrum (i.e. 2x10 MHz) for 4G in the 800 MHz frequency band and 60 MHz in the 2.6 GHz band (comprising 2x20 MHz of paired spectrum and 20 MHz of unpaired spectrum).

**Table 1 Current spectrum holdings and usage, at December 2014**

| Frequency band | EE | | Vodafone | | Telefonica[31] | | H3G | | BT | |
|---|---|---|---|---|---|---|---|---|---|---|
| 800MHz | 10 MHz | 4G* | 20 MHz | 4G | 20 MHz | 4G | 10 MHz | 4G* | | |
| 900MHz | | | 34.8 MHz | 2G, 3G | 34.8 MHz | 2G, 3G | | | | |
| 1800MHz | 90 MHz | 2G, 4G | 11.6 MHz | 2G | 11.6 MHz | 2G | 30 MHz | 4G | | |
| 2.1 GHz | 40 MHz | 3G | 29.6 MHz | 3G | 20 MHz | 3G | 29.5 MHz | 3G | | |
| 2.6 GHz | 70 MHz | 4G | 60 MHz | 4G | | | | | 45 MHz | 4G* |

Source: Figure 69, Ofcom Infrastructure report 2014 (*asterisks indicate planned use of spectrum).
Note: not all of the spectrum in each band may be deployed at the current time

3.38 We note that both Vodafone and H3G have more than half of their spectrum available solely for 4G.

3.39 The way the different bands are currently used in the UK is as follows:

- **800 MHz and 2.6 GHz** spectrum are used for LTE (4G);
- **900 MHz spectrum** was originally used for 2G services, but the two operators with this spectrum (Vodafone and Telefonica) have refarmed part of it to use it for 3G. While they may currently find it more profitable to use 900 MHz for 2G/3G, they will have the option of using it for LTE in the future. There is a growing ecosystem of devices available for using LTE at 900 MHz, including the European version of high-end smart phones (whose users may be expected to disproportionately drive traffic volumes). In Europe, there are deployments of LTE at 900 MHz in Sweden (since 2010), the Czech Republic (during 2014) and plans have been announced for the Netherlands (for deployment later in 2015).

[31] [✂]

- **1800 MHz spectrum** was originally used for 2G services in the UK, and has now partly been refarmed for LTE.
- **2.1 GHz spectrum** has always been used for 3G services in the UK. While the operators currently find it more profitable to use 2100 MHz for 3G, they will have the option of using it for LTE in the future. As with 900 MHz, there is a growing ecosystem of devices available for LTE at 2100 MHz. The only deployment of LTE at 2.1 GHz in Europe we are aware of is in the Czech Republic[32], but there are various deployments in Asia, including in Japan and Korea.

*Network improvements: cell sectors, cell splitting and small cells*

3.40 When cell sites are first rolled-out, MNOs might deploy a single antenna designed to work in all directions (omni-directionally) for that site. Increasing the number of cell sectors involves replacing an omni-directional antenna at the base station by several directional antennas. Typical configurations include adding three antennas or six antennas.

3.41 Clearly the scope for MNOs to increase further capacity will depend on the existing number of antennas and space at mobile sites. There are also limits to sectoring due to interference issues.

3.42 Cell splitting is the process of subdividing a congested cell into smaller cells. Adding cells increases capacity as traffic for users in a given grid will be split across additional sites. Increasing cell sectors could be done by, for example, deploying additional macro sites or small cells.

3.43 We recognise that doing this rapidly can be challenging. There are certain limitations such as electromagnetic interference between neighbouring cell sectors. It also takes time to negotiate permission to use suitable sites. It may also be harder to find suitable new sites because more easily accessible (hence lower cost) sites may be acquired and built first. However, we would expect operators to anticipate if they will be short of capacity in a particular area, and to plan accordingly, including by expanding their network if necessary, such as by deploying small cells.

3.44 An alternative method is to deploy small cells in areas with larger capacity requirements within the macro-cell. As they are smaller, these cells can be deployed in a wider variety of locations than macro-sites, which typically require more space for outdoor and indoor equipment. Examples of small cells include femtocells, picocells and microcells - increasing in the size of coverage area and operating power from femtocells (the smallest) to microcells (the largest).

3.45 Femtocells enable consumers to effectively deploy mobile coverage within their home using the consumers' broadband connectivity as the backhaul to the network. Femtocell technology is also being applied to public environments (such as shopping centres), overlapping with the traditional application areas of picocells and microcells.

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[32] http://www.vodafone.cz/en/about-vodafone/press-releases/message-detail/vodafone-zrychluje-pokryti-ceskych-mest-lte-4g/

## Loss of dynamic competition (efficiency offence)

3.46 Theory of harm 2 is that the merger will (in the medium to long term) weaken competitors to EE and BT such that they will impose less competitive constraint than they would have done in the counterfactual. Below we explore the four ways in which the CMA identifies that this could occur:

a. Impact of additional spectrum holdings;

b. Combination of BT's fixed assets with EE's mobile network;

c. Access to backhaul on improved terms; and

d. Increased opportunities for cross selling and bundling.

### Loss of dynamic competition (efficiency offence) – a) Impact of additional spectrum holdings

3.47 For any advantage that BT/EE would have in terms of additional spectrum capacity, we have set out above that in the longer term all MNOs will have a reasonable opportunity to increase capacity using a wide range of methods. While we have not assessed whether other MNOs may be capacity constrained in the short term, even if they were, this would not be so material as to threaten their long-term viability.

3.48 We note that here have been potential temporary advantages in the past. For example, in 2011 we varied the Spectrum licences at 900 and 1800 MHz to permit the use of UMTS. At the time one of the MNOs raised concerns that liberalising spectrum in the hands of the existing licensees would distort competition and that UMTS900 spectrum had an underlying advantage for indoor and rural 3G coverage. In 2012, following an application from EE, Ofcom varied its spectrum licence to permit the use of LTE (and WiMax) at 1800 MHz. This allowed EE to launch 4G services earlier than the other MNOs, as the other MNOs had to wait for suitable spectrum to become available such as in the 4G auction held in 2013.

3.49 In both of these examples, despite competitor MNOs claiming to be significantly weakened by the temporary advantages in spectrum holdings enjoyed by some MNOs, competition in the period after these decisions has remained strong.

3.50 The discussion of capacity above is relevant to MNOs' ability to provide *average* speeds experienced by consumers. Stakeholders have also raised concerns that the combination of EE's existing holdings of spectrum and BT's 2.6 GHz spectrum would create an advantage that competitors could not match in terms of offering higher *peak* speeds through carrier aggregation.

3.51 Carrier aggregation involves the simultaneous use of different carriers, including carriers from different frequency bands, enabling higher peak speeds.

3.52 Peak speeds represent the speeds possible under optimal conditions (e.g. close to the cell site) to a single user in a cell. In 4G, peak speeds are to a large extent determined by the bandwidth of spectrum that an operator can combine and use together. For example, an operator using a single 2x20 MHz block of spectrum could in theory deliver a peak speed that was more than double that of an operator using only a 2x10 MHz block of spectrum. The scope to aggregate carriers therefore increases the ability to offer high peak speeds.

3.53 Even without the merger, with its current spectrum EE already has greater ability to aggregate carriers and offer higher peak speeds than other MNOs, as a result of buying more spectrum in the 4G spectrum auction. The addition of BT's spectrum may further increase the peak speeds it can offer.

3.54 However, it is unclear how much consumers value peak speeds, given that peak speeds will not often be experienced by consumers, for example as there are usually multiple users in cells and they may be located some distance from the mast (and so average speeds provide a better indication of consumer experience).

3.55 We also note that, in December 2014, we published a report prepared by Ipsos Mori for Ofcom, which explored, among other things, mobile performance factors affecting consumer switching. The report describes the key drivers of overall satisfaction with network provider.[33] The report notes that aspects of services related to voice (reception and quality) are currently of more importance in determining satisfaction than mobile internet speed and reliability (although we recognise that the importance of speeds to consumers is likely to change in the medium to long term). It is also possible that higher peak speeds could give BT/EE some marketing advantage.

3.56 In the longer term, other operators would have an opportunity to acquire more spectrum (for example at 3.4 GHz) and achieve higher peak speeds than they are currently able to provide, though there could remain some gap between the peak speeds that they are able to provide and what BT/EE could provide.

## Loss of dynamic competition (efficiency offence) – b) Combination of BT's fixed assets with EE's mobile network

*Access to BT's Wi-Fi hotspots*

3.57 In its Issues Statement, the CMA identifies that one potential advantage of the merged entity could be access to BT's Wi-Fi hotspot network. In our response to the CMA's information request at Phase 1, we noted that access to BT's Wi-Fi hotspots is not currently regulated and that several CPs own and operate Wi-Fi networks across the UK.

3.58 For example, we noted that Telefonica operates a Wi-Fi service across several chains of shops and restaurants, which is free for everyone, regardless of whether you are an O2 customer or not, and Sky supplies Wi-Fi services via The Cloud. [✂] Virgin Media has also partnered with Transport for London to bring Wi-Fi to the London Underground which is available to customers of other MCPs via wholesale agreements.

3.59 We therefore consider that there are alternatives for BT's public Wi-Fi network such that, should BT no longer offer access to this network to certain MNOs, those MNOs could still gain access to competing providers' Wi-Fi networks through commercial negotiation. To illustrate this point, below we provide confidentially the data uploaded and downloaded in June 2014 split by operators. Note, however,

[33] http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/Mobile_coverage_report_December_2014.pdf

that the analysis below is not comprehensive as it excludes several small Wi-Fi providers.

3.60 [✂] A further consideration for this theory of harm is how important access to Wi-Fi hotspots is for retail mobile offers. In terms of offloading data using public Wi-Fi, we have published several statistics which may be relevant in assessing its importance to mobile services. For our 2013 and 2014 Infrastructure Reports,[34] we gathered data for the month of June 2013 and June 2014 from the main fixed and mobile operators that provide public Wi-Fi hotspots in the UK.[35]

3.61 Our data shows that in 2013 the number of hotspots for public Wi-Fi provided by these providers has increased by 23% from previous year and that around 2.3 million GB of data was uploaded and downloaded on these public hotspots in June 2014. This is an increase compared to June 2013 but at a lower growth rate than the previous year, slowing from almost 100% increase last year to a 49% increase in 2014.[36]

**Table 2: Public Wi-Fi hotspots**

| | June 2012 | June 2013 | June 2014 |
|---|---|---|---|
| **No. of public Wi-Fi hotspots** | 16 000 | 33 851 | 41 798 |
| **Total data uploaded/downloaded (GB)** | 757 861 | 1 514 630 | 2 261 986 |
| **Data per Hotspot (GB)** | 48 | 45 | 54 |

*Source: Ofcom, Infrastructure Report 2013 (update) and 2014*

3.62 In Table 4 below we show the amount of mobile data (excluding Wi-Fi) uploaded and downloaded for the month of June in the last four years. We note that the amount of June 2014 data sent over public Wi-Fi represents a small proportion of the amount of data for the same month sent over mobile networks (c. 5%) . This suggests that data offload by MNOs onto public Wi-Fi networks may not currently be very important.

3.63 [✂]

[34] *Ofcom, Infrastructure Report 2013 Update,* October 2013, http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/infrastructure-report/IRU_2013.pdf
Ofcom, *Infrastructure Report 2014,* December 2014, http://stakeholders.ofcom.org.uk/binaries/research/infrastructure/2014/infrastructure-14.pdf
[35] We gather data from BT, Sky, O2, Virgin Media, EE, and Arqiva. And while this may represent a significant proportion of public Wi-Fi hotspots, there is a long tail of Wi-Fi providers not included in this analysis. See paragraph 5.130 of the 2014 Infrastructure Report for more information on which other Wi-Fi providers are not included.
[36] Infrastructure Report 2014, paragraph 5.127.

Table 3: Overall mobile data usage

| | March 2011 | June 2012 | June 2013 | June 2014 |
|---|---|---|---|---|
| **Active connections (millions)** | 81.1 | 82.2 | 82.7 | 83.2* |
| **Total data uploaded/downloaded (GB, millions)** | 9.0 | 19.7 | 28.9 | 44.3 |

*Source: Figure 64, Ofcom, Infrastructure Report 2014. *Latest available data, March 2014.*

3.64 We believe that the extent to which MNOs will seek to offload traffic over public Wi-Fi is unclear. However, we note that the increase in use of 4G and the future deployment of faster mobile data technologies such as LTE-Advanced may reduce this. [✂]

3.65 Given that there are a number of suppliers of public Wi-Fi hotspots, this may therefore constrain BT's incentive and ability to foreclose retail mobile competition through denying access to its public Wi-Fi network post-merger.

*Access to street furniture*

3.66 The CMA identifies a further potential advantage of the merged entity to be access to BT's "network sites". Below we discuss access to street furniture such as cabinets, ducts, and poles.[37]

3.67 As stated in our response to the CMA's information request at Phase 1, BT's street furniture sits within Openreach and therefore access to products using this infrastructure is based on equivalence of inputs (EoI). EoI means that Openreach provides, in respect of a particular product or service, the same product or service to all CPs (including BT Consumer) on the same timescales, terms and conditions (including price and service levels) by means of the same systems and processes and with the same degree of reliability and performance.

3.68 Small cells can be deployed using street furniture as a means of improving mobile services in urban areas – i.e. areas where MNOs face the highest traffic and may need to increase capacity.

3.69 We expect MNOs to make more use of small cells in the future, but we understand that currently they do not account for a large share of mobile data traffic. In any case, we believe there may be alternative infrastructure to BT's street furniture for the deployment of small cells, such as lamp posts, sides of buildings, bus stops, or the cabinets of Virgin Media. Getting access to these locations may require negotiating with multiple parties; however Virgin and Arqiva have announced that

[37] We note that Vodafone also mentions access to rooftops of exchanges. This question is being dealt with in a separate RFI and is addressed separately in 3.18 above.

they will be working with MNOs to help them deploy small cells on street assets in several cities, with capacity delivered using Virgin's fixed-line network.[38]

3.70 [✂]

3.71 Thus, based on the current evidence, the ability and incentive for BT/EE post-merger to foreclose its rivals from access to its network sites is likely to be constrained.

Loss of dynamic competition (efficiency offence) – c) access to backhaul on improved terms

3.72 The CMA mentions the concern that BT/EE may have an unmatchable advantage from accessing backhaul on improved terms. In Section 5, we explain that non-discrimination obligations prohibit BT from supplying regulated backhaul products to EE on preferential terms. BT Wholesale (BTW) supplies managed products to EE which are not subject to regulation. However, Section 5 also sets out that we believe that BTW's scope to distort competition through the discriminatory supply of these products is limited. We also explained that if concerns did arise we have powers to intervene.

Loss of dynamic competition (efficiency offence) – d) increased opportunities for cross selling and bundling

3.73 The CMA also notes the concern that BT/EE may have an unmatchable advantage in terms of increased opportunities for cross selling and bundling. We do not consider these are sufficient to create competition concerns. Setting aside concerns about the MVNO market, which are addressed in Section 4, many other operators, such as Virgin, Sky, TalkTalk and Vodafone, are able to cross sell and bundle products. Moreover, as described in Section 4 paragraph 4.31, we have previously considered bundles to be constrained by unbundled offers, and it is not clear how demand for bundles will develop in future.

[38] http://www.ispreview.co.uk/index.php/2015/02/virgin-media-business-and-arqiva-to-improve-4g-mobile-in-uk-cities.html

Section 4

# Wholesale mobile market

## Introduction

4.1 This section considers the comments made on the potential foreclosure of wholesale mobile services to those MVNOs who compete with the merged entity on fixed/mobile bundles. This issue is raised by the CMA's Phase II Statement of Issues under the theory of harm 3: wholesale mobile input foreclosure/loss of competition.[39]

4.2 We first provide an overview of the wholesale mobile market and relevant regulation already in place, including a brief explanation of the regulatory framework. Next we comment on the findings we have made to date on the competition in the wholesale market, and then comment in relation to the potential impact on this as a result of the growth of fixed/mobile bundles, and the H3G/O2 merger.

## Ofcom's regulation currently in place and market overview

### Market Overview

MVNOs in the retail mobile market

4.3 There are a large number of MVNOs that provide mobile retail services to customers using commercially negotiated wholesale services provided by MNOs. The MNOs have reported to Ofcom a total of 41 direct MVNO customers. Nonetheless as we describe below, most of these MVNOs have a small retail mobile market share. The only MVNOs with a subscriber share of above 2% are Tesco Mobile and Virgin Media.

4.4 There is a broad range of MVNO models that fall roughly into two categories:

- Light MVNOs: MVNO using its own branding but with most business systems and network management provided by the host MNO. In this model the MVNO customers are managed as if they were MNO customers. The MVNO uses the host MNO mobile network code (MNC) and number range. Also, the MVNO branded SIMs are managed by the host MNO.

- Full MVNOs: MVNO using its own branding and, in addition, maintaining its own core infrastructure and using MNOs only for access to the radio network. In this model the MVNO's customers are treated as if they are roaming customers and hosted on the Visitor Location Register (VLR), a database that contains information about the subscribers roaming within a mobile switching centre's (MSC) location area. The MVNO controls its own mobile network code (MNC), its own number range, and issues its own SIMs.

[39] https://assets.digital.cabinet-office.gov.uk/media/55a8c150e5274a6fea00000d/BT-EE_-_issues_statement.pdf

4.5 Most MVNOs follow the 'light' model. Some MVNOs use existing brand recognition and/or distribution to enter the retail mobile market e.g. Tesco and Virgin, while others target niche market segments e.g. Lycamobile offers cheap international calls.

4.6 Tesco Mobile is categorised as an MVNO. However it is a 50:50 JV between Telefonica and Tesco. We do not have information on the governance of Tesco Mobile or of the commercial arrangements between Tesco Mobile and Telefonica, but note that the ownership structure and governance and commercial arrangements may constrain the ability of Tesco Mobile to operate as an independent entity on the retail mobile market.

4.7 [✂]

4.8 [✂]

4.9 The trend in MVNOs' share of the retail market is different when measured in terms of usage. In our Strategic Review of Digital Communications discussion document we described how the proportion of voice minutes used by MVNO customers has not changed since 2011, at 16% of total mobile voice minutes. However, the proportion of total mobile data used by MVNO customers has fallen to 7% (from 14% in 2011). We said that this suggests that MVNO networks are more targeted at voice call markets, or that their service propositions lead to a higher proportion of such. We explained that this may be influenced by the terms available from mobile operators for MVNOs (e.g. whether 4G services are made available) or availability of high end, data focussed handsets.[40]

4.10 This is also shown in Figure 3 below, which gives the market shares of MVNOs in terms of revenue. Virgin Media's revenue share was around [✂] during the period shown, 2007 to 2014, while Tesco Mobile increased its market share from [✂]in 2007 to [✂] in 2014. BT also increased its share during this period, and in 2014 it accounted for around [✂] of mobile retail revenue. [✂].

## Wholesale market: hosting of MVNOs

4.11 All four national MNOs are present in the wholesale market, albeit they may not all tender for all contracts or provide all services (e.g. absence of 4G from some MNO wholesale offers).

4.12 [✂]

## Fixed/mobile bundles

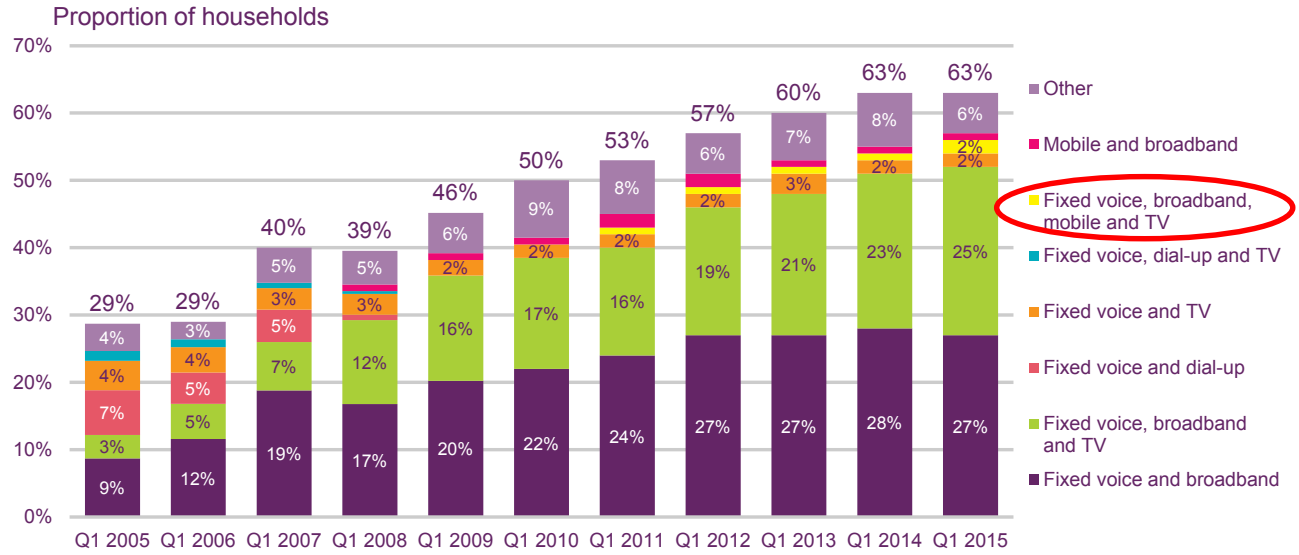
4.13 Some stakeholders' concerns about MVNOs rest on the importance of fixed/mobile bundles, as they believe that EE will have less incentive to offer MVNO access to fixed broadband players after the merger. We therefore set out below some of the information we have on bundles.

[40] Ofcom, *Strategic Review of Digital Communications: Discussion document*, paragraph 4.29, http://stakeholders.ofcom.org.uk/binaries/consultations/dcr_discussion/summary/digital-comms-review.pdf

4.14 In our recent Strategic Review of Digital Communications discussion document we explain that as operators have diversified, bundling has allowed them to effectively target and retain different consumer segments.[41] We said that the bundling trend in telecoms markets looks set to continue as the industry prepares to make quad-play bundles (telephony, fixed broadband, TV, mobile phone) a core offering. Nonetheless, take-up of quad-play has so far been limited to 2% of households (see Figure 5 below). This may be due to the fact that fixed and mobile operators have largely remained distinct in the UK until now. In some EU countries, the adoption of fixed/mobile bundles has been higher where these bundles have been actively marketed to consumers.[42]

4.15 In the UK, fixed/mobile bundles are currently offered by Virgin Media, TalkTalk and EE. BT has launched a SIM-only mobile package and Sky is set to launch its own fixed/mobile bundles next year. Vodafone recently launched its fixed mobile service, and has announced its intention to add TV services. [43]

**Figure 1 Take-up of bundled services**




*Source: Ofcom Technology Tracker. Data from Quarter 1 of each year 2005-2013, then Wave 1 2014.2015.*
*Base: All adults aged 16+ (2015 n=3756)*
*QG1. Do you receive more than one of these services as part of an overall deal or package from the same supplier?*

## Current regulation in relation to wholesale mobile services

4.16 There is currently no obligation for MNOs to provide mobile wholesale services, and the depth and range of MVNO relationships with MNOs in the UK reflects commercial rather than regulatory decisions.

[41] Ofcom, *Strategic Review of Digital Communications: Discussion document*, paragraph 4.76.
[42] In October 2014, 6% of French consumers and 8% of Spanish consumers reported as taking quad play bundles. See International Communications Market Report, December 2014, p.34: http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr14/icmr/ICMR_2014.pdf
[43] Ofcom, *Strategic Review of Digital Communications: Discussion document*, paragraph 4.76.

4.17 Ofcom carried out a review of the market for wholesale access and call origination on public telephone networks in 2003 since at the time this was listed on the European Commission's Recommendation on Relevant Markets. We concluded that no undertaking had SMP, either individually or in combination with one another. Our findings from the 2009 assessment about competition in the provision of wholesale mobile services are set out in more detail below.

4.18 It should be noted that the market for wholesale access and call origination on public telephone networks was removed from the Commission's Recommendation on Relevant Market in 2007. Therefore, as matters stand, if we were to conduct a market review of this sector with a view to imposing SMP regulation, we would have to justify doing so by demonstrating that the "three criteria test" is met.[44] The Commission has the power to veto any decision by Ofcom to identify a market not listed in its Recommendation or to designate an undertaking with SMP if it considers the measure would create a barrier to the single market or is not compatible with Community law.

## Future developments in Ofcom's regulation

4.19 Currently Ofcom does not have plans to regulate the wholesale access and call origination market given that no MNO has been found to have SMP in the provision of wholesale services either individually or jointly.

4.20 Should competition concerns emerge, we could investigate whether an SMP finding would be appropriate and whether remedies would be needed. However, as noted in our Strategic Review of Digital Communications, much of our competition related regulatory intervention under the European Framework is based on a finding of single firm dominance (through a finding of significant market power, or SMP).[45] The European Framework also recognises that there may be situations of joint dominance if certain conditions are met, typically including a finding of tacit collusion, but we are not aware of any findings of joint dominance where competition problems have emerged as a result of unilateral market power held by a number of firms that are not tacitly colluding.

## Ofcom's comments on wholesale mobile competition

4.21 In this subsection we comment on the level of competition on the wholesale market, and comment on how this might be affected by the growth of fixed/mobile bundles, and the impact of the H3G/O2 merger on the wholesale market.

### The current (pre-merger) level of competition on the wholesale market

4.22 In 2009 we carried out an assessment of the mobile sector and concluded in our statement ('Mobile Evolution Statement') that mobile markets were serving UK citizens and consumers well and that competition between mobile operators was driving this success.[46] We noted that our assessment was based on the extent of competition within the market structure at the time and that any significant change in the market structure may affect competitive pressures in the industry.

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[44] See paragraph 2.6 above
[45] Ofcom, *Strategic Review of Digital Communications: Discussion document*, paragraph 8.53-8.56.
[46] Ofcom, *Mobile Evolution Statement*, paragraph 1.1, http://stakeholders.ofcom.org.uk/binaries/consultations/msa/statement/MSA_statement.pdf

4.23 The statement set out our views on, and analysis of, mobile sector competition at that time. We said that it was our belief that effective competition was occurring within the mobile sector, as indicated by shifts in retail and wholesale market shares between existing players, robust switching levels, new suppliers (e.g. MVNOs) entering the market, and price and product innovation by service providers.[47]

4.24 In relation to the wholesale sector, we found that the UK had an active wholesale services market, supplying a large number of retailers, including the retail businesses of the MNOs and MVNOs. We said that we considered the existence and viability of MVNO arrangements as an important indicator of competitive health of the market.[48] We also referred to our observation in our 2009 consultation, ('Mostly Mobile Consultation'),[49] that MVNOs represented a significant proportion of the total retail market.

4.25 In response to comments from stakeholders that we should carry out a market review, with a view to introducing wholesale access regulation to the mobile sector, we said that in light of the degree of competition in the market overall and the significant costs that a review would impose, we did not intend to conduct a market review at that time.[50] However, we agreed with the stakeholders that our view that a market review was not needed might need to be reconsidered if the market structure changed and one or more competitors left the market – particularly at network level.[51] We also added that it might be appropriate to revisit the decision not to regulate third party access by MVNOs if, for example, we saw evidence of anti-competitive behaviour, including limitations in the supply of wholesale services to access seekers, that could not adequately be addressed using ex-post intervention.[52]

4.26 Since our 2009 mobile sector assessment, we have not formally assessed competition in the provision of wholesale access to mobile networks. We have, however, analysed some aspects in the context of spectrum auctions.

4.27 For instance, in the 2012 800 MHz/2.6 GHz competition assessment ('800 MHz/2.6 GHz Statement 2012'), we said that in our view UK mobile markets were serving citizens and consumers well and that competition between national wholesalers was driving this success.[53] We stated that UK consumers will be likely to benefit from better services at lower prices in future if, following the auction, there continue to be at least four credible national wholesalers of mobile services. We added that we would be concerned if as a result of the auction fewer operators had sufficient spectrum to compete at the national wholesale level. We identified a material risk of this occurring and decided to reserve some of the available spectrum for a fourth national wholesaler – i.e. a bidder other than EE, Vodafone, or Telefonica.

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[47] Ofcom, *Mobile Evolution Statement*, paragraph 3.36.
[48] Ofcom, *Mobile Evolution Statement*, paragraph 3.20
[49] Ofcom, *Mostly Mobile*, http://stakeholders.ofcom.org.uk/consultations/msa/
[50] Ofcom, *Mobile Evolution Statement*, paragraph 3.37.
[51] Ofcom, *Mobile Evolution Statement*, paragraph 3.39.
[52] Ofcom, *Mobile Evolution Statement*, paragraph 3.49.
[53] Ofcom, *Assessment of future mobile competition and award of 800 MHz and 2.6 GHz,* 24 July 2012, paragraph 4.14, http://stakeholders.ofcom.org.uk/binaries/consultations/award-800mhz/statement/statement.pdf

4.28 In discussing competition issues in our November 2014 consultation document on the forthcoming award of 2.3 GHz and 3.4 GHz spectrum ('PSSR Award Consultation 2014'), we reiterated our view on the continuing importance of national wholesale competition with at least four credible competitors.[54]

4.29 Competition between national wholesalers supports good consumer outcomes through direct competition at the retail level between vertically integrated providers and through competition to supply MVNOs which then compete in the retail market. However these may be inter-related as, for example, it is possible that greater competition between national wholesalers to supply MVNOs could provide MVNOs with the ability and incentive to compete more strongly at the retail level. However, we note that the following factors may impact the role of MVNOs in driving competition at the retail level:

- Scale and potential of a MVNO may impact its buyer power.
- Costs and difficulties faced by MVNOs in switching MNO suppliers. To switch MNO providers, light MVNOs would have to arrange for each retail customer to replace the SIM in the customer's device with a SIM associated with the new MNO host.
- Usage pricing in wholesale supply agreements provides MVNOs with different incentives to MNOs in the retail market. In particular, wholesale pricing arrangements may reduce the incentive of MVNOs to compete for high usage customers. As above (paragraph 4.7 - 4.10), we note that MVNOs have a higher market share in low revenue and low data usage customer segments and that as data has become more important, MVNOs share of data has fallen significantly.
- MNOs may consider the risk of substitution of existing customers and revenue as well as the potential for new customers when responding to MVNO tenders. [✂]

4.30 In sum, Ofcom believes that competition between mobile network operators has delivered significant benefits to consumers. So thus far, we have not found it necessary to impose access obligations on network operators in order to maintain mobile retail competition.[55]

## Fixed/mobile bundles

4.31 The merger may reduce the incentive for the merged entity to supply wholesale mobile services to fixed/mobile bundle MVNOs, as the impact of retail bundle customers substituting to the MVNO may be greater than it would be absent the merger. However, we note that MNOs already take account of a potential substitution effect when entering MVNO supply agreements.

4.32 In relation to fixed/mobile bundles, we have not yet defined separate markets for mobile and fixed retail bundles. Indeed, in the WBA statement, we said that it seemed likely that consumers would unpick mobile services from broadband

[54] See paragraphs 7.24-7.34 , and we also commented on the competition in the wholesale market at paragraph 4.55, of, Ofcom, *Public Sector Spectrum Release (PSS*R), Award of the 2.3 GHz and 3.4 GHz 7 November 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/2.3-3.4-ghz-auction-design/summary/2_3_and_3_4_GHz_award.pdf

[55] Ofcom, *Strategic Review of Digital Communications: Discussion document*, paragraph 4.30.

bundles in the presence of a small but significant, non-transitory increase in price (SSNIP).[56] Nonetheless, we did not conclude on whether to widen the retail market definition to include products sold in a bundle.

4.33 More recently, in our Strategic Review of Digital Communications discussion document, we said that retail convergence where different services are sold to consumers as part of the same retail bundle can deliver benefits for consumers. For instance where the retailing efficiencies associated with bundling can allow operators to deliver lower prices.[57] However, we also said that retail convergence has the potential to be less beneficial for consumers, if it results in reduced levels of retail competition. This is because insufficient wholesale competition in any of the core elements of the bundle may place suppliers at a disadvantage, leading to reduced competition across all services.

4.34 Nonetheless, take-up of quad-play (or bundles including both fixed and mobile) has so far been limited to 2% of households. This may be due to the fact that fixed and mobile operators have largely remained distinct in the UK until now. In some EU countries, the adoption of fixed/mobile bundles has been higher where these bundles have been actively marketed to consumers, and the BT/EE merger may presage significant growth in the importance of quad-play in the UK.[58]

4.35 Therefore, our view on whether the proposed merger would have a significant impact on competition in retail markets is conditioned by the future prospect of fixed and mobile convergence.

## Level of competition on the wholesale market in the event of a merger between H3G and O2

4.36 In the event of a merger between Three and O2, one competitor would be removed from the wholesale mobile market. This would leave three companies capable of providing national wholesale services: EE, Vodafone, and the merged Three/O2.

4.37 As outlined above, in our competition assessment for the 800 MHz/2.6 GHz spectrum auction, we were sufficiently concerned about the risk of a reduction in competition if only three national wholesalers were credible competitors after the auction that we put in place measures in the auction to ensure there remained four credible national wholesalers.

4.38 In our November 2014 consultation document on the award of 2.3 GHz and 3.4 GHz spectrum, we said that we believed the reasons that having at least four national wholesalers were in consumer's interests remain relevant.

4.39 Consequently, we would be more concerned with the effects of input foreclosure in mobile wholesale given the counterfactual of a merged H3G/O2, as it would

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[56] Ofcom, *Review of the wholesale broadband access markets - Final statement*, Paragraph 3.76, http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/statement/WBA-Statement.pdf

[57] Ofcom, *Strategic Review of Digital Communications: Discussion document,* paragraph 8.36 and 8.37.

[58] In October 2014, 6% of French consumers and 8% of Spanish consumers reported as taking quad play bundles. See International Communications Market Report, December 2014, p.34: http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr14/icmr/ICMR_2014.pdf

leave only three national MNOs. Nonetheless, such concerns depend on the efficacy of the imposed remedies to address the competition problems that may arise from the H3G/O2 merger.

## Section 5

# Mobile backhaul

## Introduction

5.1 This section considers the CMA's theories of harm 4 and 5 in relation to mobile backhaul markets. The CMA has set out the concern that, as a result of the merger, the merged entity would have both the ability and incentive to engage in partial input foreclosure (theory of harm 4) or customer foreclosure (theory of harm 5) in the supply of its mobile backhaul products:

- **Input Foreclosure**—i.e. BT using its position in provision of backhaul to reduce competition in the downstream retail mobile market by, for example:
    - increasing the prices of products supplied to competing MNOs;
    - lowering the quality of products supplied to competing MNOs; and/or
    - frustrating innovation in backhaul products that could benefit competing MNOs.
- **Customer Foreclosure**—i.e. MBNL (EE and H3G) moving all its backhaul purchases to BT making it harder for non-BT backhaul providers (e.g. Virgin, CityFibre) to compete.

5.2 MNOs use mobile backhaul services to provide connectivity between the radio access network and the mobile core network in order to allow them to deliver downstream retail mobile services. These backhaul services can employ transmission over a range of different media and technologies including microwave, copper and fibre. The CMA's theories of harm focus on transmission over fibre.

5.3 There are two main forms of provision of backhaul. First, direct purchase of leased lines, which MNOs can use for backhaul, and which are predominantly supplied by Openreach (the CMA refers to this as 'unmanaged backhaul services'). Alternatively, MNOs can purchase 'managed services' which integrate leased lines with a number of other components to provide an end-to-end backhaul solution (including, for example, capacity management) to MNOs, primarily by BTW in the form of its MEAS product.[59]

5.4 The market for leased lines is subject to *ex ante* regulation. In the Business Connectivity Market Review 2013 (BCMR 2013) we identified that BT has SMP for the provision of leased lines in most (but not all) of the UK. The BCMR 2016 is at the consultation stage and will update this regulation. In addition to our regular market reviews, if we were to have concerns in this area, we also have powers to investigate these services, and introduce further regulation if needed.

[59] This distinction is a simplification for the purposes of this document and there are different degrees of 'management' that can be provided with a backhaul product.

5.5 Where components of mobile backhaul services are provided by Openreach, they are also subject to legally binding Undertakings given by BT to Ofcom in 2005, which require Openreach to provide its products and services on an Equivalence of Input (EoI) basis to all customers (including its own downstream divisions) on the same terms.

5.6 The remainder of this section takes the following structure:

- Ofcom's current regulation and market overview;
- Future developments in Ofcom regulation; and
- Ofcom's comments on mobile backhaul.

## Ofcom's current regulation and market overview

Market Overview

5.7 Mobile backhaul is the infrastructure that links mobile transmission masts with a mobile operator's core network. The transmission elements of mobile backhaul can be provided over a range of different infrastructure and technologies including over microwave, copper and fibre.

5.8 Openreach offers copper and fibre leased lines which are used for mobile backhaul. We have found BT to have SMP in most of the UK and Openreach products are provided on a regulated basis almost nationally.

5.9 BTW is by far the largest wholesale provider of managed solutions for mobile backhaul. It provides a range of products including managed backhaul products based on Openreach inputs (i.e. MEAS and EAC) as well as some, regulated products, based on legacy technology (e.g. RBS). It can provide services in most parts of the UK. BTW's managed mobile backhaul products are not subject to regulation (although leased lines it uses in those products are regulated).

5.10 There are also a number of alternative providers of mobile backhaul including Virgin Media, Vodafone which uses the network it acquired from the purchase of Cable & Wireless Worldwide (C&W), Level 3, Colt, Verizon and Geo Networks, among others. However, the on-net services for these operators are in general limited in geographic scope. If any of these operators wished to provide a national service based on their existing networks they would need to rely on at least some Openreach inputs (and potentially long-distance transmission services through other CPs' national core networks).

5.11 In **Error! Reference source not found.**[redacted] below, we present estimates of the number of each MNO's mobile backhaul sites, split by technology and supplier. This table is based on information provided by the MNOs in response to requests for information from the CMA. It shows that fibre products serve a high proportion of overall sites (and likely to be a higher proportion of overall capacity). It also shows that BTW has a high share of supply of fibre products.

[✂]

BT Openreach Undertakings

5.12 The Undertakings are legally binding Undertakings given by BT to Ofcom in 2005 following Ofcom's strategic review of the telecommunications sector.[60] They were given under the Enterprise Act 2002, in lieu of a reference to the Competition Commission. The Undertakings, among others, require Openreach to provide its products and services on an Equivalence of Input (EoI) basis. This means that when providing access BT must provide the same products and services to all customers (including its own downstream divisions) on the same terms, which means at the same prices, using the same processes and systems and to the same timescales. BT may provide different service levels at different prices and Service Level Guarantees, but the availability of these is the same for all CPs. EOI is therefore designed to limit the ability of Openreach to engage in discriminatory behaviour.

BCMR 2013[61]

5.13 In the BCMR 2013 we concluded that Ethernet leased lines used as components of managed backhaul services supplied to mobile network operators (MNOs) should form part of the broader leased lines markets.[62] Fibre backhaul lines are functionally similar to other types of leased lines but we note that backhaul requirements may be different from other uses of leased lines due to the geographic scale and scope of their use. Nevertheless, in our market reviews we have defined markets for leased lines in general rather than specifically for mobile backhaul.

5.14 Our review focused primarily on the upstream inputs (i.e. those predominately supplied by Openreach, although we also regulate some legacy products supplied by BTW). We did not undertake a detailed review of downstream managed backhaul services, as we considered that the upstream regulation of Openreach products would be a sufficient constraint on BTW's provision of these services.

5.15 Table 4 below provides a summary of the market definitions and SMP findings we adopted in the BCMR 2013. Both our market definition and SMP assessment were conducted on a forward-looking basis, taking into account expected or foreseeable developments during the period prior to the next market review. We considered a number of different levels in the supply chain (i.e. retail services, symmetric broadband origination, and trunk segments). For each level of the supply chain, a number of different product markets were defined, based on the extent of likely substitution and observed differences in competitive conditions between leased lines services using different interface technologies (i.e. Traditional Interface (TI) (either TDM or analogue), Alternative Interface (AI) (typically Ethernet), and Multiple Interface (MI)) and different bandwidths.

[60] A summary of the Undertakings is available here: BEREC, *Guidance on Functional Separation, Annex I*, February 2011, http://berec.europa.eu/eng/document_register/subject_matter/berec/download/1/195-berec-guidance-on-functional-separation-_1.pdf
[61] http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/?a=0
[62] BCMR 2013, Paragraph 4.11.

5.16 We defined three geographic markets reflecting differences in competitive conditions between different parts of the UK for some product markets. In particular we defined separate markets in the Hull area (for all services) and in London and the surrounding area (for some services). We called the London area geographic market the West East and Central London Area (the WECLA).

**Table 4 Market definition and SMP findings from the BCMR 2013**

<table>
<tr><th colspan="2" rowspan="2"></th><th colspan="2">Retail Services</th><th colspan="3">Wholesale Segments</th></tr>
<tr><th colspan="3">Symmetric Broadband Origination</th><th>Trunk</th></tr>
<tr><th>Interface technology</th><th>Bandwidth (Mbit/s)</th><th>UK</th><th>Hull</th><th>The WECLA</th><th>UK except the WECLA and Hull</th><th>Hull</th><th>UK</th></tr>
<tr><td rowspan="5">Traditional (TI)</td><td>V Low: <2</td><td>BT</td><td rowspan="2">KCOM</td><td colspan="2">BT</td><td>KCOM</td><td rowspan="5">National<br>No SMP<br><br>Regional<br>BT</td></tr>
<tr><td>Low: <=8</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Med: >8, <=45</td><td></td><td></td><td>No SMP</td><td>BT</td><td>KCOM</td></tr>
<tr><td>High: >45, <=155</td><td></td><td></td><td>No SMP</td><td>BT</td><td>KCOM</td></tr>
<tr><td>Very High: 622</td><td></td><td></td><td colspan="2">No SMP</td><td>KCOM</td></tr>
<tr><td>Alternative (AI)</td><td>Low <=1,000</td><td></td><td>KCOM</td><td>BT</td><td>BT</td><td>KCOM</td><td></td></tr>
<tr><td>Multiple (MI)</td><td>>1,000, and any if WDM at customer's premises</td><td></td><td></td><td>No SMP</td><td>BT</td><td></td><td></td></tr>
</table>

5.17 We imposed a number of remedies on BT in order to address the competition problems we identified in our assessment of these markets. The most relevant of these remedies in the context of the merger can be summarised as follows:

- Requirement to provide network access. BT must provide wholesale network access in these markets to any CP on reasonable request.
- Requirement to provide network access on an equivalence of inputs (EoI) basis—When providing network access BT must provide the same products and services to all customers (including its own downstream divisions) on the same terms. BT may provide different service levels at different prices and Service Level Guarantees, but the availability of these is the same for all CPs. The same terms includes:
  - at the same prices;
  - using the same processes and systems; and
  - to the same timescales.
- Requirement not to discriminate unduly. BT must not unduly discriminate against any particular CP.
- Charge control. We control the level of charges that BT can set for its wholesale products based on a RPI-X approach.

5.18 Full details of the remedies imposed can be found in BCMR 2013, Annex 7, Schedule 2.

## Future developments in Ofcom regulation

BCMR 2016 process

5.19 We are currently conducting our next review of the business connectivity market (BCMR 2016). A consultation document was published on 15 May 2015 setting out our proposals for this market.[63] This contained a provisional market analysis (see Table 5 below) and proposed a set of remedies (see Table 6 below for remedies applied to Contemporary Interface (CI) services (e.g. Ethernet and WDM), which account for the majority of new sales) for the period from April 2016 to March 2019.

5.20 The proposals and measures described below are based on extensive evidence, analysis, and input from stakeholders, but they may change in light of representations made to us during the consultation or other developments. During our review so far stakeholders' representations have typically focused on the introduction of passive remedies, the quality of the provision of Ethernet leased lines and the structure of the charge control rather than on other aspects of existing and proposed remedies such as non-discrimination.

BCMR 2016 proposals

5.21 In the BCMR 2016 Consultation, consistent with BCMR 2013, we do not propose to define separate markets for either mobile backhaul or other types of backhaul (such as LLU backhaul). We consider that conditions of competition are sufficiently homogenous that for the purposes of the market review these types of backhaul can be considered within a broad leased lines market (leased lines can be used for a range of purposes other than just backhaul).

5.22 The main relevant changes that we propose, relative to BCMR 2013, are to:

- define a single product market, CI, which includes AI and MI;
- deregulate CISBO services in the Central London Area (CLA) because BT does not have SMP in this area;
- deregulate trunk services as no operator has SMP;
- introduce a passive remedy (i.e. access to infrastructure only) in the form of dark fibre (but not access to ducts) in addition to active (i.e Ethernet and WDM) services;
- limit the differential between EAD and EAD-LA prices to be equal to the difference in costs (this is explained further below in paragraph 5.25); and
- introduce obligations on minimum standards of quality of Ethernet services.

[63] http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/summary/BCMR_Sections.pdf

## Table 5 Proposed market definitions and SMP findings

| | | Retail services | | Wholesale terminating segments | | | |
|---|---|---|---|---|---|---|---|
| **Interface technology** | **Bandwidth (Mbit/s)** | **Hull** | **Rest of UK** | **Central London Area** | **London Periphery** | **Rest of UK** | **Hull** |
| **Traditional (TI)** | Low: <=8 | **KCOM** | *No SMP* | **BT** | | | **KCOM** |
| **Contemporary (CI)** | All bandwidths | **KCOM** | *No SMP* | *No SMP* | **BT** | **BT** | **KCOM** |

## Table 6: Overview of remedies proposals in wholesale regulated CI markets

| Remedies | UK, except CLA, London Periphery and Hull | London Periphery |
|---|---|---|
| Network access on reasonable request | Yes | Yes |
| **Specific access remedies** | | |
| Dark fibre | Yes | Yes |
| Ethernet | Yes | Yes |
| Minimum Quality Standards for Ethernet | Yes | Yes |
| WDM | Yes | Yes |
| **Price controls** | | |
| Dark fibre | Yes | Yes |
| Ethernet <=1Gbit/s | Yes | Yes |
| Ethernet >1Gbit/s and WDM | Safeguard cap | No |
| **Equivalence of Inputs** | | |
| Dark fibre | Yes | Yes |
| Ethernet <= 1Gbit/s | Yes | Yes |
| Ethernet > 1Gbit/s and WDM | Yes | n/a |
| Other general access remedies, including:<br>- No undue discrimination<br>- Publication of reference offers<br>- Notification of changes to charges, terms and conditions<br>- Publication of technical information<br>- Accounting separation | Yes | Yes |
| Develop new products | Yes | Yes |
| Ethernet Quality of Service | Yes | Yes |

Charge control proposals in relation to Ethernet services

5.23 Under the BCMR 2013, BT is subject to a charge control on Ethernet services, including those used for backhaul, in the regulated areas. In our BCMR 2016 consultation, we propose a charge control applying to Ethernet services, at 1 Gbit/s and below, in the UK, except Hull and the CLA, that would apply from 1 April 2016 to 31 March 2019. The proposed control is in the form of a basket, whereby BT Openreach has flexibility to set prices for individual products (subject to any sub-caps) provided the overall average of the products within the basket does not breach the control. We are consulting on a 'base case' control for this basket of CPI-13.5% per annum.[64] [65] We also propose to impose sub-caps (caps where an individual product's price is directly limited) for all services in this basket, as well as for Ethernet services over 1 Gbit/s.

5.24 We propose that BT is required to provide access to dark fibre. The price of our proposed dark fibre remedy will be linked to the price of two active Ethernet products, EAD 1 Gbit/s and EAD-LA 1 Gbit/s, each of which will have a CPI-13.5% sub-cap. We consider this will appropriately limit the potential for gaming (as otherwise BT may have an incentive to load common costs allowed to be recovered across the basket into these products to increase the price of passives).

5.25 We also propose to require the difference between the EAD and the EAD-LA price to be the same as the difference in incremental cost of the two products. The rationale for this is that the presence of the current differential disadvantages CPs who make relatively limited use of BT exchanges as aggregation points (and who must therefore use EAD rather than EAD-LA) pay higher charges for comparable circuit configurations. We consider that restricting the differential would ensure that the choice between the two products is productively efficient as it would be based on differences in the underlying costs of provision. Additionally, setting the differential in this way would reduce the risk of excessive pricing or undue discrimination by BT and address the risk that BT recovers more common costs from non-Local Access variants, which are proportionally more important to its competitors.

Beyond BCMR 2016

5.26 Following completion of the BCMR 2016, we will continue to review these markets at least every three years, in line with our regulatory obligations.

[64] We also have a starting charge adjustment of -9% for the base case.
[65] The current charge control requires BT to reduce charges for Ethernet services, provided outside the Western, Eastern and Central London area (WECLA) by RPI-11.5% per annum.

# Ofcom's comments on mobile backhaul

## Input foreclosure

Potential input foreclosure at the unmanaged level

5.27 The upstream leased line inputs supplied by Openreach (as well as legacy technology leased line services provided by BTW) are reviewed in our BCMR. We have found that BT has SMP in the provision of these services in certain cases. They are therefore subject to SMP regulation, which specifies, amongst other things, that there should be no undue discrimination. The Undertakings also require Openreach to provide these services on an Equivalence of Inputs basis. Both the SMP regulation and the Undertakings cover both pricing schedules and differences in quality. We believe this limits Openreach's ability to discriminate.

5.28 As part of the Undertakings, BT has been required to set up an Equality of Access Board (EAB). This monitors Openreach's compliance with the Undertakings, including EOI. It provides regular annual reports which summarise issues related to non-equivalence.[66] We are also proposing in the current BCMR to require Openreach to meet minimum performance standards over the three year period of the market review aimed at ensuring it has the incentives to improve its Ethernet provisioning performance (to deliver higher levels of certainty as to when it will deliver circuits and installing them more quickly) whilst maintaining its current levels of fault repair performance. Openreach will therefore not be allowed to lower quality of standard below these levels to any MNO.

5.29 We note that Vodafone said that there is scope for discrimination in quality since BT's downstream businesses already achieve better delivery outcomes from BT Openreach than non-BT operators.[67] In this regard we note that the Equality of Access Office (EAO) has investigated differences in outcomes between Openreach's provision of leased lines to BT lines of business and other CPs and found no evidence of discrimination. To the extent that there were differences in outcomes these were explained by the fact that some of the BT lines of business made use of an additional service provided by Openreach known as "Project Services" which manages the delivery of a large number of leased lines as a project.

5.30 Under the SMP framework, Ofcom also specifies obligations concerning the manner in which requests for new product developments should be handled. These obligations require BT to publish guidelines on how requests should be submitted and will be processed and also to specify timescales for handling of requests.[68] This product development process for the wholesale leased lines services is known as the Statement of Requirements (SoR) process.[69]

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[66] See, Equality of Access Board, *Annual Report 2014*, http://www.btplc.com/Thegroup/Ourcompany/Theboard/Boardcommittees/EqualityofAccessBoard/Publications/EAB_Annual_Report_2014.pdf

[67] Vodafone Initial Phase 2 Submission to the Competition and Markets Authority, 3 July 2015, Para 2.40 (ii). [✂]

[68] SMP Condition 1 – obligation to provide network access on reasonable request, SMP Condition 4 Equivalence of inputs basis and SMP Condition 10 – Requests for new forms of network access.

[69] See Openreach presentation to Ofcom on 15 December 2014.

5.31 We also consider that the introduction of regulated access to dark fibre would increase MNOs' ability to innovate and develop new backhaul technologies. Dark fibre remedies would provide MNOs with more control of the underlying infrastructure, offering a greater potential for innovation compared to current active remedies. We note that in addition to allowing MNOs to innovate themselves, the threat of MNOs using passives may put more pressure on BT to develop its active products to fit MNOs' changing requirements. More detail is provided in our 2016 BCMR Consultation as well as in a previous consultation last year focusing specifically on passives ('Passives Consultation 2014').[70]

5.32 While we believe that the requirement to provide access to dark fibre could limit any potential attempts to discriminate over product innovation, this will only be the case if all MNOs have opportunities to take up dark fibre. Given that the MNOs currently have long-term contracts with BTW which include volume commitments, these commitments may limit the extent of dark fibre they can take up. This could be particularly concerning if BT were to choose to release EE (or MBNL) from its contractual commitments post-merger.

Potential input foreclosure at the managed level

5.33 While the upstream leased line level is regulated as described above, MNOs actually make the majority of their backhaul purchases at the managed services level from BTW.

5.34 Some stakeholders have expressed concerns that post-merger BTW may have the ability and incentive to engage in various forms of vertical leverage from managed backhaul services into the retail mobile level. This would benefit BT Group as a whole by disadvantaging rival MNOs relative to its newly vertically integrated downstream arm, EE. There are concerns that this vertical leverage could occur via raising prices to rival MNOs, degrading quality to rival MNOs, refusing to supply rival MNOs or favouring EE over rival MNOs in terms of future product development and innovation.

5.35 In the BCMR 2016 consultation we have expressed a view that access to the regulated upstream inputs should constrain BT Wholesale's supply of managed backhaul services, and we would therefore not expect it to have market power at that level.

5.36 We also note that the ability to materially affect downstream outcomes will depend on the size of backhaul costs relative to other costs of supplying mobile services. If managed backhaul services costs, net of regulated leased lines prices, are small in proportion to other costs then there will be limited ability to create a distortion and foreclose by manipulating them. However if they are relatively large, there may be greater ability.

5.37 We have examined evidence on the importance of managed services to MNOs costs. In Figure 6 below we show the components of the cost stack, broken down into "within category proportions", i.e. the first column shows what proportion of total costs is accounted for by network costs; the second column shows what

[70] See, section 4 of, Ofcom, *Business Connectivity Market Review, Preliminary Consultation on Passive Remedies*, 5 November 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-passives/summary/BCMR_passives.pdf

proportion of network costs is accounted for by backhaul costs; the third shows what proportion of backhaul costs are fibre, and so on. [redacted] then shows the proportion of the total cost stack each of these components (network costs, backhaul costs, fibre costs etc.) account for.

5.38 Our estimates suggest that:[71]

- Backhaul costs, which are around 18% of network costs, amount to 8% of total costs;[72]
- Fibre backhaul comprises around 80% of backhaul costs[73] [✂][74], so accounts for 6% of total costs;

[✂]

5.39 Demand for mobile data is growing rapidly. We therefore expect consumers' and MNOs' requirements to change even in the relatively short-term. The impact of such changes on the proportion of MNOs' total costs accounted for by backhaul costs is unclear, because there are two directionally off-setting factors at play:

- Volumes. We anticipate that the demand for data and hence backhaul capacity will increase substantially. For example, due to the growth in mobile broadband and an increasing expectation from users to access data when in large concentrations, e.g. events, city centres, etc. there is an increasing trend of "cell densification", i.e. the process of providing more cells and better capacity in areas where population and usage are high. Mobile technologies designed to address some of this growth include "Cloud-RAN" which has a much higher backhaul requirement as the backhaul capacity for each site has to be dimensioned to address a higher demand, as the radio capacity can be shifted from one site to another to better manage radio capacity.

- Prices. The per unit cost of backhaul is likely to fall rapidly. This is partly due to regulatory requirements which reflect a decrease in the underlying costs of providing backhaul - the proposed 2016 LLCC charge control is an overall cap of CPI-13.5% year on year following a starting charge adjustment (i.e. reduction) of 9%. Furthermore, the cost of increasing backhaul does not increase in proportion to the extra capacity purchased. For example, upgrading from a 1 Gbit/s service to a 10 Gbit/s service does not cost 10 times as much but roughly double the amount.[75] Thus backhaul costs will not increase in proportion with the increase in

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[71] Some of these estimates of mobile backhaul costs are taken from our 2015 Mobile Call Termination (MCT) model designed for the MCT market review, which was published in March 2015. These figures are subject to the caveat that Ofcom's 2015 MCT model was not designed to calculate backhaul costs specifically and backhaul was not explicitly considered as part of our calibration exercise (although the accuracy of individual assumptions may not affect the key implications). The exact proportions used by different MNOs will also differ depending on their individual strategies.
[72] Ofcom estimates based on MCT 2015 model. MNOs have claimed values in the region of (c. 20-22%) for backhaul costs as a proportion of network costs and that they are likely to grow substantially.
[73] Ofcom estimates based on MCT 2015 model. We note we have not been able to separate copper costs from the fibre costs, so these are included in the fibre costs here, potentially leading to an overestimate.
[74] Ofcom estimates based on Vodafone, O2 and H3G responses to the CMA's RFI in the context of the BT/EE merger.
[75] See, Figure 4.1 of BCMR 2016, Consultation, May 2015.
http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/summary/BCMR_Sections.pdf

data requirements, and may even fall if the reduction in underlying costs is significant enough.

5.40 [✂] This may suggest that BT's ability to increase prices is limited, albeit it may not be constrained to the level of its costs, which may be lower than Virgin's or other alternatives, due to economies of scope and scale.

5.41 Vodafone referred to BT's advantages from its incumbency and wide-reaching network. It said no other provider can compete with BT's wide-reaching incumbent fibre network and its ubiquitous presence in, and links between, the 5,000+ BT local exchanges. However, we consider that a CP need only be present in all the Access Serving Nodes (ASNs) (not all local exchanges) and use Openreach inputs in order to be able to provide a national service, because Openreach's leased line access products can reach almost all points in the UK from the ASNs. [✂] Thus there are limits on the extent to which any advantage that BT had in the supply of MEAS would lead to foreclosure of competition in the mobile market. If BT were to further increase the price, or decrease the quality of the MEAS service, MNOs could turn to another supplier(s) or buy Openreach products themselves. We believe that an MNO should be able to assemble a product with national coverage through self-supply or sourcing from multiple providers who in turn use Openreach products to supply outside their own network. This may be more expensive than buying from BTW, but this difference in price does not seem likely to be sufficient to lead to foreclosure, given the proportion of MNOs' total costs it accounts for. However, it may take time to switch, particularly if MNO's are locked into long term contracts with BTW, and there is a risk that in the intervening period degradation of service quality of BT could affect competition at the retail level.

5.42 Stakeholders have also suggested that BT may decrease the price to EE – this is considered in the discussion on "efficiency offences" in paragraph 3.72.

## Customer foreclosure

5.43 The concern under this theory of harm is that, as a result of the merger, the merged entity would have both the ability and incentive to engage in customer foreclosure of other CPs that compete with BT by influencing MBNL's choice of backhaul supplier to be BT. This could have the effect of foreclosing other suppliers, if they considered access to MBNL's custom to be necessary in order to compete.

5.44 The CMA has indicated it will consider four factors in relation to this theory of harm. We comment on these briefly below.

a) **The extent of EE's influence over MBNL's decisions, and the way in which commercial decisions are taken by MBNL**—EE, H3G and MBNL will be best placed to comment on this factor.

b) **The merged entity's incentives to switch from other (current or putative) suppliers to BT**—The incentive for BT/EE to foreclose suppliers like Virgin will depend on the degree to which it is profitable. For example, we expect there would be switching costs involved in switching away from any existing supplier, including switching from Virgin to BT.

c) **The extent of suppliers' operations in the UK and how these would be affected by the loss or reduction in scope of custom from MBNL**—We would not expect any supplier to have a business model that relies specifically on being

able to provide mobile backhaul and even less to rely specifically on being able to provide a specific MNO. Moreover, rival backhaul suppliers to BT do not have national coverage, but rather are primarily focused on urban areas where there are likely to be a wide range of alternative uses for their infrastructure (such as enterprise leased lines or FTTH). [✂] We also believe that the majority of investment costs are likely sunk and therefore providers are likely to face strong incentives to remain or re-enter the backhaul market following any foreclosure attempt.

d) **The impact of other suppliers on competition to provide wholesale local access to communication providers and backhaul more generally**—As mentioned under c) above, the rollout of rival infrastructure is likely to be based on business cases that assume a range of uses for their services. The lack of mobile backhaul may not be significant enough to affect rollout decisions, particularly given that the mobile backhaul specific parts (links to aerial sites) are likely to be separate from the rest of the network.

5.45 Overall we do not believe that there is a strong risk of customer foreclosure. Aside from MBNL there are other MNOs which rival CPs could compete for. Additionally many of the inputs used to provide mobile backhaul could be used for other purposes (with the possible exception of the last link to an aerial site) such that it is unlikely that the custom of MBNL is determinative in allowing rival CPs to achieve scale efficiencies sufficient to compete.

Section 6

# Fixed broadband

## Introduction

6.1 This section addresses Theories of Harm 6, 7 and 8 as set out in the CMA's Issues Statement, namely:

- Wholesale broadband – input foreclosure
- Unilateral effects arising from loss of competition in rural areas; and
- Unilateral effects arising from potential loss of competition in superfast broadband.

6.2 Before considering the specific theories, we first set out some background information on fixed broadband and current and future regulation which is relevant to these theories. Having done this, we consider each of the three theories in turn.

## Background

### Ofcom's approach to regulation of broadband

6.3 Where possible, our approach historically has been to intervene upstream in order to facilitate competitive downstream markets. We therefore often require SMP operators to supply 'wholesale' access to certain elements in the value chain in order to allow other providers to use these elements to compete in the downstream market, including by innovating over the replicable part of the supply chain.

6.4 Our approach to promoting effective competition in the broadband and voice markets is illustrated in Figure 2. We currently require BT to provide various Wholesale Local Access (WLA)[76] services on regulated terms such as Local Loop Unbundling (LLU) for copper-based current generation access (CGA) services, and Virtual Unbundled Local Access (VULA)[77] for fibre-based next generation access (NGA) services. This allows other CPs to use BT's access network to provide competing voice and broadband services in the downstream markets.

6.5 Throughout most of the country, regulation to ensure the availability of LLU has been successful in promoting entry by other CPs such that BT faces effective competition in the retail market. CPs, including BT, also resell their product to other downstream players (such as EE, who buy from BT, or the Post Office, who buy from TalkTalk). This intermediate market is referred to as the Wholesale

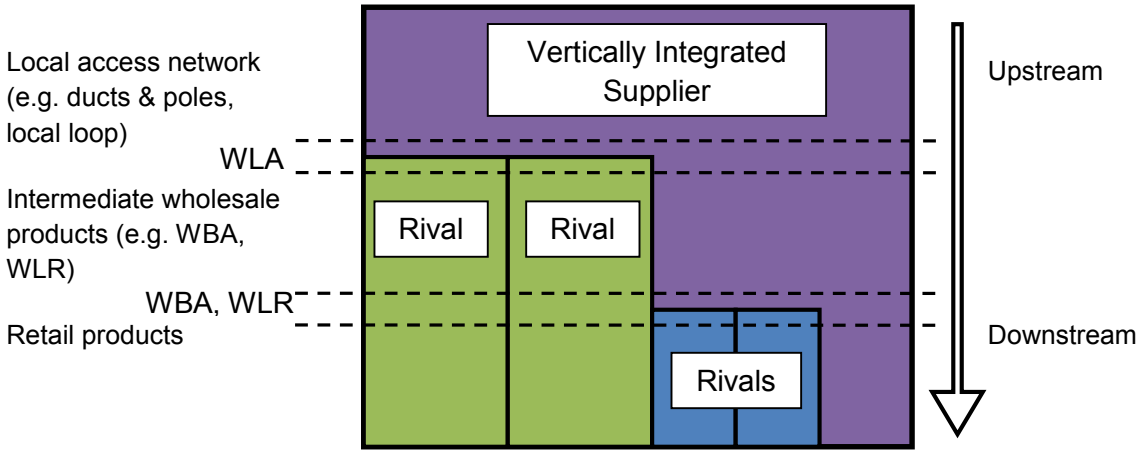
[76] Wholesale local access refers to the fixed connection from the local exchange or access node to the end-user.
[77] Virtual unbundled local access provides access to BT's NGA network in a way that is similar to how LLU provides access on the CGA network. However, rather than providing a physical line, VULA provides a virtual connection that gives CPs a direct link to their customers and provides flexibility over how this link is integrated into their network and over product offerings. The product that BT supplies in order to meet this obligation is called Generic Ethernet Access ('GEA').

Broadband Access (WBA) market.[78] No further remedies are imposed in the geographic areas where LLU has been effective in promoting broadband competition (referred to as 'Market B').

6.6 However, in some areas (referred to as 'Market A'), WLA remedies have not been as effective at promoting entry. This is largely in rural areas where WLA remedies are less viable due to the limited number of premises in the area, which reduces CPs' opportunities to recover the costs of installing LLU equipment. In such areas, we impose regulation further down the supply chain at the WBA level. The regulated areas have been shrinking, as LLU rollout has progressed, and is now significantly smaller. For example, in the 2014 WBA review we found that areas in which BT had SMP in the provision of WBA covered 9.5% of UK premises, while in the 2010 WBA review, 21.7% of UK premises were in SMP areas.[79]

6.7 We also impose regulation for supplying less profitable services, such as voice only services which we regulate though WLR.

**Figure 2: Illustrative example of the impact of regulating local access and intermediate wholesale products**




6.8 We set out more detail of the relevant regulations below.

[78] The WBA market sits between the retail broadband market, which relates to the products that consumers buy, and the WLA market, which relates to the access connection between the consumer and the network. The WBA market concerns the wholesale broadband products that CPs provide for themselves and sell to each other.

[79] In the 2014 WBA Statement, we noted that 9.5% of UK premises fall within Market A (defined as exchange areas where there are no more than two Principal Operators (POs) present or forecast to be present). In the 2010 WBA market review, we found that 11.7% of premises were within areas where only BT was present or forecast to be present, and 10% of premises were served by exchanges where two POs were present or forecast to be present and exchanges where three POs were present or forecast to be present but where BT's share was greater than or equal to 50% (paragraph 4.9 of our July 2013 WBA consultation, available at http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/summary/WBA_July_2013.pdf). This reflects a change to our approach to geographic market definition in our 2014 WBA Statement.

## Current WLA regulation

6.9 Our last WLA market review was completed in June 2014, and covers the period until 31 March 2017.

6.10 We found that BT had SMP in the WLA market in the UK excluding the Hull Area. Outside of the Hull Area, we considered whether to define sub-national markets to distinguish between areas where Virgin was and was not present. However we decided not to on the basis of common pricing constraints.[80] In order to address BT's SMP, we imposed a number of conditions on BT, with important differences in the conditions for current and next generation access.

6.11 For CGA, we imposed cost-based charge controls for LLU and WLR.[81] However, for NGA, we did not apply a cost-based charge control on VULA in this market review period. Instead, we required BT to maintain a minimum margin between the wholesale price of VULA and the retail price of broadband packages that use VULA as an input.[82] This reflected Ofcom's view that BT should retain broad flexibility over the level of VULA prices during this market review period, but sought to protect and promote competition at the retail level by clearly setting out the minimum VULA margin BT must maintain. This ensures that BT does not set the VULA margin such that it prevents an operator with slightly higher costs than BT (or some other slight commercial drawback relative to BT) from being able to profitably match BT's retail superfast broadband offers.

6.12 Our VULA margin regulation is subject to appeals by BT and TalkTalk.[83] The specified price control matters raised in these appeals are expected to be referred to the CMA after 17 November 2015. The Competition Appeal Tribunal hearing on non-specified price control matters raised is listed for 9-17 December 2015.

6.13 We also imposed a set of general remedies on BT to support these measures. These include: [84]

- Requirement to provide network access on reasonable request;
- Requirement to publish and follow a process to address requests for new forms of network access (known as the Statement of Requirements, or SoR, process);
- Requirement not to unduly discriminate and EOI;
- Accounting separation;

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[80] 2014 FAMR Statement, paragraphs 7.70-7.73.
[81] Full details are set out in Section 13, 15, 16 and 18 of our 2014 FAMR Statement. Details of the LLU and WLR charge controls are set out in Volume 2 of the statement.
[82] Further details are set out in our statement of 19 March 2015 (the 'VULA Margin Statement'), available at http://stakeholders.ofcom.org.uk/consultations/VULA-margin/statement/.
[83] Case numbers 1237-1238/3/3/15.
[84]Further details are set out in Section 10 of our 2014 FAMR Statement. Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 Volume 1: Statement on the markets, market power determinations and remedies, available at http://stakeholders.ofcom.org.uk/telecoms/ga-scheme/specific-conditions-entitlement/market-power/fixed-access-market-reviews-2014/statement/.

- Requirement to publish a Reference Offer[85] (including specifying services subject to SLAs[86]/ SLGs[87]);
- Requirement to notify changes to charges, terms and conditions;
- Requirement to notify technical information;
- Cost accounting.

6.14 With regard to the accounting specifications, in May 2014 we published a statement making changes to BT's Regulatory Financial Reporting framework.[88] This statement sets out a number of changes to the way regulatory financial reports are prepared and provided, in response to a number of concerns raised with the previous system. The changes proposed will be implemented across all regulated markets, and were applied in the WLA (and WBA) markets in the June 2014 market reviews.

6.15 We also set out in the 2014 FAMR Statement that, in response to wider concerns expressed by several stakeholders that the BT SoR process is not working effectively, we decided to closely monitor the SoR process over the following 12 months. This will enable us to gain a better view of the concerns that stakeholders have raised and determine whether it is appropriate to initiate a separate SoR project. We have since extended the period for this monitoring, and are currently considering whether to extend it further. This is also noted in our Strategic Review of Digital Communications discussion document.[89]

## Future developments in the regulation of WLA

6.16 We are currently scoping the analysis to be undertaken for the next WLA market review. This will consider, among other issues, assessing whether defining a single market for standard and superfast broadband is still appropriate at the retail and wholesale level (along with other questions about geographic and product market definition), and what remedies may be appropriate if market power is established in any such markets.

6.17 As set out in the 2014 FAMR Statement, we anticipate that we will revisit the issue of whether to regulate the level of NGA prices in our next market review – indeed we considered it both in the 2010 WLA Review and 2014 FAMR Statement. Any pricing obligation we might impose beyond the present review period will be set as a result of future market reviews in light of the circumstances prevailing at the

[85] Reference Offer means the terms and conditions on which BT is willing to enter into an agreement for the provision of network access in accordance with its SMP Condition to provide access on reasonable request
[86] A Service Level Agreement is a contractual commitment provided by Openreach to CPs about service standards
[87] A Service Level Guarantee is a contractual commitment by Openreach to CPs specifying the amount of compensation payable by Openreach to a CP for a failure to adhere to an SLA.
[88] Ofcom, Regulatory Financial Reporting: Final Statement, 20 May 2014, available at http://stakeholders.ofcom.org.uk/binaries/consultations/bt-transparency/statement/financial-reporting-statement-may14.pdf.
[89] Strategic Review of Digital Communications: Discussion document, 16 July 2015, paragraph 11.39, available at http://stakeholders.ofcom.org.uk/binaries/consultations/dcr_discussion/summary/digital-comms-review.pdf

time. Although we cannot fetter our future discretion, factors that we may consider include the presence of a constraint from copper (or other services), the risk of regulatory failure, and the extent to which superfast broadband has matured (for example, whether demand, technology and/or costs are more certain but also whether there remain future potential investments e.g. speed upgrades). We also noted that if we did find a cost-based wholesale pricing obligation necessary, there are a range of different types of such obligations.[90]

### Current WBA regulation

6.18 Our most recent review of the WBA market was completed in June 2014 and covers the period until 31 March 2017. We found that BT had SMP in the supply of WBA in an area referred to as Market A, which covers 9.5% of premises. In order to address this, we imposed a number of conditions on BT in Market A. This included a charge control on WBA services offered in Market A. This was supported by a number of other general conditions regarding transparency, non-discrimination, accounting separation, obligations for access to and use of specific network facilities, cost accounting obligations and further price controls. Further details are set out in the 2014 WBA market review.[91]

### Future developments in the regulation of WBA

6.19 We are currently scoping the analysis to be undertaken for the next WBA market review. This will include assessing product market definition, including whether standard and superfast broadband remain in the same retail and wholesale market; whether separate geographic markets are still appropriate and if so what areas these should cover; and what remedies may be appropriate if market power is established in any such markets. Regulatory remedies which may be appropriate include: transparency; non-discrimination; accounting separation; obligations for access to and use of specific network facilities; and price control (which may include cost based charge controls) and cost accounting obligations.

## Theory of Harm 6: Wholesale broadband – input foreclosure

### Ofcom's comments on concerns

6.20 We consider there are broadly three sets of concerns expressed by stakeholders relating to the fixed wholesale broadband market:

- Whether the regulation of superfast broadband inputs (particularly VULA) will be undermined as a consequence of the transaction and the resulting increase in

[90] Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 Volume 1: Statement on the markets, market power determinations and remedies, paragraph 12.151-12.154, available at http://stakeholders.ofcom.org.uk/telecoms/ga-scheme/specific-conditions-entitlement/market-power/fixed-access-market-reviews-2014/statement/

[91] Review of the wholesale broadband access markets: Statement on market definition, market power determinations and remedies, 26 June 2014, available at http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/statement/WBA-Statement.pdf

complexity in assessing BT's compliance with its obligation to maintain a minimum VULA margin;[92]

- Whether BT will have the incentive and ability to disadvantage downstream competitors by shifting costs onto regulated products or products purchased by downstream competitors;[93] and

- Whether BT will have the incentive and ability to disadvantage downstream competitors by reducing the quality of products purchased by downstream competitors.[94]

## Assessing BT's compliance with the minimum VULA margin obligation

6.21 We noted above (paragraph 6.11) that Ofcom requires BT to maintain a minimum margin between the wholesale price of VULA and the retail price of broadband packages that use VULA as an input. The purpose of this obligation is to ensure that BT cannot use its SMP in the WLA market to set the VULA margin such that it causes retail competition in superfast broadband to be distorted. We supplemented our SMP condition with guidance on how we intend to assess compliance with that condition. Further details are set out in our VULA Margin Statement.[95]

6.22 BT currently bundles superfast broadband with a range of other services. When assessing whether BT is maintaining a sufficient margin we will look at the costs and revenues of the bundle.[96] We explicitly stated that we would take into account bundles that include mobile services.[97] We also provided our preliminary view on how we would likely take the costs and revenues associated with these services into account should BT being offering superfast broadband bundles that include mobile services during this review period.[98] We stated that:

> "It is not possible for us to provide detailed guidance on the treatment of mobile services before they have been launched – even if it was certain that BT will begin to offer mobile services, the assessment approach would likely depend on how BT configures its mobile network and how it sets charges to end users."[99]

6.23 As set out in our response to the CMA', we have considered whether complexity is likely to increase relative to a counterfactual where BT operates as an MVNO while using its own network for indoor coverage.

6.24 It is not obvious that assessing the revenues associated with BT superfast broadband bundles that include mobile services would be significantly more complex post-merger as compared to this counterfactual. In both scenarios the revenue sources and data used may be the same.

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92 [✂]
93 [✂]
94 [✂]
95 http://stakeholders.ofcom.org.uk/consultations/VULA-margin/statement/
96 VULA Margin Statement, paragraphs 5.95-5.96.
97 VULA Margin Statement, paragraph 5.87.
98 VULA Margin Statement, paragraphs 6.69-6.74.
99 VULA Margin Statement, paragraph 6.71.

6.25 It is difficult to be certain whether assessing the costs associated with these bundles would become more complicated since:

- It depends on the approach Ofcom adopts for assessing these costs. As explained above, it was not possible for us to provide detailed guidance on this matter in the VULA Margin Statement. Our approach would ultimately depend on the circumstances of any future assessment, but possible options might include: (i) analysing the costs of BT's mobile arm and attributing a proportion to superfast broadband bundles that include mobile services; (ii) assessing the costs that BT would incur under an MVNO agreement; or (iii) if few BT superfast broadband subscribers take mobile services, mobile costs and revenues could be disregarded as a simplification. Ofcom has not explored these options. At this stage, Ofcom does not have a fixed view on the details of how it would assess these costs should the merger go ahead.

- It depends on what cost data is available from BT post-merger. Obviously it is easier to assess the VULA margin when clear, disaggregated data is readily available (and vice-versa). Ofcom does not know how BT intends to structure and record the costs of the EE business post-merger.

- Similarly it depends on what cost data is available in the counterfactual. Ofcom does not know how BT would structure and record its costs in the counterfactual.

6.26 In summary, it is difficult to be certain about the extent to which complexity would increase. That said, Ofcom has extensive experience in cost modelling and applying regulation in complex environments. Therefore, we do not anticipate that any added complexity arising out of the merger would make our VULA margin regulation unworkable.

## Cost allocation

6.27 [✂]

6.28 There do not appear to be any significant costs in EE's mobile services which BT might plausibly try to recover from regulated Openreach products. [✂]

6.29 There may be instances, however, where in the future some of the Openreach assets may be shared to provide mobile services. For example, if the street poles in the access network were used for providing mobile services as well as fixed access, then the cost of the poles would be common to MiiS (Openreach's Mobile Infill Infrastructure Solution) and fixed products (such as GEA, WLR and LLU). However, we do not envisage that BT would be able to reduce the costs of MiiS by allocating common costs to regulated products, as discussed below. We note that to the extent that BT (or any other mobile operators) used Openreach's MiiS, it may lead to increased economics of scale/scope, tending to reduce regulated charges for Openreach's access network.

6.30 It is important that BT retains the flexibility to make appropriate changes to the way it allocates costs between markets in its Regulatory Financial Statements. However, these rules must comply with a series of accounting principles (the Regulatory Accounting Principles) that we define. These include the principle of Causality, which requires, amongst other things, that costs are attributed in accordance with the activities which cause those costs to be incurred. If BT wishes to change the way it allocates its costs in its Regulatory Financial Statements, it must inform Ofcom in advance and publish the reasons for and

impact of those changes on costs for each market. We therefore have sight of the changes to the way BT allocates its costs and can prevent BT from making those changes in its Regulatory Financial Statements if they do not comply with the Regulatory Accounting Principles.

6.31 Although BT's Regulatory Financial Statements are an important input into our assessment of prices of regulated services, it does not follow that changes in the way BT allocates its costs in its Regulatory Financial Statements will be reflected in the prices of regulated services. In 2012/13, for example, BT changed the way it allocated some costs with the effect of moving more costs into the fixed access markets; Ofcom did not include these additional costs when setting the regulated prices in these markets in 2014. More generally, when setting prices, we consider whether BT's approach to allocating costs provides an appropriate starting point for setting prices and change the way costs are allocated when we determine it is appropriate to do so.

6.32 Therefore, if BT's purchase of EE led to possible changes in the way it allocated its costs to regulated markets, BT would first need to show that the proposed treatment in its Regulatory Financial Statements was appropriate, then we would need to decide if and how those changes should be reflected in regulated prices.

6.33 [✂] We impose individual charge controls on the main WLR and LLU products (and impose broader 'basket' charge controls on most other WLR and LLU products). When we set these charges, we consider carefully the differences in charges between WLR and LLU-based products, and how common costs should be treated.[100]

## Quality and investment

6.34 [✂]

6.35 We strengthened the quality of service requirements BT is obliged to meet in the 2014 WLA market review, in part as a result of stakeholder comments on this issue. We now impose obligations on BT to address concerns in relation to the quality of service delivered by BT (through Openreach) in the supply of regulated wholesale fixed access services. Further details of these obligations is set out in Sections 9 and 11 of the 2014 FAMR Statement, but in summary:

- We impose a set of minimum standards on fault repair and provisioning for WLR and MPF, which ensure that a specified percentage of all such services are delivered within the contracted timeframes. Failure to meet these standards is subject to penalties up to 10% of relevant turnover.

- We directed BT to report an extensive set of KPIs for several services (WLR, LLU, GEA, wholesale ISDN2 line rental and wholesale ISDN30 line rental services). A subset of these KPIs (specifically in relation to the installation of new lines, repair of faults and late installations and fault repairs) is published with unrestricted access on a BT Group website every 3 months.

[100] Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 Volume 1: Statement on the markets, market power determinations and remedies, available at http://stakeholders.ofcom.org.uk/telecoms/ga-scheme/specific-conditions-entitlement/market-power/fixed-access-market-reviews-2014/statement/.

- As noted above (see paragraph 6.13), we have imposed an obligation on BT to include SLAs and SLGs in the Reference Offers for specified elements of certain services.

- We have set out principles to guide the conduct of the process for negotiating new, or modifications to, SLA/SLGs.

6.36 With regard to product development, one of the general remedies imposed in relation to WLA is a requirement for BT to publish and follow a process by which they will address requests for new forms of network access (its SoR process). These guidelines must meet the principle that the reasons for the rejection of any request should be clear and transparent.

6.37 We acknowledge that vertically integrated CPs have an incentive to favour their own downstream business over third party CPs. One form of discrimination is in relation to the handling of requests for new forms of network access. The aim of this regulation is to support access seekers in ensuring that there is a fair, reasonable and transparent process for assessing reasonable requests for new forms of network access. To make such a request, the CP must provide the dominant provider with an SoR against which the reasonableness of the request can be assessed.

6.38 In our Strategic Review of Digital Communications discussion document, we set out that we are currently conducting work in this area, including closely monitoring SoRs as they progress through the process and attending working groups. When this work is completed later this year and we have gathered views from stakeholders as part of this review, we will decide whether further work is required to address the concerns raised. For example, we will consider whether potential measures could be introduced to increase transparency around the approval process.[101]

6.39 We will consider these issues again in our next WLA market review.

## Theory of harm 7: Retail broadband – unilateral effects arising from loss of competition in rural areas

### Ofcom's comments on concerns

6.40 In the 2014 WBA review, we suggested the retail market could be local.[102] [✂] We noted that although BT charges a geographically uniform price, it is not legally obliged to do so, and other CPs charge different prices in different areas.[103]

6.41 We also concluded that there are separate geographic markets at the wholesale level – namely Market A, which is regulated, and Market B which is not. Despite

[101] Strategic Review of Digital Communications: Discussion document, 16 July 2015, paragraph 11.39, available at http://stakeholders.ofcom.org.uk/binaries/consultations/dcr_discussion/summary/digital-comms-review.pdf
[102] WBA 2014 Statement, Paragraph 4.46, Page 88: http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/statement/WBA-Statement.pdf
[103] See 4.44 and 4.45 of the WBA 2104 Statement

the presence of upstream regulation ensuring that wholesale products are available in Market A, BT maintains a high retail market share in these areas.[104] The pattern of market shares in Market A (i.e. a high market share for a single player and low market shares for rivals) does not necessarily mean that there is limited retail competition.

6.42 Indeed, one of the reasons for the market share pattern is BT's policy of maintaining a uniform national price for its primary retail broadband services. By comparison, other CPs (including BT's subsidiary PlusNet) tend to use geographically differentiated prices, which are higher in rural areas where it is more expensive to serve. BT's commercial policy will therefore tend to raise its market share in rural areas.

6.43 We note the argument by [✂].

6.44 EE is one of the larger competitors in rural areas, but its share is still [✂]and there are other competitors (e.g. [✂]). Nevertheless, we note that BT's retail market share in Market A is already high [✂]. Potential concerns about the effect of the merger on retail broadband consumers in rural areas would be mitigated if BT were to continue its current commercial practice of charging geographically uniform prices.

6.45 In the next WBA review, we will consider the take-up of the wholesale remedies currently in place, and what implications this may have for the most appropriate form of regulation (if competition concerns persist in some geographic areas).

## Theory of harm 8: Retail broadband – unilateral effects arising from potential loss of competition in superfast broadband

### Ofcom's comments on concerns

6.46 In the 2014 WBA market review we defined a single retail product market including fibre, cable and copper-based products at all speeds, although we did acknowledge that there are factors pointing to a separate market potentially emerging at the retail level for superfast broadband products at some point in the future. We will consider this question again as part of the next review.

6.47 An increasing proportion of consumers purchase superfast broadband services (which Ofcom defines as those with an actual speed of 30Mbit/s or higher).

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[104] As of September 2013, at the wholesale level BT had 88.8% market share in Market A, TalkTalk had 5-15%, and other LLU operators had a very small market share (see 2014 WBA Statement, Table 5.2). However, as a number of operators buy a wholesale product to provide an end product, retail market shares will be different. In particular, BT's retail market share will be lower than its wholesale share, reflecting the sale of its wholesale product to EE, as well as other WBA purchasers including both Sky and TalkTalk [✂]Other LLU operators may also sell an (unregulated) wholesale product. As our review of the market focuses on the wholesale level it did not consider details of the retail market shares, including WBA players. EE's national market shares will be provided in our 2015 Communications Market Report next month. This suggests it has [✂], nationally, although its market share may be higher in rural areas where other providers are less active. However, we consider it unlikely that EE or any of the other WBA providers are likely to have a very significant market share in rural areas. We are currently scoping the next WBA market review, and expect to have updated data in the Autumn of 2015.

6.48 As is shown in [redacted] it is important to note that not all cable and fibre broadband connections are capable of providing superfast broadband services (i.e. actual speeds of 30Mbit/s or higher). For example, the speed achievable on a fibre-to-the-cabinet (FTTC) line will depend upon the length and quality of the copper connection from the street cabinet to the user's premises, as is the case with ADSL (these limitations do not apply to cable and fibre-to-the-premises services).

[✂]

6.49 We note that [✂][105] While this data was published by Ofcom, the original source for this data was Enders Analysis. We set out below, in [redacted], our own data gathered from operators. This sets out the shares of the top five providers of these services, in terms of lines, up to the end of 2014. [✂]

[✂]

6.50 This shows that Virgin and BT have historically had the largest shares of connections with a headline speed ≥30Mbit/s. The step increase in Virgin's share in Q3 2012 is as a result of its speed doubling initiative.

6.51 However, these shares of supply should be interpreted carefully. We noted in the VULA Margin Statement that the period covered by the current market review is likely to be an important stage in the migration to superfast broadband, with take-up anticipated to increase significantly. We suggested this period of high expected take-up of (and transition to) superfast broadband represents a disruption to the market and so is likely to present an opportunity for retailers to win customers from their rivals.[106]

6.52 [✂]

6.53 We note [✂]. We note that BT has been winning a substantial share of VULA-based retail superfast broadband subscribers.[107] Accordingly BT's high current share may be the reason why [✂] rather than the increment as a result of the merger. However we have not seen the data [✂] relies upon and are thus not in a position to confirm this.

6.54 Overall, therefore, it seems that EE has [✂] a very small share of the superfast broadband segment[108] across the UK. Although BT has a large share, in the light of other operators' shares it therefore seems unlikely that the merger would give

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[105] [✂]

[106] This is because if a customer is considering switching from standard broadband to superfast broadband, this indicates that they are already engaged with the switching process. It thus seems plausible that a consumer will be more willing to consider an alternative supplier (although we acknowledged that this will not necessarily always be the case). This was one of the factors which we took into account in deciding to impose our VULA margin regulation (see VULA Margin Statement paragraphs 3.68-3.74).

[107] See, for example, VULA Margin Statement paragraphs 3.53-3.55.

[108] We note that EE has a relatively small share of the broadband market overall. We can provide data on current market shares in the broadband market if this would assist the CMA.

rise to competitive concerns because of the elimination of EE as an independent competitor in superfast broadband.

## Annex 1

# Glossary

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| **21st Century Network (21CN)** | BT's next generation network upgrade. |
| **Access Serving Node (ASN)** | A type of BT local exchange that BT has designated for backhaul aggregation. There are around 1,100 ASNs in the UK. |
| **Alternative Interface (AI)** | Leased line services typically using an Ethernet interface. |
| **Alternative interface symmetric broadband origination (AISBO)** | Leased line terminating segment typically using an Ethernet interface. |
| **Asymmetric Digital Subscriber Line (ADSL)** | A variant of DSL that supports higher bandwidth on downlink transmissions, i.e. from the exchange to the end user than from the end user to the exchange. |
| **Backhaul** | Connections between access nodes and core nodes. |
| **Bandwidth** | In digital telecommunications systems, the rate measured in bits per second (bit/s), at which information can be transferred. |
| **Business Connectivity Market Review 2013 (BCMR 2013)** | Ofcom's market review of business connectivity services last completed in 2013. Its measures are applicable over the period 1 April 2013 to 31 March 2016. |
| **Business Connectivity Market Review 2016 (BCMR 2016)** | Ofcom's current market review of business connectivity services. It is currently at the consultation stage and is due to be completed in 2016. The measures it introduces will apply from 1 April 2016 to 31 March 2019. |
| **Central London Area (CLA)** | The geographic market covering areas of central London where there are many rival networks to BT in close proximity to businesses. It is defined fully in 4.3.3 of the May 2015 BCMR Consultation. |
| **Contemporary Interface (CI) leased lines** | Any AI or MI leased line. |
| **Contemporary Interface Symmetric Broadband** | AISBO and MISBO services at all bandwidths. |

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| **Origination (CISBO)** | |
| **Communications Provider (CP)** | An organisation that provides electronic communications services. |
| **Consumer price index (CPI)** | The consumer price index (CPI) is a measure of inflation. It measures changes in the price level of consumer goods and services purchased by households. The most significant item excluded in the CPI, but included in the RPI, is mortgage interest rate payments. |
| **Core Network** | Network containing a number of major nodes connected together by high bandwidth links. |
| **Cost Volume Elasticity (CVE)** | The percentage increase in operating costs for a 1% increase in volume. |
| **Current Generation Access (CGA)** | A copper-based access network that can support a maximum download speed of 24 Mbit/s. |
| **Equivalence of Input (EOI)** | A remedy designed to prevent a vertically-integrated company from discriminating between its competitors and its own business in providing upstream inputs. This requires BT to provide the same wholesale products to all CPs including BT's own downstream division on the same timescales, terms and conditions (including price and service levels) by means of the same systems and processes, and includes the provision to all CPs (including BT) of the same commercial information about such products, services, systems and processes. |
| **Ethernet** | A packet-based technology originally developed for and still widely used in Local Area Networks. Ethernet networking protocols are defined in IEEE 802.3 and published by the Institute of Electrical and Electronic Engineers. Developments of this technology known as Metro Ethernet or Carrier Ethernet are now being used in communications providers' networks to provide leased line and backhaul services. |
| **Ethernet Access Connect (EAC)** | A BTW Ethernet product that is similar to resale of an Openreach EAD product. |
| **Ethernet Access Direct (EAD)** | A wholesale BT Ethernet product offered by Openreach providing high bandwidth, point-to-point connections. |

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| **Ethernet Access Direct Local Access (EAD-LA)** | A wholesale BT Ethernet product offered by Openreach providing high bandwidth, point-to-point connections over short distances to local exchanges. |
| **Ethernet Backhaul Direct (EBD)** | A BT wholesale Ethernet backhaul product providing high bandwidth, inter-exchange connectivity between designated BT exchanges. |
| **Equality of Access Board (EAB)** | The Board that monitors Openreach's performance over providing access on an equivalent level. |
| **Equality of Access Office (EAO)** | The Equality of Access Office (EAO) monitors BT's delivery of the Undertakings on behalf of the EAB. It also assesses complaints from communications providers and manages a programme of stakeholder engagement on behalf of the EAB. |
| **Fixed Access Market Reviews (FAMR)** | Ofcom's review of the following markets (as defined in those reviews): wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. |
| **Fibre-to–the-Cabinet (FTTC)** | An access network structure in which the optical fibre extends from the exchange to the street cabinet. The street cabinet is usually located only a few hundred metres from the subscriber's premises. The remaining part of the access network from the cabinet to the customer is usually copper wire but could use another technology, such as wireless. |
| **Fibre-to-the-Premises (FTTP)** | An access network structure in which the optical fibre network runs from the local exchange to the end user's house or business premise. The optical fibre may be point-to-point – there is one dedicated fibre connection for each home – or may use a shared infrastructure such as a GPON. Sometimes also referred to as Fibre To The Home (FTTH). |
| **Gigabits per second (Gbit/s)** | A measure of bandwidth in a digital system (1 Gigabit = 1,000,000,000 bits). |
| **Generic Ethernet Access (GEA)** | BT's wholesale non-physical product providing CPs with access to higher speed broadband products |
| **Hull Area** | The area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and Kingston Communications (Hull) plc. |

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| **Internet Service Provider (ISP)** | An organisation that provides internet access services |
| **ISDN2** | Integrated Service Digital Network standard, providing a connection to the end customer (usually over a copper access network) comprising two 64kbit/s digital channels. |
| **ISDN30** | A digital telephone service that provides up to the equivalent of 30 analogue lines over a common digital bearer circuit. These lines provide digital voice telephony, data services and a wide range of ancillary services. |
| **Kilobits per second (kbit/s)** | A measure of bandwidth in a digital system (1 kilobit = 1,000 bits). |
| **Leased line** | A permanently connected communications link between two premises dedicated to the customers' exclusive use. |
| **Local Loop Unbundling (LLU)** | A process by which a dominant provider's local loops are physically disconnected from its network and connected to competing provider's networks. This enables operators other than the incumbent to use the local loop to provide services directly to customers. |
| **Local Loop Unbundling (LLU) backhaul circuit** | A circuit provided by BT that enables the connection of a communications provider's DSLAM to a communications provider's point of connection with BT's SDH network. |
| **Local Serving Exchange (LSE)** | A building at which local loops are terminated and which also houses telecommunications network and switching equipment. |
| **Long Run Incremental Cost (LRIC)** | The cost caused by the provision of a defined increment of output given that costs can, if necessary, be varied and that some level of output is already produced. |
| **Managed Ethernet Access Service (MEAS)** | This is a managed Ethernet product offered by BT Wholesale that provides full end-to-end service and utilises BT's 21CN network. |
| **Metallic Path Facility (MPF)** | The provision of access to the copper wires from the customer premises to a BT MDF that covers the full available frequency range, including both narrowband and broadband channels, allowing a competing provider to provide the customer with both voice and/or data services over such copper wires. |

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| **Mobile Infill Infrastructure Solution (MiiS)** | A service offering access to BT's telegraph poles and other infrastructure in its access network for micro radio cells. The product comprises: access to selected Openreach telegraph poles; access to Openreach's radio antenna attached to the pole; connection to a powered street cabinet; and space within the street cabinet for the customer's own equipment. |
| **Mobile Network Operator (MNO)** | A provider of mobile communications services which owns a radio access network. |
| **Mobile Virtual Network Operator (MVNO)** | A provider of mobile communications services which does not own a national network themselves, but instead provides all or part of their mobile phone services over network infrastructure owned by an MNO. For example: Tesco Mobile or Asda. |
| **Mobile switching Centre (MSC)** | A component of a mobile telephone network that switches voice calls between mobile users |
| **Multiple Interface (MI) leased lines** | Leased line services with bandwidths greater than 1Gbits/s and leased lines services of any bandwidth delivered using WDM equipment at the customer's premises. |
| **Multiple Interface Symmetric Broadband Origination (MISBO)** | Leased line terminating segments supporting high bandwidth services –either an Ethernet interface with bandwidths greater than 1Gbit/s or services of any bandwidth/interface delivered using WDM equipment at the customer's premises. |
| **Next generation access (NGA)** | A new or upgraded access network capable of supporting much high capacity broadband services than traditional copper access networks. Generally an access network that employs optical fibre cable in whole or in part. |
| **Next Generation Network (NGN)** | An IP based multi-service network capable of providing voice telephony, broadband and other services. |
| **Point of Handover (POH)** | A point where one communications provider interconnects with another communications provider for the purposes of connecting their networks to 3rd party customers in order to provide services to those end customers. |
| **Point of Presence (POP)** | A node in a CPs network (such as an exchange or other operational building), generally one used to serve customers in a particular locality. |

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| **Points of Connection (POC)** | A point where one communications provider interconnects with another communications provider for the purposes of connecting their networks to 3rd party customers in order to provide services to those end customers. |
| **Public Switched Telephone Network (PSTN)** | A telecommunications network that uses circuit switched technology to provide voice telephony services. |
| **Radio Base Station (RBS) backhaul circuit** | A circuit provided by BT that connects a mobile communications provider's base-station to a mobile communications provider's mobile switching centre. |
| **Reference Offer** | The terms and conditions on which BT is willing to enter into an agreement for the provision of network access in accordance with its SMP Condition to provide access on reasonable request. |
| **Regulatory Financial Statements** | The financial statements that BT is required by Ofcom to prepare, have audited and publish. |
| **Service Level Agreement (SLA)** | A contract between a network service provider and a customer that specifies, usually in measurable terms, what services the network service provider will furnish. |
| **Service Level Guarantee (SLG)** | A contractual agreement specifying the compensation payable if the service provider fails to deliver the agreed service performance. |
| **Shared metallic path facility (SMPF)** | The provision of access to the copper wires from the customer's premises to a BT MDF that allows a competing provider to provide the customer with broadband services, while the dominant provider continues to provide the customer with conventional narrowband communications. |
| **Significant Market Power (SMP)** | A position where a firm can act in a market in a way which is independent of its competitors and customers to a significant degree. It is manifest by an ability to price above the competitive level. |
| **SSNIP** | Small but Significant Non-transitory Increase in Price, usually considered to be 5 to 10 per cent, which is part of the hypothetical monopolist test used in market definition analysis. |

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| **Statement of Requirements (SoR)** | Process which BT is required to publish and follow to address requests for new forms of network access |
| **Synchronous Digital Hierarchy (SDH)** | A digital transmission standard that is widely used in communications networks and for leased lines. |
| **The Act** | The Communications Act 2003. |
| **The LLCC Consultation** | The forthcoming consultation on charge controls for leased lines services, forming part of this market review. |
| **Traditional Interface (TI) Leased Lines** | Leased lines services with an ITU G.703 Interface. |
| **Traditional interface symmetric broadband origination (TISBO)** | Leased line terminating segment with an ITU G.703 interface. |
| **Undertakings** | The Undertakings are legally binding Undertakings given by BT to Ofcom in 2005 following Ofcom's strategic review of the telecommunications sector. |
| **Virtual Unbundled Local Access (VULA)** | An access remedy first imposed by Ofcom in the 2010 WLA Statement that requires BT to provide access to its NGA network in a way that is similar to LLU. It provides a connection from the nearest 'local' aggregation point to the customer premises. |
| **Wavelength Division Multiplex (WDM)** | An optical frequency division multiplexing transmission technology that enables multiple high capacity circuits, to share an optical fibre pair by modulating each on a different optical wavelength. |
| **Western, Eastern, Central and East London Area (WECLA)** | The geographic market defined by Ofcom in the BCMR 2013. |
| **Wholesale Broadband Access (WBA) Market** | The wholesale market for fixed broadband services. |
| **Wholesale Line Rental (WLR)** | A remedy that requires BT to rent telephone lines to CPs on a wholesale basis. |
| **Wholesale Local Access** | The wholesale market for fixed telecommunications |

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| **(WLA) Market** | infrastructure, specifically the physical connection between end users' premises and a local exchange. |