



Mobile call termination market review 2018-21

Consultation

Publication date: 27 June 2017

Closing Date for Responses: 5 September 2017

About this document

Mobile call termination (MCT) is a wholesale service provided by a mobile provider to connect a call to a customer (i.e. call recipient) on its network. When fixed or mobile providers enable their customers to call a UK mobile number, they pay the mobile provider which terminates the call a wholesale charge, namely a 'mobile termination rate' (MTR). MTRs are set on a per-minute basis and are currently subject to regulation.

This consultation document seeks stakeholders' views on our proposals for regulation of the wholesale MCT market for the period 1 April 2018 – 31 March 2021. The purpose of this review is to assess competition in the provision of MCT and to consider the appropriate form of *ex ante* regulation, if any, that should be imposed in this market to protect consumers of both fixed and mobile services from any harm arising from market power.

The consultation closes on 5 September 2017.

We plan to notify the European Commission of our final decision on MCT regulation by February 2018 and to publish a statement by March 2018.

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Section 1

Summary

- 1.1 Mobile call termination ('MCT') is a wholesale service provided by a mobile provider to connect a call to a customer (i.e. call recipient) on its network. When fixed or mobile providers enable their customers to call a UK mobile number, they pay the mobile provider which terminates the call a wholesale charge, namely a 'mobile termination rate' (MTR). MTRs are set on a per-minute basis and are currently subject to regulation.¹
- 1.2 This consultation document seeks stakeholders' views on our proposals for regulation of the wholesale MCT market for the period 1 April 2018 – 31 March 2021. The purpose of this review is to assess competition in the provision of MCT and to consider the appropriate form of *ex ante* regulation, if any, that should be imposed in this market to protect consumers of both fixed and mobile services from any harm arising from market power.

Our proposals for regulation

- 1.3 We propose to define the markets as in previous reviews and our preliminary finding is that there are 80 markets, each corresponding to a provider able to set a termination charge for calls to the UK mobile numbers allocated to it by Ofcom.² We propose that there are no sufficiently close substitutes for termination of calls to mobile numbers for us to widen the market definition, nor are any likely to emerge over the period covered by this review. This means that, for example, voice calls terminated using Facetime, Skype or WhatsApp are not part of the relevant market.
- 1.4 We propose to designate each provider holding UK mobile numbers as having significant market power (SMP) with respect to the (wholesale) market for terminating calls to the numbers it controls. This recognises the commercial reality that control of the number range provides the mechanism by which each provider can price termination for these calls or refuse to allow other providers to connect calls to these numbers. Applying this approach means that we propose that 80 mobile providers would be designated with SMP.³ The list of such providers is set out in Annex 13.
- 1.5 We propose to regulate all providers who have SMP by imposing only two of the four remedies that are currently imposed in this market, namely:
- 1.5.1 *An access obligation*: An obligation to provide network access on fair and reasonable terms and conditions;
 - 1.5.2 *A charge control*: A single maximum cap on MTRs based on the long-run incremental cost (LRIC) of MCT, the proposed levels of which are summarised in the table below:

¹ Our latest statement "Wholesale mobile voice call termination" ('the 2015 MCT Statement') was published on 17 March 2015 and is available on the following link together with the current regulated MTRs: https://www.ofcom.org.uk/data/assets/pdf_file/0029/76385/mct_final_statement.pdf

² UK mobile numbers are defined, for the purposes of this review, as numbers in the format 07xxx xxx xxx and beginning 071 to 075 and 077 to 079.

³ We also propose that the relevant markets and SMP designation would include any other mobile provider, if any, which is in receipt of a relevant Ofcom number allocation and providing (or planning to provide) MCT at the time of our Statement in March 2018.

Table 1: Current MTR, forecast LRIC of MCT and consultation range (ppm)

	From 1 April 2017	From 1 April 2018	From 1 April 2019	From 1 April 2020
Current MTR (nominal)	0.495			
Cost (2015/16 prices)	0.489	0.468	0.449	0.433
Range (2015/16 prices)		0.355–0.602	0.338–0.583	0.323–0.567

Source: 2017 MCT model.

- 1.6 We have considered whether it remains appropriate to impose a no undue discrimination obligation on the four largest providers⁴ and a set of general price transparency obligations on all providers with SMP and have come to a provisional view that neither is necessary.
- 1.7 As part of this review we have also considered whether the same price obligation should apply to all calls, including those originated outside the European Economic Area ('non-EEA calls'). We are aware that some European countries apply a differential approach meaning that these calls are subject to different regulation from domestic calls, or are unregulated. Certain mobile providers have raised concerns to us relating to high termination rates set by some providers in countries outside the EEA.
- 1.8 Our provisional view is that the same controlled rate should apply to all calls to UK mobile numbers regardless of origin. While there may in principle be some benefits from differential regulation which might justify departing from our proposal to cap termination rates at LRIC, these depend on where rates would settle and whether any benefits are passed from the mobile providers to consumers. In particular, for the benefits to be material, it requires either:
- high termination rates in other countries being reduced through negotiation and pass-through of these cost reductions to UK retail call prices; or
 - a waterbed effect whereby higher wholesale revenues for UK mobile providers are used to reduce retail prices for UK consumers or to invest more in UK mobile networks to the benefit of consumers.
- 1.9 Our assessment at this stage is that these benefits are either unlikely to materialise or would be small. In addition, there are risks that allowing UK mobile providers to set higher MTRs could have negative consequences for consumers, particularly if it led to a 'race-to-the-top' in setting MTRs, or contagion to countries where there are currently reciprocal low rates. A likely increase in UK MTRs, owing to differential regulation, is liable to cause a reduction in calls to UK consumers from outside the EEA.

Approach for this review

- 1.10 We have considered the appropriate approach to take in this review and the remedies we might impose in the current circumstances and those likely to apply over the period covered by the review. We are concerned to make sure the process

⁴ The four largest providers are EE, H3G, Telefónica and Vodafone. These providers operate a fully-deployed national mobile network, including both a radio access network and a core network; they have independent control of spectrum, and operate in both the wholesale and retail markets.

and the outcome protect consumers' interests while imposing no more burden than is necessary. In our Strategic Review of Digital Communications we explained that, while we will seek opportunities to simplify the regulation of call termination, we thought it likely that protection against high termination charges would continue to be necessary. This would reflect the likelihood of continued SMP.⁵

- 1.11 Since we began regulating this market, we have found that mobile providers have market power in the provision of termination services. This is mainly because, when a call is made to a mobile network, the caller, or the originating provider, has no other choice than buying termination services from, and paying the MTR set by, the terminating mobile provider for that call. If unregulated, mobile providers have strong incentives to set a very high termination charge. This in turn may significantly increase retail prices to call mobile numbers (both fixed and mobile) because of direct pass-through from the higher wholesale charge or because of competitive distortions created by excessive MTRs.
- 1.12 MTRs were relatively high in the past. Terminating a minute of a voice call on a mobile network cost on average more than 13 pence per minute (ppm) in 1998, driving high retail prices for mobile voice calls. With our regulatory intervention and reductions in the cost of provision, MTRs have been progressively decreasing, dropping to around 0.5ppm today – which reflects the estimated incremental cost of terminating a call with today's technology. Meanwhile, mobile voice retail pricing has evolved so that monthly tariffs now typically include a large number or unlimited voice minutes. UK consumers are often unaware of the wholesale charge paid by their provider to terminate calls to their mobile phone.
- 1.13 MTR reductions combined with reductions in call volumes from fixed-to-mobile networks make the MCT market worth less today than at the time of our previous reviews. In 2016-17 the total revenues from mobile wholesale termination in the UK were around £345m. This reduces to around £85 million if we exclude mobile-to-mobile calls (i.e. include only "net" termination).⁶ Considering that the total UK retail mobile revenues amounted to £15.2 billion in 2015, net termination now accounts for a small proportion of mobile providers' total revenues (net termination represents around 0.5% of UK retail mobile revenues).⁷
- 1.14 There has also been a shift in consumer demand. Latest market developments show that voice is less important in driving retail competition, being offered in unlimited or large call allowances that are part of many SIM-only and post-pay contracts. Consumers increasingly use mobile networks for data connectivity: mobile data use has seen unprecedented growth in recent years. This has been mainly driven by an increase in penetration of smartphones and the increased availability of 4G technology which provides a better user experience for data services.
- 1.15 Our provisional view is that there are opportunities in this review to simplify the approach we take, and the remedies we propose, applying a lighter touch where appropriate.

⁵ Paragraph 8.5 of Ofcom Statement "Initial conclusions from the Strategic Review of Digital Communications", https://www.ofcom.org.uk/_data/assets/pdf_file/0016/50416/dcr-statement.pdf

⁶ Termination revenues are obtained by considering total and net termination volumes of 68.79 and 17.19 billion, respectively and the 2016-17 MTR of 0.503ppm. Volumes refer to the four largest mobile providers and include traffic carried on behalf of, or for, MVNOs or other third parties.

⁷ For retail revenues see Ofcom, *Telecommunications market data tables Q4 2017*, 27 April 2017, https://www.ofcom.org.uk/_data/assets/pdf_file/0014/101408/telecoms-data-update-q4-2016.pdf

- 1.16 A number of the fundamental issues involved in MCT regulation, such as the LRIC cost standard to be applied to the charge control for MTRs, have been considered in detail in successive reviews and are now more settled.
- 1.17 Also, in the next three to four years we do not foresee that any significant network investments or the deployment of a new generation of mobile technology (such as 5G) would have a significant impact on the MCT market.⁸ This differs from the 2015 MCT review, when our analysis considered for the first time the deployment of 4G networks and the trend in the UK mobile industry of more use of network sharing.
- 1.18 Taking the 2015 MCT model as the starting point, we have considered whether it continues to provide a reasonable basis to model MCT costs for this review period. To answer this question, we have identified the key inputs to the 2015 MCT model (technology choice, subscription information, network traffic volumes and forecasts for traffic growth) and investigated the likely impacts of updating them on the model results. Having done so, we have found that updating the key input data and assumptions would not materially affect the 2015 MCT model outputs and consequently we propose to use that model to calculate the MTR cap for the 2018-2021 review period.
- 1.19 We have also considered whether all the remedies previously imposed remain appropriate and proportionate, or whether there is scope to remove or simplify them. Having done so, as set out above, we are now consulting on removing two of the four remedies currently in place and retaining only a network access obligation and a charge control.

⁸ 5G is the term used to describe the next generation of wireless technologies beyond 4G. 5G is expected to deliver faster data rates, and better user experience. Technical standards are still under development and are likely to include both an evolution of existing and new radio technologies.

Section 2

Introduction and background

Structure of the Document

2.1 The consultation consists of six main sections and 14 supporting annexes:

- Section 1 summarises our provisional conclusions and proposals;
- In this Section 2 we set out the background to the review, including the regulatory framework, the process we followed to gather evidence, our impact assessment and a recap on the current regulation in the UK and Europe;
- In Section 3 we set out our provisional decisions on market definition in relation to wholesale MCT and on determining which providers in these markets have SMP;
- In Sections 4 to 6, we consider which remedies to impose given our provisional conclusions on SMP. Section 4 proposes the appropriate remedies, including that among others a charge control would be necessary and appropriate and what cost standard should be used for that charge control. The level of the proposed charge control is set out Section 5. Section 6 concludes with the details concerning the proposed implementation of the charge control and how we will assess compliance;
- Annexes support the analysis in the main body of the document and are an integral part of our reasoning. Annex 1 sets out how to respond to the consultation; Annex 2 our consultation principles; Annex 3 our consultation questions; Annex 4 our equality impact assessment; Annex 5 our regulatory framework; Annex 6 our approach to market definition and SMP; Annex 7 the draft legal instrument; Annex 8 our approach to smaller MCT providers; Annex 9 our modelling analysis; Annex 10 our approach to the Weighted Average Cost of Capital (WACC); Annex 11 our approach to Non-EEA calls; Annex 12 the model outputs and sensitivities; Annex 13 the provisional list of companies with SMP; and Annex 14 the glossary.

Regulation of MCT in the UK

Mobile Call Termination Rates

- 2.2 One of the services that network operators offering voice services provide to each other is call termination – that is, the completion of a call from a customer of another network. MCT is the service provided by a mobile provider which is necessary for an originating provider to connect a caller with the intended mobile call recipient on that mobile provider's network. Under current interconnection practices in the UK the originating provider pays an amount (known as the mobile termination rate or MTR) to the mobile provider providing the voice call termination service.
- 2.3 Typically, each provider is able to set a charge for connecting calls to its own customers. Historically, as part of the EC Framework, National Regulatory Authorities (NRAs), including Ofcom, have found that each provider has SMP with respect to call termination and have regulated fixed and mobile termination rates, typically capping them at cost-related rates.

The 2015 MCT Statement

- 2.4 We completed our last review of the MCT markets in 2015. In that decision (the ‘2015 MCT Statement’), we identified 72 separate markets, each corresponding to a mobile provider able to set an MTR for calls to the UK mobile numbers allocated to it by Ofcom. We designated each undertaking holding UK mobile numbers as having SMP with respect to the (wholesale) market for terminating calls to such numbers.
- 2.5 We imposed the following remedies on all 72 MCT providers designated with SMP:
- i) a network access obligation (on reasonable request on fair and reasonable terms and conditions);
 - ii) a charge control set using the LRIC cost-standard (which for the first time applied to all MCT providers not just the four largest); and
 - iii) a price transparency obligation.
- 2.6 We also imposed a no undue discrimination obligation on the four largest mobile providers.

The Strategic Review of Digital Communications 2016

- 2.7 In the Strategic Review of Digital Communications we said that we will continue to look for opportunities to simplify regulation on call termination, but it is likely that some form of protection against high termination rates will continue to be necessary.⁹

Regulation of fixed termination rates

- 2.8 In December 2016, we published our Narrowband Market Review Consultation which includes wholesale fixed geographic call termination.¹⁰ In that consultation, amongst other remedies, we proposed a charge control, based on LRIC, on the FTRs charged by all telecoms providers that have SMP in wholesale fixed call termination. This will replace our current approach where BT is subject to a charge control, while other providers with SMP are subject to a fair and reasonable charges requirement.

MCT market players

- 2.9 There are four mobile providers with national radio access networks (RANs), who have control of spectrum and operate in both the wholesale and retail markets.¹¹ We refer to these providers (EE, Vodafone, Telefónica and H3G) as the ‘four largest mobile providers’.
- 2.10 There are also a large number of smaller MCT providers (of varying size and scope) which provide various types of mobile communications services using mobile number ranges allocated to them by Ofcom, but are not the same size and scope as the four

⁹ See paragraph 8.5 of the Initial conclusions from the Strategic Review of Digital Communications.

¹⁰ https://www.ofcom.org.uk/_data/assets/pdf_file/0016/95011/Narrowband-Market-Review.pdf

¹¹ There are two national RAN sharing agreements: EE and H3G share their RANs through the joint venture company Mobile Broadband Network Ltd (MBNL), and Vodafone and Telefónica share their RANs through the joint venture company Cornerstone Telecommunications Infrastructure Ltd (CTIL).

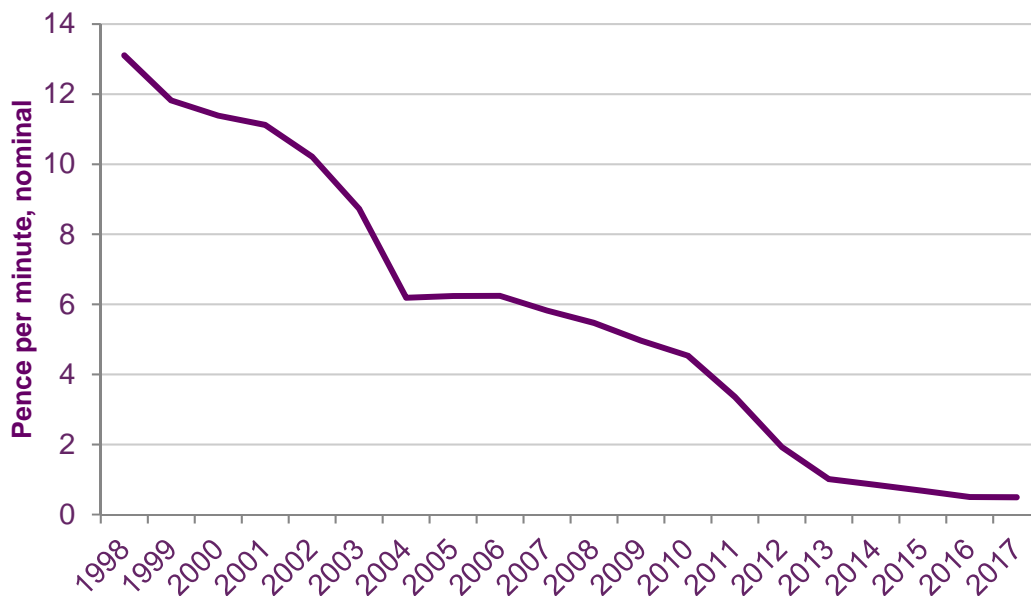
largest mobile providers. Some mobile providers combine infrastructure rollout with roaming or other wholesale arrangements to provide a mobile service.¹²

2.11 We refer to providers using over the top (OTT) services to terminate calls to their mobile numbers as *asset-light* MCT providers. By this we mean that these are mobile providers who provide MCT without using the full technological infrastructure such as is used by the four largest mobile providers. *Asset-light* MCT providers would not operate, or themselves directly incur the costs of operating, a RAN or radio spectrum licences.

Regulation of MTRs in the UK and Europe

2.12 MTRs in the UK have decreased significantly over recent years. In 1998, the average MTR was more than 13ppm, driving high retail prices for mobile voice calls. With our regulatory intervention and reductions in the cost of provision, MTRs have been progressively decreasing, dropping to around 0.5ppm today – which reflects the estimated incremental cost of terminating a call with today’s technology. The decrease in MTRs is shown in Figure 1 below.

Figure 1: Average MTR in the UK (nominal pence per minute, weighted by subscriber numbers)



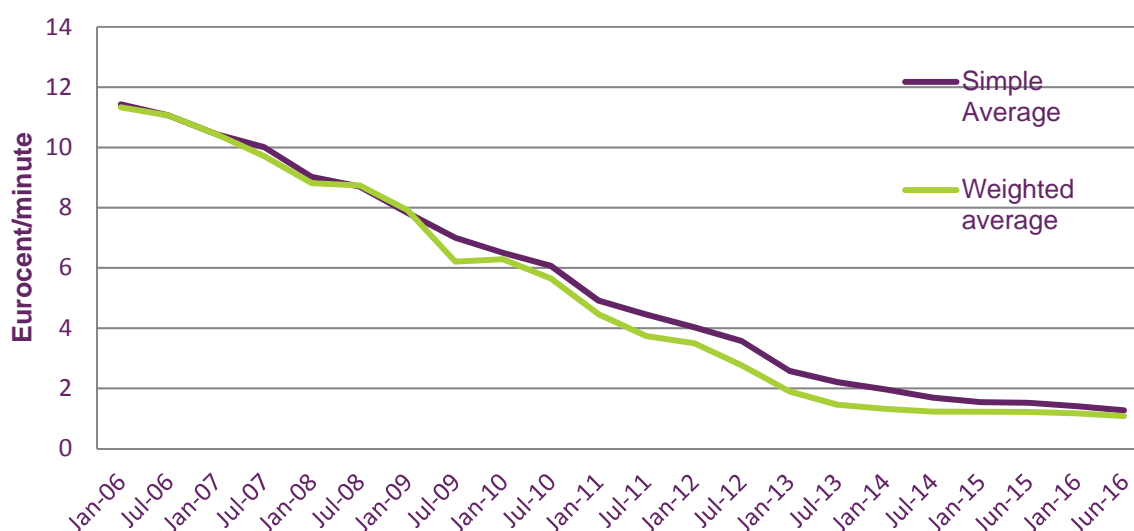
Source: Ofcom.

2.13 Our review concerns the markets for MCT in the UK and as such is based on the specific national circumstances that characterise these markets. However, since this review is conducted under our duties within the European Framework, we include here some information about regulation of MCT in other European countries.

¹² Some mobile providers are often referred to as mobile virtual network operators (MVNOs), e.g. Tesco, Virgin Media, Asda, and GiffGaff. Typically MVNOs do not operate their own RAN but rely on that of one of the four largest mobile providers, but there is no generally accepted definition of an MVNO. Not all MVNOs have their own allocation of UK mobile numbers and some MVNOs act as resellers of services provided by other mobile providers on UK mobile numbers allocated to those other mobile providers.

- 2.14 According to the latest European benchmark, the simple average MTR in Europe stands at 1.27 eurocents per minute, and the subscriber weighted average is estimated at 1.08 eurocents per minute.¹³
- 2.15 As with the UK trend identified in Figure 1 above, the average MTR in Europe has declined significantly in the last 10 years from about 11.5 eurocents per minute to less than 1.3 eurocents per minute as shown in Figure 2 below.

Figure 2: Average MTRS in Europe - time series



Source: BEREC, Termination rates at European level, July 2016.

Regulatory framework

- 2.16 The applicable regulatory framework (known as the Common Regulatory Framework or ‘CRF’) has its basis in five EU Communications Directives (‘the Directives’) each of which has been implemented into national legislation.¹⁴ It imposes a number of obligations on NRAs, such as Ofcom. One of these obligations is to carry out various market reviews, including of the market for voice call termination on individual mobile networks. The Communications Act 2003 (‘the Act’) also sets out our duties when performing our functions, including our principal duty to further the interests of citizens in relation to communications matters and the interests of consumers in relevant markets, where appropriate by promoting competition. We set out the regulatory framework and the market review process in more detail in Annex 5 and 6. In this section we set out, in summary, what the market review process involves.

The market review process

- 2.17 A market review is carried out in three stages:
- i) we first identify and define the relevant markets, appropriate to national circumstances;

¹³ http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/6603-termination-rates-at-european-level-july-2016

¹⁴ The harmonised EU regulatory framework for electronic communications was amended in 2009. Those amendments to the Directives were transposed into national legislation and came into effect from 26 May 2011.

- ii) we then carry out analysis of these markets to determine whether they are effectively competitive, which involves assessing whether any operator has SMP in any of the relevant markets; and
- iii) we finally assess the appropriate remedies where there has been a finding of SMP (known as SMP obligations or conditions), based on the nature of the competition problem identified in the relevant markets.

2.18 In carrying out a market review, NRAs are required to define markets “appropriate to national circumstances, in particular relevant geographic markets within their territory, in accordance with the principles of competition law”.¹⁵ In doing so, the Framework Directive requires that NRAs shall take “utmost account” of the European Commission’s Recommendation on Relevant Product and Service Markets (‘2014 EC Recommendation’)¹⁶ and SMP Guidelines.¹⁷ In deciding on remedies, we are required to take utmost account of recommendations issued by the EC under Article 19(1) of the Framework Directive, including the 2009 Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates (‘2009 EC Recommendation’).¹⁸

The 2014 EC Recommendation

2.19 The Commission Recommendation on relevant markets (2014/710/EU)¹⁹ of 9 October 2014, which replaces the 2007 EC Recommendation, sets out products and services markets which, at the European level, the EC has identified as being susceptible to *ex ante* regulation. These markets are identified on the basis of the cumulative application of three criteria:

- i) the presence of high and non-transitory barriers to entry;
- ii) a market structure which does not tend towards effective competition within the relevant time horizon; and
- iii) the insufficiency of competition law alone to adequately address the market failure(s) concerned.

¹⁵ See Article 15(3) of Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (as amended by Directive 2009/140/EC), 7 March 2002 (‘the Framework Directive’), <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02002L0021-20091219&qid=1399985618659&from=EN>

¹⁶ Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to *ex-ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (2014/710/EU), which replaces the corresponding Commission Recommendation of 17 December 2007 (2007/879/EC), <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014H0710&from=EN>

¹⁷ 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 (‘the SMP Guidelines’), <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF>

¹⁸ Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC), 7 May 2009 (‘2009 EC Recommendation’), <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:124:0067:0074:EN:PDF>

¹⁹ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.295.01.0079.01.ENG

- 2.20 The markets identified in the 2014 EC Recommendation include those for wholesale voice call termination on individual mobile networks. Together with the 2014 EC Recommendation, the Commission has also adopted a revised Explanatory Note.²⁰

The SMP Guidelines and their application to this review

- 2.21 The SMP Guidelines include guidance on market definition, assessment of SMP and SMP designation. Where relevant, we have also had regard to the revised working paper on SMP published by the European Regulators Group (now replaced by BEREC) in 2005 ('the ERG SMP Position').²¹ In the relevant sections below we set out how we have taken the ERG SMP Position into account in reaching our proposals.

The 2009 EC Recommendation

- 2.22 In 2009, the European Commission issued a Recommendation of the Regulatory Treatment of Fixed and Mobile Termination Rates under Article 19(1) of the Framework Directive.²² This recommends that Member States adopt a common approach when setting price controls in termination markets.
- 2.23 The 2009 EC Recommendation favours setting regulated termination rates using a bottom-up long-run incremental cost (bottom-up LRIC) model. The 2009 EC Recommendation also outlines the EC's view that termination rates should be symmetrical, i.e. set at the same level for all MCT providers.

Forward look

- 2.24 Rather than just looking at the current position, market reviews look at how competitive conditions might change over the period covered by the review. For this review we have taken a forward looking view of demand, technology and costs and forecast the LRIC of MCT for each of the three years in the period covered by the review, in line with the requirement in the Directives that ordinarily a market review should be conducted within three years of the previous review.
- 2.25 This does not preclude us from reviewing any of the markets sooner, but in the absence of unforeseen developments, we anticipate that we would time the next market review to conclude three years after the completion of the current review. We therefore propose that the remedies in this statement would apply for a period of (at least) three years (noting that the proposed charge control would expire on 31 March 2021, but the network access obligation would remain valid afterwards (and we propose in that case that access charges should be fair and reasonable).

²⁰ See Commission Staff Working Document, Explanatory note, Accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, 9 October 2014 ('Explanatory Note to the 2014 EC Recommendation')

http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?action=display&doc_id=7056

²¹ ERG, *Revised working paper on the SMP concept for the new regulatory framework*, September 2005,

http://berec.europa.eu/doc/publications/public_hearing_concept_smp/erg_03_09rev3_smp_common_concept.pdf.

²² 2009 EC Recommendation.

Evidence-gathering process for this review

2.26 We have based our analysis on evidence gathered during this review and noted throughout the document what sources we have relied upon. The evidence includes information gathered using our statutory powers (under section 135 of the Act), a questionnaire sent to other NRAs regarding their approach to MCT and submissions from stakeholders following conversations about our approach.

Information-gathering using statutory powers (section 135)

2.27 For this market review, we have issued notices under section 135 of the Act ('section 135 information requests') requiring various providers to provide specified information as set out in the notices. These included:

- i) Notices of 16 February 2017 sent to the four largest mobile providers requesting information for our cost modelling, market definition and SMP assessment. We requested information regarding use of technologies, numbers of subscriptions, network traffic, financial information, retail call allowances and termination of calls from outside the EEA. We also requested clarification regarding informal submissions made by mobile providers regarding calls outside the EEA.
- ii) Notices sent on various dates between January 2017 and April 2017 to the 87 providers holding mobile number ranges allocated by Ofcom. We requested information about the use of these numbers, whether MCT was offered on these numbers, the level of MTRs charged, and other information in relation to the business of these providers.
- iii) Notices of 14 June 2017 sent to four providers holding number ranges allocated by Ofcom who are not offering MCT over these number ranges. We requested information about whether these numbers are used for international call forwarding services.

Impact assessment

2.28 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, "Better policy-making: Ofcom's approach to impact assessment", which are on our website.²³

2.29 The analysis in this document is an impact assessment as defined in section 7 of the Act.

Equality Impact Assessment (EIA)

2.30 Annex 4 sets out our Equality Impact Assessment (EIA) for this market review. Ofcom is required by statute to assess the potential impact of all our functions, policies, projects and practices on the following equality groups: age, disability,

²³ https://www.ofcom.org.uk/_data/assets/pdf_file/0026/57194/better_policy_making.pdf

gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation. EIAs also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.

- 2.31 For the reasons explained in Annex 4, we do not expect any of the equality groups to be negatively affected by our proposals to a material extent. We have not carried out separate EIAs in relation to the additional equality groups in Northern Ireland: religious belief, political opinion and dependants. This is because we anticipate that our proposals will not have a differential impact in Northern Ireland compared to consumers in general.

Background on the current provision of MCT

- 2.32 The following paragraphs provide some further background to our review in relation to the latest developments in the provision of MCT. More specifically, to inform our market definition we first recap on the current technical solutions to deliver a voice call over a mobile network and the most recent trends in mobile networks.

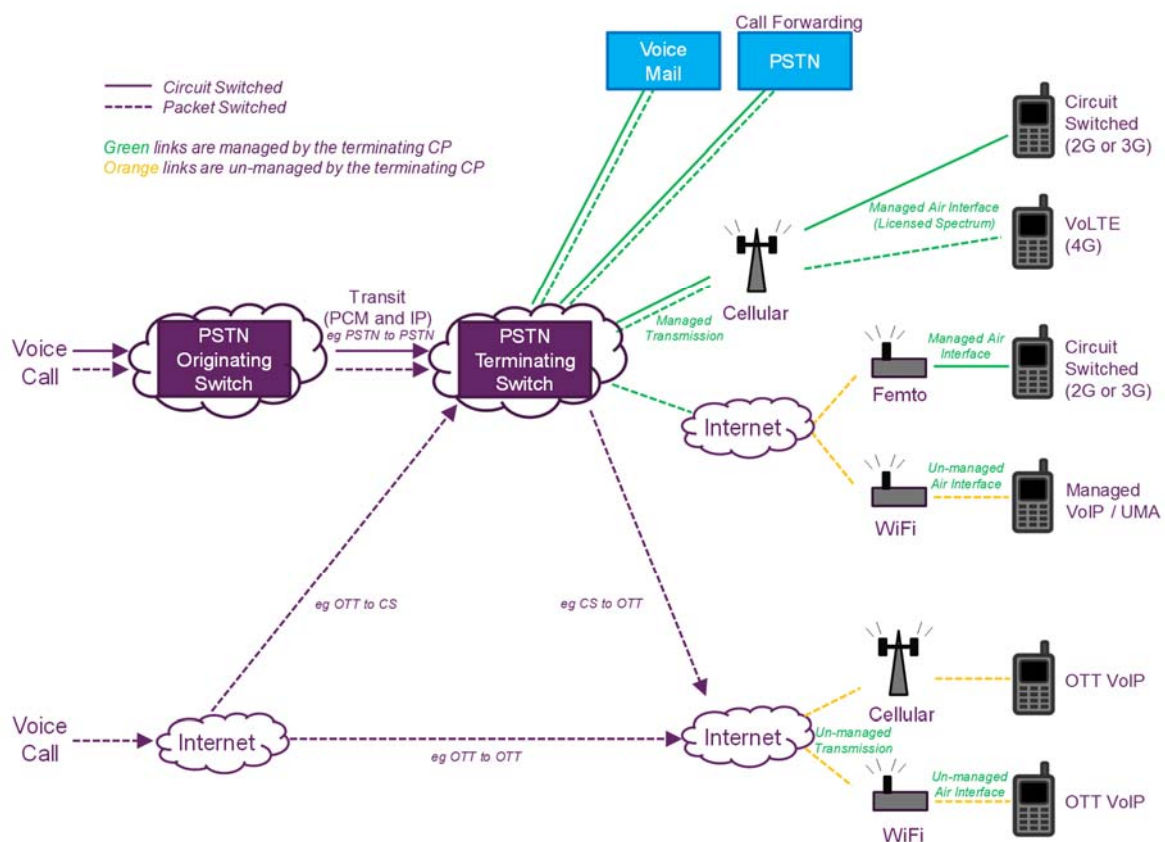
How voice calls are delivered

- 2.33 There are many ways to deliver voice calls to a mobile handset as handsets are increasingly becoming capable of making or receiving voice calls through various radio technologies. Below we describe the typical architecture used to carry voice calls over mobile networks and how this differs in the case of OTT and hybrid voice services. The network architecture is described at a high level, together with examples of the call path through the voice network.
- 2.34 Traditionally voice calls have been carried over public switched telephone networks (PSTNs) using circuit switched (CS) technology.²⁴ In CS networks the communication takes place over a dedicated circuit and as such the call quality can be fully controlled. Recently, some MCT providers have started using packet switched (PS) networks to carry voice. PS networks differ from CS networks in that they group all transmitted data – regardless of content, type, or structure – into suitably sized blocks, called packets, which are routed independently of their respective destinations. This means that in a PS voice call there is no single dedicated network path reserved for the call but, instead, various paths can be used in parallel while other services such as video or data may be carried over the same paths. A PS voice call is typically carried over Internet Protocol (IP) and more commonly referred to as a Voice over IP (VoIP) call.
- 2.35 When a PS voice call is used by MCT providers on managed networks the quality of service (QoS) of the call can be controlled. However, a PS call, in the form of VoIP, can also be delivered through an OTT service whereby the voice packets are carried over an existing data connection provided by a third party. Typically, the underlying data network will provide no prioritisation for the OTT voice packets relative to other data packets and so the OTT voice QoS cannot be guaranteed.

²⁴ A Public Switched Telephone Network (PSTN) refers to a telephony network used to provide telephone calls using (or emulating) circuit-switching and using telephone numbers to identify subscribers or called locations, allowing all customers connected to the network to call all other customers. A PSTN can be either a fixed or a mobile network.

- 2.36 Typically, 2G and 3G technologies carry voice calls over a CS network, however 4G is a PS-only network which does not intrinsically support CS calls.²⁵ MCT providers have mainly been using circuit switched fall back (CSFB) where handsets are instructed to switch from 4G to 3G or 2G when making or receiving voice calls. Since the last review, some MCT providers have launched voice over 4G using the technology of Voice over LTE (VoLTE). MCT providers are also able to originate and terminate a call using Voice over WiFi (VoWiFi), in which case they do not use a 2G, 3G, or 4G RAN. The use of VoWiFi is currently limited and accounts for a small percentage of total traffic.
- 2.37 Figure 3 shows a simplified view of the call paths in both traditional PSTN networks and OTT services. An MTR is levied when a call is routed via a PSTN terminating switch.

Figure 3: Simplified PSTN and OTT Architecture



Source: Ofcom.

- 2.38 As shown in Figure 3 (left part), calls to UK mobile numbers²⁶ can be originated either on a PSTN or over the Internet. The call can then be delivered by using a variety of different technologies (right part). These include (from top to bottom of the picture):

- By forwarding to another PSTN or voice mail.

²⁵ 4G can be used to indicate technologies such as LTE and WiMAX, however LTE is the predominant 4G technology used in the UK. As such, where 4G is referred to in this document, we mean LTE unless otherwise specified.

²⁶ Note that not all mobile numbers are allocated for use in the UK. Some are allocated to mobile providers providing services to customers in the Channel Islands and Isle of Man.

- *Over a traditional cellular network (CS or PS) to a mobile handset with a SIM card.*

If the destination handset is attached via a SIM card to the terminating MCT provider's cellular network then the voice call can be routed over the cellular network. Typically, the network links used for terminating these calls will be fully managed by the provider at all times.

- *Over the internet via a femtocell to a mobile handset with a SIM card.²⁷*

In this situation, the network between the terminating MCT provider and the femtocell may not be managed by the terminating MCT provider so it may not be possible to fully control the QoS of the voice call.

- *Over the internet via VoWiFi to a mobile handset with a SIM card.*

VoWiFi which delivers voice calls over WiFi connectivity is available. Similar to the femtocell scenario above, the MCT provider may not be able to fully control the QoS of the voice call when the call is delivered over a broadband network not directly managed by the same MCT provider.

- *Over the internet to a mobile handset using an application.*

Mobile providers may offer an application for use on smartphones and tablets in which the application receives a voice call if the device is connected to the internet, for example over WiFi. In this situation the call is made to a mobile number and the terminating switch directs the call over the internet as an OTT service. An example is the Telefónica TU Go service.²⁸

Calls originating over the internet and terminating on a mobile PSTN

- 2.39 VoIP calls originating over the internet and terminating on a mobile PSTN are known as 'VoIP Out' services and can be terminated to a UK mobile number. Examples of these services include Skype calls to mobile numbers, BT's SmartTalk, and various SIP based applications.²⁹ These calls are carried as OTT VoIP until they reach an IP/PSTN gateway from where they are carried as a PSTN managed voice call to the terminating switch. The terminating PSTN switch can terminate the call in any of the ways described above. For these type of calls (which are to a UK mobile number), the terminating MCT provider charges an MTR.

Calls carried over the Internet not involving a UK mobile number (OTT VoIP)

- 2.40 VoIP calls originating over the internet and terminating via the internet without using telephone numbers are known as OTT VoIP services. Such calls are not terminated to a UK mobile number and as such we are not aware of them incurring a termination rate. The whole voice path is OTT via third party IP providers and so, as with any OTT service, the call quality cannot be fully managed or guaranteed. Examples of these services include Skype over the Internet, Viber and Facetime.

²⁷ A femtocell is a small low power cellular base station. Femtocells are typically used inside buildings and are connected to a broadband line.

²⁸ See <http://www.o2.co.uk/apps/tu-go>

²⁹ Session Initiation Protocol (SIP) is a signalling protocol that is commonly used for calls over IP networks.

Calls originating on a PSTN and terminating via the Internet.

- 2.41 'VoIP In' refers to services which allow voice calls originating on a PSTN to be received via VoIP over the Internet. Such calls will pass to a PSTN terminating switch and from there to a PSTN/IP gateway where they are converted to OTT VoIP. Examples of these services include Skype and various SIP based applications. The call is routed to the terminating switch by using a telephone number and either a fixed or mobile termination rate may apply depending on the type of number used.

Technology developments in mobile services during the review period

- 2.42 We do not foresee any new major mobile network deployment for the period of this review (April 2018 - March 2021) that would significantly affect the provision of MCT.
- 2.43 For example, in the next three to four years there will not be network investments concerning the deployment of new generations of wireless technologies such as 5G. 5G technology will provide very high speed data access and is expected to be used for enhanced mobile broadband, communications between machines and ultra-reliable and low latency communications. As of today, there is no standard specified for 5G and all the main industry players are currently involved with standardization bodies in the specification work.³⁰ The industry expects wide deployment of 5G networks and commercial launch after 2020.³¹
- 2.44 This is different from the 2015 review, when our analysis of the market considered for the first time the deployment of 4G networks and the pervasive trend in the UK mobile industry of network sharing.

Review of Donor Conveyance Charges

- 2.45 Donor Conveyance Charges (DCCs) are wholesale charges levied for the provision of 'onward routing' of calls to mobile numbers that have been ported. General Condition 18 places obligations on communications providers to provide number portability. These include, among other things, the requirement that wholesale porting charges are cost-oriented and based on the incremental costs of providing portability.
- 2.46 Ofcom has a duty under Article 30(2) of the Universal Service Directive of the EC (USD)⁷ to ensure that pricing between CPs and/or service providers related to the provision of number portability is cost-oriented. In September 2014, we published guidance on how communications providers should set charges to meet these obligations,³² and in March 2015 we made a direction on the appropriate level of DCCs ('2015 DCC Direction').³³ This direction will expire on 31 March 2018 (i.e. the same date as the 2015 MCT charge control will expire).
- 2.47 Our 2015 DCC Direction drew heavily on the then recently published 2015 MCT model, and we committed to link the timing of future reviews of DCCs with our

³⁰ The International Telecommunications Union (ITU) will be the standards body that releases the final technical specification. The 3GPP is the mobile industry standardisation body that will submit a proposed specification to the ITU to be part of the final standard. Mobile operators and vendors all participate in the 3GPP specification process.

³¹ See GSMA paper "The 5G era: Age of boundless connectivity and intelligent automation", <https://www.gsmainelligence.com/research/?file=0efdd9e7b6eb1c4ad9aa5d4c0c971e62&download>

³² See https://www.ofcom.org.uk/_data/assets/pdf_file/0026/79424/statement_on_porting_charges_under_g_c18.pdf

³³ See https://www.ofcom.org.uk/_data/assets/pdf_file/0028/62965/dcc_direction_statement.pdf

reviews of MCT. As a result we plan to use the charge control modelling explained in Section 5 to estimate DCCs for the period 1 April 2018 to 31 March 2021 and will consult on this shortly, with the intention of publishing a new DCC Direction shortly after the MCT Statement.

Section 3

Market definition and SMP assessment

3.1 This section sets out our analysis and proposals for the product and geographic market definition for MCT. It then assesses whether any SMP exists in those markets.

Summary of our proposals

3.2 We propose the following market definition:

“termination services that are provided by [named mobile communications provider] (“MCP”)³⁴ to another communications provider, for the termination of voice calls to UK mobile numbers³⁵ allocated to that MCP by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate”.

3.3 Based on the above definition, we have provisionally identified a total of 80 separate markets for wholesale MCT services. These correspond to each of the four largest mobile providers and the 76 providers³⁶ with fewer subscribers (smaller MCT providers) who currently provide MCT or whom we expect to do so in the review period.

3.4 We provisionally conclude that each MCT provider has SMP in the corresponding relevant market. These MCT providers are listed in Annex 13.

3.5 This would be consistent with the market definition in our 2015 MCT Statement, although there have been some changes to the list of MCT providers.³⁷ The market definition would also be consistent with the approach proposed in Narrowband Market Review 2017 when assessing the markets for fixed geographic call termination.

3.6 We first briefly discuss the regulatory background. We then discuss our reasoning in relation to market definition and our market power assessment.

Regulatory background

3.7 The 2014 EC Recommendation identifies those product and service markets in which *ex ante* regulation may be warranted, including wholesale “voice call termination on individual mobile networks”.³⁸

3.8 In reviewing this market, we must define relevant markets appropriate to UK national circumstances in accordance with competition law principles and taking due account

³⁴ In this document, where appropriate, we refer to these as MCT providers.

³⁵ For the purposes of this review, we define UK mobile numbers as those numbers in the format 07xxx xxx xxx and beginning 071 to 075 and 077 to 079.

³⁶ This includes two government bodies (Home Office and the National Cyber Security Centre) which have been allocated mobile number ranges.

³⁷ Based on a similar definition, our 2015 MCT Statement identified a total of 72 separate markets for wholesale MCT services, corresponding to each of the 68 smaller MCT providers and four largest mobile providers.

³⁸ Market 2, 2014 EC Recommendation.

of the 2014 EC Recommendation and SMP Guidelines. In the market definition and market analysis below, we follow the general analytical framework set out in Annex 6.

Market definition

- 3.9 As explained in Annex 6, while we are ultimately seeking to define wholesale markets, we begin with consideration of the relevant retail services. The reason for this is that retail-level behaviour may act as an *indirect constraint* on wholesale prices, which might imply a broader wholesale market.

Retail services

Starting point

- 3.10 We take as our starting point voice calls to the called party's UK mobile number.³⁹ This includes all calls to UK mobile numbers that are active, or which we expect to be active, within the review period, including those that are used to provide call forwarding services. This is regardless of the technology employed to terminate the call to that mobile number by the MCT provider (e.g. on a 2G, 3G or 4G network and/or via WiFi), and irrespective of how the call may be originated. However, this excludes services that establish voice calls between two users using data connections without using mobile telephone numbers (OTT VoIP calls).
- 3.11 We include all other calls to UK mobile numbers held by any foreign-based mobile providers that provide MCT services in the UK. This includes calls to UK mobile numbers held by MCT providers holding a mobile operator licence issued by the Channel Islands or Isle of Man authorities, to the extent that mobile call termination to these numbers is provided in the UK.
- 3.12 As in our 2015 MCT Statement, we propose that the control of the number range, rather than the hosting of the termination service, or the sub-allocation of the number range, is the key element to controlling the wholesale call termination service. This is because hosted numbers may be moved between different hosting networks by the number range holder or, ultimately, moved onto a network of its own. The intervention of a hosting provider can only occur with the authorisation of the number range holder and consequently wholesale call termination cannot occur without, directly or indirectly, the involvement of the number range holder. Similarly, where a number range holder sub-allocates its numbers to another mobile provider, wholesale call termination cannot occur without, directly or indirectly, the involvement of the original number range holder.

Indirect constraints from the retail level

- 3.13 We analyse the potential for demand-side substitution by considering whether a hypothetical monopolist supplier could impose a small but significant non-transitory increase in price (SSNIP) of 5-10% above the competitive level without losing sales to such a degree as to make this price rise unprofitable.

³⁹ See footnote 35 for a definition of a UK mobile number.

- 3.14 As the purpose of a voice call is to contact a specific recipient party, the opportunities for demand-side substitution are limited to alternative methods of contacting that party.⁴⁰
- 3.15 In the UK, the calling party pays the full price of the call. Our retail assessment therefore focuses on the potential response of callers rather than call recipients.
- 3.16 A number of retail services could act as demand-side substitutes to MCT. These include VoIP calls using OTT (such as Skype, WhatsApp and Viber), calls to fixed numbers, and the use of text-based methods of communication such as SMS, OTT, social networking applications and email.
- 3.17 We provisionally consider voice calls using OTT to be the most likely potential demand-side substitute, and this is the focus of our discussion. However, we first briefly explain why we do not propose to consider the other potential demand-side substitutes above to be sufficiently strong to be included in the relevant market:⁴¹
- 3.17.1 Calls to fixed lines: Even if the calling party is aware of the recipient party's fixed geographic number (if he or she has one), calls to mobiles offer a much greater chance of immediate contact and potentially offer greater privacy.
- 3.17.2 Text-based communications: Text messages may lack the immediacy and two-way responsiveness of a voice conversation, and are not good at conveyance of 'paralanguage', including pitch, intonation and volume of speech. Moreover, SMS communication requires traffic to be sent to the same number range as used for voice calls and as such involves termination services provided by the same MCT provider.

OTT VoIP calls

- 3.18 Ofcom's Communications Market Review 2016 noted that:⁴²

"More traditional means of communication are being substituted for over-the-top services. The amount of time people spend texting and emailing has fallen, while the proportion of people who use instant messaging services, VoIP and video calling has increased."

⁴⁰ To the extent that each number corresponds to a different receiving party, calls to different numbers are not substitutes to each other. If a recipient consumer has multiple mobile numbers, a potential response to an increase in the price of calls to one number is to call one of their other numbers. However, only 8% of consumers have multiple subscriptions (including mobile phones for work purposes), and in general on-net and off-net retail prices are the same. Source: *Ofcom Technology Tracker, Half 1 2017* (https://www.ofcom.org.uk/data/assets/pdf_file/0015/101292/technology-tracker-data-tables-h1-2017.pdf) QD2. *Do you personally use a mobile phone? How many mobile phones with different telephone numbers do you use at least once a month? Please include any phones used for work or other purposes.*

⁴¹ A detailed discussion of the other potential demand-side substitutes mentioned in paragraph 3.17 can be found in 2015 MCT Statement pages 30-32 and 37.

⁴² Introduction, Ofcom, *Communications Market Report 2016*, 4 August 2016.

- 3.19 The volume of OTT VoIP call traffic⁴³ is growing by around 50% per year.⁴⁴ Many of the previously cited barriers to adoption (such as the need for both parties to own a smartphone and have downloaded the relevant OTT application) are diminishing.^{45 46}
- 3.20 However, in assessing whether our market definition should include OTT services, we need to consider whether OTT services act as a demand-side substitute for calls to mobile numbers.
- 3.21 For OTT termination to act as a competitive constraint on MTRs requires that:
- a) The originating provider responds to an increase in MTRs by the MCT provider by increasing its call retail prices (see the following subsection).
 - b) Customers of the originating provider respond to this increase in retail prices by using OTT VoIP services to call the MCT provider's customers.
 - c) This substitution to OTT VoIP services is of sufficient extent that any increase in MTRs above competitive levels is unprofitable, because it causes a reduction in call volumes to the MCT provider.
- 3.22 Our previous market review found that consumers have limited awareness of changes in the retail price for calls to mobiles.⁴⁷ The increasing prevalence and size of inclusive bundles of calls, texts and data at the retail level may serve to further reduce consumer awareness of the retail price of making a call to a particular mobile number (or mobile number range).
- 3.23 Around 80% of mobile retail consumers receive inclusive allowances of voice calls (including consumers on both pre-pay and post-pay packages). The marginal price of a call within such call allowances is zero. 94% of UK mobile-to-mobile calls are made within such inclusive call allowances, and 90% of mobile consumers with inclusive call allowances did not make any out-of-allowance calls to UK mobiles.⁴⁸
- 3.24 Even for those consumers who may perceive an increase in the marginal price of making a call to a particular mobile number (i.e. if an MTR increase were passed on

⁴³ This includes OTT VoIP calls carried over mobile or fixed technologies.

⁴⁴ Based on a (compound average) growth rate of 11% per quarter and 51% per year between Q2. 2015 and Q4 2015. Ofcom, *Narrowband Market Review consultation*, 1 December 2016, paragraph 4.159, p. 78.

⁴⁵ 76% of UK adults have a smartphone and 58% of UK adults have a 4G service (76% of those with a smartphone). Source: Ofcom Technology Tracker, Half 1 2017: *QD4 (QD24B)*. *Do you personally use a smartphone? QD6 (QD41)*. *Do you have a 4G service? This is a service that enables faster mobile internet access.*

⁴⁶ To the extent that that any constraint from OTT voice calls exists, it is likely to be strongest from OTT voice calls on a smartphone, as OTT voice calls using a different device require an additional action on the part of the calling party. Of the 55% of UK households that have made voice calls using the internet, 62% have used a smartphone for such calls. Source: Ofcom Technology Tracker, Half 1 2017: *QE37 (QE30)*. *Have you or anyone in your household ever used one of these services to make voice calls using the internet at home?*

⁴⁷ Research found that only 54% had only a rough or vague idea of the cost of making a call to a mobile, and 35% had no idea. See MCT Consultation June 2014, Annex 18.

⁴⁸ Source: Ofcom analysis of operator data provided in response to an s135 information request of February 2017.

through call prices), price-based substitution may be unlikely for a number of reasons:⁴⁹

- 3.24.1 The group of consumers which is most likely to face a non-zero marginal price for making voice calls to mobiles (such as pre-pay consumers) are those consumers who are least likely to make use of voice calls using an OTT service. Only 8% of all pre-pay consumers have made voice calls using an OTT service.⁵⁰
 - 3.24.2 OTT usage is far more prevalent for making international calls, which are typically excluded from inclusive call allowances, and have relatively high retail prices.⁵¹
 - 3.24.3 OTT usage is typically relatively infrequent compared to mobile voice calls. Only around 18% of those who have ever used the internet to make voice or video calls do so daily. On the other hand, 70% of mobile phone users make telephone voice calls at least daily.⁵² Furthermore, a minority of consumers claim to have used OTT VoIP calls on a smartphone.⁵³ This suggests consumers see traditional mobile numbers as the “go-to” service.
 - 3.24.4 Studies have found that use of OTT services and “traditional” mobile voice calls are in many cases complementary, reflecting different functionality and quality of service, rather than a price-induced substitution effect.⁵⁴
- 3.25 While OTT volumes are increasing, only a minority of consumers use it on a smartphone, and fewer use it frequently.⁵⁵ Therefore, with low demand for OTT voice relative to “traditional” voice, the required level of switching of mobile voice calls to use of OTT voice calls in response to a price rise would imply a large proportional increase in demand for OTT.

⁴⁹ Jigsaw research for the Narrowband Market Review 2017 found that only 11% of residential survey respondents said they would be certain or very likely to switch some calls to VoIP in response to a SSNIP for calls. See Ofcom, Narrowband Market Review consultation, paragraph 4.163, p.78.

⁵⁰ 14% of pre-pay consumers have made use of OTT video calls; combined 16% of pre-pay consumers have made use of OTT voice calls and/or OTT video calls. Source: Ofcom Technology Tracker, Half 1 2017: QD12 (QD28A). *Which if any, of the following activities, other than making and receiving voice calls, do you use your mobile for?* Note cross break is not shown in published tables.

⁵¹ Jigsaw research for Ofcom Narrowband Market Review 2017 found that 44% of VoIP users were more likely to call international numbers using VoIP than other services, whereas only 8% of mobile users said they were more likely to use a mobile to call international numbers. Furthermore, only 7% of VoIP users said they would use VoIP to call mobile numbers. See Ofcom, *Narrowband Market Review Consultation*, 1 December 2016, Table 4.1, p.76.

⁵² Source: Ofcom Technology Tracker Half 1 2017: QD11B (QD4B). *And how often, if at all, do you use your mobile phone to make calls? QE39 (QE50). How often do you or does anyone in your household use these services [make voice or video calls using the internet at home]?*

⁵³ 17% of UK mobile phone users claim to have made OTT voice calls on their mobile. 28% of UK mobile phone users claim to have made OTT video calls using their mobile. Overall, 32% of mobile users had made voice and/or video OTT calls using their mobile. Source: Ofcom Technology Tracker Half 1 2017: QD12 (QD28A). *SHOWCARD Which if any, of the following activities, other than making and receiving voice calls, do you use your mobile for?* Note cross break is not shown in published tables.

⁵⁴ See for example a WIK paper: Arnold, R. Schneider, A. and Hildebrandt, C., 2016, *All Communications Services Are Not Created Equal – Substitution of OTT Communications Services for ECS from a Consumer Perspective*, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2756395

⁵⁵ See Ofcom *Narrowband Market Review Consultation*, 1 December 2016, paragraph 4.167, p.79.

- 3.26 Based on the evidence and reasoning set out above, we provisionally consider that the use of OTT applications is unlikely to be a sufficiently close substitute for calls to a mobile number at the present time.
- 3.27 Our proposed approach is in line with the 2014 EC Recommendation on Relevant Markets, which says that '*currently OTT services are not yet at a level in which they can be considered actual substitutes to the services provided by infrastructure operators*'.⁵⁶

The effect of MTR price rises on retail prices

- 3.28 Above we have considered the impact of price rises above a SSNIP at the retail level. Moreover, a number of factors serve to dilute the pass-through of the increase in the wholesale MTR to the retail level.
- 3.29 Firstly, the ability to make outbound calls to a particular mobile number is sold as part of a package with the ability to make outbound calls to all mobile numbers. Generally, these outbound calls have a common retail price, regardless of the provider which holds the number being called.⁵⁷ Therefore, the impact of an increase in the MTR by a single MCT provider on this common retail price would be diluted, and would have a spillover effect on demand for calls to all MCT providers.
- 3.30 In addition, MTRs make up only a fraction of the underlying cost of calls. MTRs make up an even smaller fraction of the cost of bundles of calls, texts and data. As the importance of voice calls in fixed and mobile bundles declines,⁵⁸ the fraction of consumer expenditure accounted for by MTRs will reduce further.⁵⁹
- 3.31 While the reduction in MTRs over time has been associated with an increase in the size of inclusive call allowances, the reduction in MTRs over time has been very large (including a reduction of around 80% between 2011 and 2015), far exceeding the 5-10% usually considered as a SSNIP.
- 3.32 As such, it is unlikely that a 5-10% increase in the MTR by a single provider would lead to a substantial change in the retail price of outbound mobile voice calls, and it is also unlikely that such a change would lead to a change in the overall price or size of inclusive call allowances for a bundle including voice calls.

⁵⁶ Explanatory Note to the 2014 EC Recommendation, page 17.

⁵⁷ A small number of retail providers are excluded from some MCT providers' retail call allowances, and so do not have a common retail price. However, if consumers lack awareness of the mobile provider being called they will make their call decision based on the average price of making a mobile call, and the same dilution and spillover effects apply.

⁵⁸ While outgoing mobile voice call volumes increased by 3.9% in 2015, mobile data volumes increased by 63.7%. See pages 152 and 154, *Ofcom Communications Market Report 2016*. Furthermore, calls from fixed to mobile have declined by an average 9.4% per year since 2010, and the proportion of average monthly retail voice revenue per fixed line associated with calls to mobiles has declined by 12.8% per year over the same period. See *Ofcom, Communications Market Report 2016*, Figures 4.9 and 4.10.

⁵⁹ Furthermore, if the form of the retail price increase was an increase in the price of the entire bundle of voice calls, texts and data, then the relative price of voice calls relative to OTT VoIP services would be unchanged.

Provisional conclusion on indirect constraints from the retail level

- 3.33 In light of the analysis above, our provisional conclusion is that there are no sufficiently close substitutes at the retail level to broaden the market beyond the focal product of calls to a mobile number.

Wholesale market

Starting point

- 3.34 As wholesale demand is derived from retail demand, the focal product for analysis of the wholesale market is wholesale call termination services provided to terminate voice calls to a called party's mobile number.

Demand-side substitution

- 3.35 Once the originating provider's retail subscriber has chosen to call a particular mobile number, the originating provider generally has no alternative but to purchasing MCT from the provider controlling that mobile number.
- 3.36 OTT bypass is a mechanism whereby calls which are initiated as voice calls to a mobile number can be terminated instead by an OTT provider, such as Viber, through its app on the recipient's device.⁶⁰ This can occur without the knowledge of the calling party.⁶¹ OTT bypass requires the originating provider, or transit provider, to enter a commercial agreement with the OTT provider. Given the relative reciprocity of the number of calls (and MCT revenue) between UK mobile providers, and the potentially lower quality of call termination by OTT bypass, it appears to us unlikely that any UK mobile provider would have an incentive to enter such an agreement for the routing of domestic calls, as this would potentially lead to retaliation by the other providers doing the same thing, leaving none of the MCT providers better off. We are not aware that OTT bypass currently occurs within the UK to a material extent.

Supply-side substitution

- 3.37 Supply-side substitution could occur if competitors were able to offer call termination to the particular number called. Such competition could only occur if the MCT provider that controls the mobile number were to grant entry to another provider to terminate calls on their number range. However, we consider that a provider is unlikely to have an incentive to give up its monopoly on MCT to allow other providers to terminate calls to the numbers that it holds.
- 3.38 Hence, we propose that supply-side substitution should not lead us to widen the wholesale product market definition.

Widening the product market

Competitive conditions and common pricing of MCT by a given MCT provider

- 3.39 The analysis of demand- and supply-side substitution presented above would imply a separate product market for MCT for each individual mobile number. However, it may

⁶⁰ We note that this could also be characterised as wholesale supply-side substitution or potential market entry.

⁶¹ A mobile provider cited "TelecomsXChange" as an example of the practice.

be reasonable to widen the individual product market by aggregating individual product markets if at least one of two conditions is satisfied:⁶²

- 3.39.1 The individual markets face homogeneous competitive conditions, meaning that suppliers' conduct would be the same in each; and/or
 - 3.39.2 There is a common pricing constraint, which means that suppliers' pricing and behaviour is likely to be the same in each market being considered.
- 3.40 Recipients of mobile calls lack the incentive to influence MTRs, because the calling party pays principle means they do not bear the cost of the call, and lack the ability to influence MTRs. These features are common across all the mobile numbers controlled by a given MCT provider – indicating homogeneity of competitive conditions. In addition, there is a common pricing constraint at the wholesale level, as it is likely to be costly and complex for MCT providers to charge different termination rates for calls to individual mobile numbers.
- 3.41 However, we do not consider that competitive conditions or pricing constraints are common across different MCT providers. Absent SMP regulation, each MCT provider would be able to set its MTR independently. Indeed, where MCT providers have faced differing forms of SMP regulation, and particularly when they have not been subject to a charge control, they have priced differently from other MCT providers.⁶³

Provisional conclusion on wholesale product market definition

- 3.42 Therefore, we propose aggregating termination to individual mobile numbers into a wider product market encompassing termination to all mobile numbers controlled by a particular MCT provider, but no further.

Numbers and call types falling within our market definition

- 3.43 Here, we clarify which 'types' of termination services are covered by our proposed market definition.
- 3.44 We propose the market for MCT would include any call conveyance technology used to deliver voice call termination to a mobile number and all mobile number ranges allocated to a particular MCT provider over which it is able to set the MTR.
- 3.45 Our proposed market definition includes ported-out numbers, but excludes ported-in numbers.⁶⁴ Calls to ported numbers are usually first routed to the provider that originally held the number being called (the donor provider). The donor provider sets the MTR for calls to these mobile numbers, even though they subsequently terminate on the recipient provider's network.⁶⁵ We therefore propose to include the termination of calls to ported-out numbers as part of each MCT provider's termination market, but exclude termination of calls to ported-in numbers. Hence we refer to the "UK mobile numbers allocated to that MCP by Ofcom".

⁶² See, for example, the Explanatory Note to the 2014 EC Recommendation section 2.5 and the SMP Guidelines, paragraph 56.

⁶³ See paragraph 3.73.

⁶⁴ Under a process known as "porting", when customers change network they can take their current mobile number with them.

⁶⁵ Donor conveyance charges (DCCs) are regulated separately. As we note in Section 2, we intend to update our regulation of DCCs.

- 3.46 When a call is diverted to voicemail, the number range holder decides whether and how to divert a call to a particular mobile number, and faces the same competitive constraints in setting the termination rate as for a call that is connected to the intended recipient. Similarly, when a call is terminated by another MCT provider using national roaming arrangements, the MTR is set by the MCT provider that has been allocated the number. Therefore, calls to voicemail and calls terminated by national roaming arrangements would fall within the market of the MCT provider allocated the number.
- 3.47 We also propose that calls to call forwarding services that use UK mobile numbers would also fall within the market of the MCT provider allocated the number. We acknowledge that the set of possible competitive constraints, and their strength, may differ across service types. Nonetheless, we are minded to include calls to call forwarding services that use mobile numbers for the following reasons:⁶⁶
- 3.47.1 Access and pricing to the termination service is controlled by the MCP allocated the UK mobile number, irrespective of the final destination of that call. Evidence on the MTRs set for these calls suggests that current constraints are not sufficient.
- 3.47.2 Given these numbers are part of the range designated for mobile services, consumers should be able to expect these services to be mobile, and charged as a normal mobile call. Higher MTRs for such calls may be exploiting a structure of retail prices reflective of MTRs priced at LRIC – in that industry-wide pricing of MTRs at LRIC facilitates low retail call prices (e.g. large inclusive call allowances), including for off-net calls. Unless originating providers exclude calls to such numbers from inclusive call packages calls to such numbers will appear as calls to “regular” mobile numbers to consumers.⁶⁷
- 3.47.3 As with other types of calls to mobile numbers, once the retail subscriber has chosen to originate a call to that particular mobile number, the originating provider at the wholesale level has no alternative but to purchase call termination from the terminating provider.
- 3.48 To this end, we propose to make appropriate changes in the draft SMP condition (Annex 7) to make clear it applies to all calls made to numbers in the ranges 071 - 075 and 077 - 079. Separately, we are also intending to consult on amendments to the National Telephone Numbering Plan.⁶⁸ These would be designed to make clear

⁶⁶ In many cases, the MCT provider that offers the “call forwarding service” terminates the call to the call forwarding switch, which then originates a separate call to the final destination. This is consistent with our interpretation of call forwarding services in Ofcom, *Determination to resolve a dispute between TeiNG and H3G relating to compliance with GC17 and NTNP*, 22 July 2016. https://www.ofcom.org.uk/_data/assets/pdf_file/0019/83332/final_determination.pdf

⁶⁷ Where calls are excluded from retail call packages, this can lead to consumer confusion and undermine consumer confidence in the mobile number range (and in some cases bill-shock).

⁶⁸ See Ofcom, *The National Telephone Numbering Plan*, 5 June 2017, https://www.ofcom.org.uk/_data/assets/pdf_file/0013/102613/national-numbering-plan-june-2017.pdf

such numbers should not be used to identify immobile apparatus and for conveying signals to that apparatus.^{69 70}

- 3.49 Calls made to UK mobile numbers while the recipient is roaming abroad are initiated by a call to the UK mobile number and are initially routed to the UK home provider, which effectively terminates the calls from the perspective of the originating or transiting provider. The UK provider charges an MTR and then forwards the calls to the relevant foreign visited networks. Therefore, we propose to include these calls within the relevant MCT markets.
- 3.50 However, calls made to foreign mobile numbers while roaming on a UK network are initiated by a call to a foreign mobile number and initially routed to the foreign network, before being forwarded to the UK visited network. These calls will be subject to the roaming agreement between the foreign network and the UK visited network, which is itself subject to separate regulation.⁷¹ Because the number ranges, routing and billing arrangements and competitive conditions differ for wholesale roaming services (including termination) provided by UK MCT providers, and taking into account the existing regulation of wholesale roaming under a modified Greenfield approach, we propose that these calls fall outside the relevant MCT markets.
- 3.51 We also propose that other calls (e.g. test calls, calls to customer services) would be considered within the market where the call is made to a UK mobile number as a common pricing constraint means they are charged the MCT provider's MTR.
- 3.52 For the avoidance of doubt, our proposed market definition includes termination of voice calls to UK mobile numbers originated internationally.
- 3.53 Table 2 below summarises the call types that would be included within our wholesale product market definition, which would be the same as in our 2015 MCT Statement.

Table 2: Call types included in this and the previous MCT market review

Call type	2018 Proposals
Off-net origination	✓
On-net origination	x
Calls to ported-out numbers	✓
Calls to ported-in numbers	x
Calls which terminate on voicemail	✓
Voice calls to an MCT provider's UK mobile numbers terminated on IP by that MCT provider	✓
National roaming	✓
Calls to call forwarding services	✓
Calls to UK mobile numbers roaming abroad	✓
Calls to non-UK numbers roaming in the UK	x
Calls originated internationally to UK mobile numbers	✓

⁶⁹ In our proposed amendments we will consider including voicemail message services which are provided where the numbers are used in an attempt to make calls to mobile apparatus.

⁷⁰ If such changes are made, we would consider if it is appropriate to modify the wording of the proposed SMP condition. We would not necessarily intend to modify its effect – namely, that it would apply to calls made to the relevant number ranges. But, we may seek to identify any simplification we could make to the drafting to achieve that effect in light of any changes to the National Telephone Numbering Plan.

⁷¹ See Article 3(4) of Regulation (EU) No 531/2012 of the European Parliament and of the Council of 13 June 2012 on roaming on public communications networks within the Union (as amended by Regulation 2017/920) and Article 7(1) and (2) of that Regulation.

Geographic market definition

- 3.54 Having defined the relevant wholesale product market, we now assess the geographic scope of the relevant wholesale market.
- 3.55 At the wholesale level, MCT services are accessed by an originating provider at a relevant handover point on the terminating provider's network. However, regardless of location, all termination points provide connection to all UK mobile numbers for which the terminating provider controls the MTR. Therefore, any particular handover point would act as a substitute for another, and, as the identity of the provider of MCT to a particular number range would be the same at each of these handover points, the competitive conditions will not differ between handover points. This suggests widening the geographic scope of the market to any part of the UK where handover is possible for the termination of calls to the UK mobile numbers in question.
- 3.56 Therefore, we propose that the scope of the geographic market definition relates to the area (i.e. an MCT provider's relevant handover points) for which the MCT provider can determine the MTR in relation to its allocated UK mobile numbers. This area lies within the UK. This would also mean, for example, that calls to relevant UK numbers allocated to MCT providers in the Channel Islands and the Isle of Man would, to the extent they provide termination services to those numbers in the UK, fall within our proposed market definition.

Provisional conclusions on market definition

- 3.57 In light of the analysis set out in this section, we propose to identify the relevant markets as follows:⁷²
- “termination services that are provided by [named mobile communications provider] (“MCP”) to another communications provider, for the termination of voice calls to UK mobile numbers allocated to that MCP by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate”.
- 3.58 The relevant markets we propose include any mobile provider which has requested transfers of relevant UK mobile numbers and offers (or plans to offer) MCT.⁷³
- 3.59 Annex 13 lists the 80 relevant MCT markets, comprising the four largest MCT providers and 76 smaller MCT providers. We also propose that the relevant markets would include any other mobile provider which is in receipt of a relevant Ofcom number allocation and providing (or planning to provide) MCT at the time of our Statement in March 2018.

⁷² Which in our assessment would be consistent with the 2014 EC Recommendation's identification of “voice call termination on individual mobile networks” as a market susceptible to *ex ante* regulation and the recommendation that the geographic scope of each market coincides with the geographic coverage of the market concerned (see section 4.1.3 of the Explanatory Note).

⁷³ Without prejudice to the question of whether any request would be granted.

Market power assessment

Analytical approach

3.60 We have assessed whether MCT providers have SMP (as described in section 78 of the Act and Article 14 of the Framework Directive) in the provision of MCT according to the following criteria:

- high current and future market shares;
- high barriers to entry;
- an absence of effective countervailing buyer power (CBP); and
- evidence of pricing above competitive levels.

3.61 Our assessment takes due account of the SMP Guidelines⁷⁴ as required by section 79 of the Act. We have also had regard to the ERG SMP Position.⁷⁵

Market shares

3.62 Although a high market share alone is not sufficient to establish SMP, very large market shares are usually taken to indicate that SMP is present in the relevant market.⁷⁶ As set out in the previous section, we define the relevant markets as voice call termination to mobile numbers allocated to individual MCPs. Once a mobile provider has acquired a retail customer, that provider is typically the only provider of termination services to that customer's mobile phone number, so each MCT provider has a 100% share of the relevant market associated with its number allocation.

Barriers to entry and expansion

3.63 Each MCT provider terminates calls to its retail customers, and so no new entrant (or existing rival provider) is able to offer termination for calls to that MCT provider's customers without the first MCT provider's consent.

3.64 OTT bypass could be characterised as a form of market entry. However, we do not propose to consider OTT bypass as a relevant competitive constraint for the reasons explained at paragraph 3.36 above.

3.65 Our provisional view is that barriers to entry are high, and are unlikely to be reduced materially over the review period. Accordingly, we are not minded to consider that any threat of entry exists which would constrain MCT providers to set MTRs at a competitive level absent regulation.

⁷⁴ Paragraph 78 of which refers to criteria listed above. We considered all of the other criteria listed in the SMP Guidelines and the ERG SMP Position in our 2007 MCT Statement (at paragraphs 4.25 – 4.63). However, we concluded that these other criteria had less relevance to an assessment of SMP in wholesale MCT markets.

⁷⁵ We note in particular that, in respect of pricing, the latter says in paragraph 20, "...the ability to price at a level which keeps profits persistently and significantly above the competitive level is an important indicator for market power."

⁷⁶ Paragraphs 75 – 77 of the SMP Guidelines.

Countervailing buyer power (CBP)

- 3.66 CBP is the restraint that a buyer is able to place on any attempt by the seller to set its prices above the competitive level.
- 3.67 Generally, whether a buyer has CBP will depend on whether (a) it is sufficiently important to the seller, in terms of purchasing a significant proportion of the total volume of the seller's output, and (b) can credibly threaten to buy less from that seller in response to a price rise. In the context of call termination, the prospect of CBP also arises from the fact that providers both provide and receive termination services from one another, and so (absent regulation) they could potentially restrain the termination rates charged to them by other providers by threatening to raise their own rates.
- 3.68 In assessing CBP, we consider the effectiveness of the potential levers by which providers could attempt to exert CBP. The main levers are: raising its own termination rate; refusing to interconnect; and setting retail prices so as to deter its retail customers from originating calls to the network in question (for example, through placing calls outside inclusive retail call allowances). In doing so, we explain the important role of BT's end-to-end connectivity obligation.
- 3.69 Considering these in turn:
- While BT is the largest transit provider, and largest overall purchaser of MCT, it is constrained in its ability to use its own termination rates, provision of interconnection circuits, or network access services in a wider sense, as a bargaining tool, since these are constrained by regulation in those markets.⁷⁷ Therefore, we consider it unlikely that BT has sufficient CBP to constrain the MTR charged by the terminating provider.
 - BT's end-to-end connectivity obligation means that it is interconnected, either directly or indirectly, to each MCT provider. This means that if an originating provider attempted to negotiate a lower MTR than the terminating provider had agreed with BT, the terminating provider could refuse the lower rate, because the only alternative for the originating provider would be to transit via BT. This also means that if a terminating provider asked for a higher rate than the one it had agreed with BT (plus any transit charge), then the originating provider could refuse, and instead indirectly interconnect through BT.
 - Therefore, the MTR BT agrees with each MCT provider acts, to some extent, as both a 'ceiling' (when added to the BT transit rate) and a 'floor' on MTRs for individual bilateral negotiations between originating providers and terminating providers.
 - Another option for exerting CBP would be for an originating provider to threaten to block the MCT provider's number ranges. However, we provisionally consider that the commercial incentives for providers to provide universal interconnection for their customers weakens the credibility of this threat, even in the case of the four largest mobile providers negotiating with smaller MCT providers.⁷⁸

⁷⁷ Where appropriate, we take account of this regulation as part of the modified Greenfield approach, as it is regulation imposed in separate markets to constrain the exercise of SMP in those markets.

⁷⁸ Moreover, it may not be cost effective for originating providers to negotiate direct interconnection with smaller MCT providers with limited traffic when the alternative option to direct their traffic through BT exists. In such instances originating providers effectively have little or no CBP with respect to smaller MCT providers.

Furthermore, even if such incentives did exist, the parties' expectation of Ofcom's potential intervention in these cases (in terms of our current and future views on whether regulatory and industry practices are sufficient to ensure end-to-end connectivity) could further weaken the credibility of this threat.

- Alternatively, providers could place numbers from an MCT provider charging high MTRs outside retail call allowances, in an attempt to reduce the number of calls originated to that MCT provider, and hence reduce the termination revenue received by that MCT provider. Our previous review noted two instances of calls to number ranges of smaller MCT providers, which charged significantly higher MTRs, being affected in this way.⁷⁹ However, this did not appear to have the effect of reducing the MTRs charged by the providers in question. Rather, the significantly higher MTRs were sustained by these providers.

3.70 Even if it were possible for certain of the four largest mobile providers to exercise a degree of CBP, there is no mechanism by which lower MTRs paid by a large mobile provider would 'spill over' to the benefit other originating providers. Therefore, all MCT providers would have SMP over their respective mobile number ranges in relation to at least some originating providers.

3.71 Our provisional view therefore is that CBP is not present in the relevant markets to a sufficient degree to constrain MTRs at a competitive level absent regulation.

Pricing behaviour

3.72 Currently, all MCT providers who have been active in the market since before the 2015 MCT Statement are subject to a charge control. Hence, we cannot observe the MTRs which would have been set by those MCT providers in the absence of SMP regulation. Nevertheless, evidence that MCT providers have charged the maximum allowed amount would suggest that their pricing is likely to have been constrained by regulation. We note that:

- All four large MCT providers charge the maximum allowed under the charge control;
- All bar four MCT providers charge at least the maximum allowed amount;⁸⁰ and
- Some smaller MCT providers charge above the maximum allowed.

3.73 Prior to 2015, smaller MCT providers were not subject to charge control regulation,⁸¹ and prior to 2011 smaller MCT providers were not subject to any SMP regulation. Thus, for smaller MCT providers, pricing behaviour in those periods was less constrained by regulation and so may be indicative of pricing in the absence of SMP regulation (although it was possibly constrained by the threat of regulation). In our 2015 MCT Statement, we noted that, as of November 2014, more than a third of smaller MCT providers were charging above the then benchmark rate, and that half of those had MTRs of 10ppm or more.⁸² We also noted that prior to enforcement

⁷⁹ 2015 MCT Statement, paragraph 4.42.

⁸⁰ These are [REDACTED] Source: Data provided in response to s135 request, various dates between January 2017 and April 2017 and BT Carrier Price List.

⁸¹ Those smaller MCT providers designated as having SMP were subject to a fair and reasonable charges obligation.

⁸² Ofcom, 2015 MCT Statement, para 4.50 and Table 6, p.63, and Table 7, p.64.

action, an even greater number of those designated as having SMP had been charging more than the benchmark rate. We also noted that, at the time of our 2011 MCT Statement, pricing data indicated that there was wide variation in the MTRs set by these smaller MCT providers, and included relatively high MTRs compared with the charge control applied to the four largest MCT providers at the time.⁸³

- 3.74 This evidence suggests that the pricing behaviour of smaller MCT providers in those periods was consistent with the exercise of SMP.

Provisional conclusion on market power assessment

- 3.75 On the above bases, we provisionally conclude that each MCT provider has SMP in the corresponding relevant market. These providers are listed in Annex 13.

Consultation question

Question 3.1: Do you agree with Ofcom's view of the relevant market and assessment of significant market power? If not, please explain why.

⁸³ Ofcom, 2015 MCT Statement, para 4.48, p.62.

Section 4

Remedies

Introduction

- 4.1 In Section 3 we have provisionally identified 80 Relevant Markets each relating to a single MCT provider, and set out our reasons for proposing to identify each MCT provider as having SMP in the market concerned. In this section, we propose remedies to address the harm arising from SMP in the provision of MCT.
- 4.2 Based on our assessment, we propose the remedies listed in Table 3 on the MCT providers with SMP identified in Section 3.

Table 3: Summary of proposed remedies for MCT

SMP Condition	Description	Applied to	Same Remedy as 2015 review
M1	Network access obligation (on reasonable request on fair and reasonable terms & conditions)	All MCT providers	Yes
M2	Charge control (set using LRIC cost-standard) for all calls regardless of origin	All MCT providers	Yes ⁸⁴

- 4.3 The remainder of this section is structured as follows:
- We set out our provisional assessment of the harm that would arise in the absence of regulation.
 - We then discuss the legal background to the imposition of remedies.
 - We consider in detail the remedies we are minded to impose.

The case for regulation: harm arising from SMP and the insufficiency of *ex post* competition law

- 4.4 In Section 3 we provisionally concluded that each of the MCT providers listed in Annex 13 has SMP in its relevant market and therefore that these MCT markets are not effectively competitive. We need to assess the nature and scale of the problems arising from SMP in these markets, to decide if competition law remedies are sufficient to address the problem and, if not, to impose appropriate *ex ante* remedies.
- 4.5 Without regulation, MCT providers with SMP may have the incentive and the ability to:
- i) refuse to supply MCT or fail to do so on fair and reasonable terms;

⁸⁴ In addition to the remedy imposed in the 2015 review, we have added a condition which requires all MCT providers with SMP to provide information to Ofcom annually on the MTR charge in the previous charge control year.

- ii) charge excessively high MTRs;
 - iii) supply MCT on discriminatory terms or in discriminatory ways (including price and non-price elements); and
 - iv) not provide clarity or certainty in relation to MTRs.
- 4.6 Our provisional assessment is that, for the reasons that follow, the first and second of these are likely to apply here. They could manifest themselves in isolation or in combination. The extent of harm is likely to be in proportion to the size of the relevant MCT provider's customer base. Nevertheless, we consider that harm would also arise from smaller MCT providers engaging in these behaviours. We explain below in turn how these behaviours are liable to lead to harm.
- 4.7 Provisionally, we are less concerned, again for the reasons we explain, about the last two forms of behaviour and think that maintaining the existing remedies in respect of them (i.e. no undue discrimination and price transparency) may be disproportionate.

Refusal to supply MCT

- 4.8 In the absence of a requirement to provide network access to other providers on fair and reasonable terms, MCT providers with SMP could refuse access to their network or provide access subject to unfair or unreasonable terms. They may have an interest in doing so, for example, to deter entry or reduce competition.
- 4.9 An originating provider whose interconnection request was rejected by a terminating MCT provider would not be able to connect calls by its customers to customers of that MCT provider. Alternatively, if access were subject to unfair or unreasonable terms, leading to the originating provider facing higher costs, it might reflect these costs in its retail prices (or, if were unable to do so, would have to absorb the higher charges, thereby putting it at a competitive disadvantage).
- 4.10 A failure to connect certain calls or higher retail prices for certain calls would be to the detriment of the originating provider's customers. In turn, this could place the originating provider at a competitive disadvantage, potentially distorting retail competition.

Excessively high MTRs

- 4.11 If an MCT provider sets excessive MTRs, it earns a higher margin from doing so and harms its rivals on the retail-side of the market (either by reducing their margins on calls or, if rivals increase their retail prices, by reducing their competitiveness). An MCT provider with SMP would benefit from this and so has the incentive to do it.
- 4.12 MCT providers both set an MTR for calls terminated on their network and pay an MTR for calls terminated on a different provider's network. In this context, the important element for a provider is its net revenue position. If a provider has customers who make a larger number of off-net calls than they receive, this net revenue position will be negative, whereas if the provider's customers make fewer off-net calls than they receive the net revenue flow will be positive. (Note that the addition of fixed to mobile calls (or calls from overseas) will also add to the net revenue flows for UK MCT providers.)
- 4.13 As described in Section 3, we propose to include calls to call forwarding services that use UK mobile numbers in our market definition. As these services are offered over

number ranges designated for mobile services, originating providers and consumers would expect these services to be charged as a normal mobile call. If MCT providers charge excessive MTRs for such services this could still distort competition in retail mobile services or cause consumer harm through potential bill-shock and/or, more generally, undermine consumer confidence in the mobile number range.

Possible competition concerns caused by high MTRs

- 4.14 The power to set high MTRs in the absence of regulation will generate profits which could affect competition in retail mobile markets. In our 2015 MCT Statement, we noted that although these effects would be limited if all MCT providers have similar market shares, this does not eliminate the risk of distortion to competition. Our provisional view is that, without regulation, high MTRs are likely to create barriers to entry or expansion. While this would likely be particularly felt by smaller players, it would also be likely to affect the intensity of competition among larger mobile providers.
- 4.15 Competitive harm may also arise if smaller mobile providers set higher (asymmetric) MTRs with the intention of discounting their retail offers and thereby gaining a competitive advantage against larger mobile providers. The competition harm from asymmetric MTRs is one of the concerns identified in the Explanatory Note to the 2009 EC Recommendation on the regulatory treatment of fixed and mobile termination rates.⁸⁵ Insofar as asymmetric MTRs would allow mobile providers to grow their subscriber bases more than they otherwise would, there is a risk of competitive distortion. For example, this could reduce the incentive on smaller providers to become more efficient, or deter them from growing their market share.
- 4.16 Another source of competitive harm could arise in relation to the transfer of call termination revenues between the fixed and mobile sectors. If mobile providers were to set excessive MTRs while fixed providers were able only to charge regulated (cost-oriented) FTRs, this would result in a transfer of funds from fixed providers to mobile providers. To the extent that fixed providers and mobile providers compete with one another (for example on calls), this would also distort competition.
- 4.17 It is possible that excess profits from MTRs set above cost could be passed through to the mobile provider's customers, for example through lower retail call prices, handset subsidies, or investment. This competing away of excess profits is known as the 'waterbed effect'. However, this would be a competitive distortion as the terminating provider would earn economic rents at the expense of customers of competing providers, and could use these to improve its retail offering to consumers. This could potentially benefit mobile providers who have net MCT inflows, rather than competition being based on the merits of each provider.
- 4.18 Even if the waterbed effect led to a full 'recycling' of higher MTRs, excessive MTRs could still harm consumers' interest by distorting competition in downstream retail markets.

⁸⁵ See paragraph 3.1.3, Commission Staff Working Document accompanying the Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU, Explanatory note, 7 May 2009 ('Explanatory Note to the 2009 EC Recommendation') http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/sec_2009_0600_en.pdf

Discriminatory supply

- 4.19 In previous reviews, we have been concerned that discrimination in the provision of MCT could take both price and non-price forms. For example, incumbent providers could charge higher MTRs or provide an inferior quality-of-service to new entrant MCT providers or smaller providers in order to create barriers to entry or expansion for them.
- 4.20 For reasons we explain in more detail below, our provisional assessment is that MCT providers' incentives and ability to behave in such discriminatory ways are likely to be more limited in this review period than in the past. Accordingly, we do not think it likely that competition in retail markets would be distorted in the forthcoming review period by unduly discriminatory behaviour that requires *ex ante* regulation.

Clarity and certainty in relation to MTRs

- 4.21 In general, a lack of price transparency could allow providers with SMP to engage in anti-competitive behaviour. In the present context, it could allow MCT providers to engage in bespoke pricing to different originating providers. Such conduct may facilitate the exploitation of market power in MCT, either by extracting greater revenue from originating providers and/or by facilitating certain forms of exclusionary pricing.
- 4.22 We are minded, for the reasons we outline below, to regard the level of transparency generally in the markets for wholesale MCT services to be sufficient to mean these forms of behaviour are unlikely to occur.

Sufficiency of *ex post* competition law

- 4.23 Before considering *ex ante* regulation (i.e. SMP conditions) to remedy the problems arising from SMP in MCT markets, we must determine if competition law remedies would be sufficient to address these problems. This is because *ex ante* regulation should only be imposed where competition law remedies are insufficient to address the competition problem(s) identified.⁸⁶
- 4.24 Generally, the case for *ex ante* regulation in communications markets is based on the existence of market failures which, by themselves or in combination, mean that competition might not be able to become established if the regulator relied solely on its *ex post* competition law powers. In MCT markets, the nature of the problem is one of persistent market power and so the scale of any problems which are likely to arise in the absence of any regulation would be liable to justify *ex ante* intervention.
- 4.25 We take account that the Explanatory Note to the 2014 EC Recommendation says that, given the crucial importance of guaranteeing effective and timely interconnection, *ex post* competition law alone is not able to address bottlenecks in termination markets. Consequently, the use of *ex ante* regulation '*appears indispensable, at least for the time being*'.⁸⁷ In relation to refusals to supply on fair and reasonable terms and excessively high MTRs, we are minded to agree with this proposition.
- 4.26 Imposing obligations on an *ex ante* basis in relation to these matters would allow consistent and timely intervention. Moreover, our provisional view is that where, as

⁸⁶ Recital 27 of the Framework Directive.

⁸⁷ Page 31 and 32 of the Explanatory Note to the 2014 EC Recommendation.

here, fair and reasonable access to the infrastructure of competing firms is important or where effective competition has been facilitated because of prior *ex ante* regulation (and where technology and/or demand conditions are unlikely to support commercially viable alternatives) *ex ante* SMP conditions are likely to be necessary.

- 4.27 Furthermore, *ex post* competition law focuses on past abuses of dominance, and so is unlikely to bring about or promote competition by itself. *Ex ante* regulation is normally aimed at actively promoting the development of effective competition.
- 4.28 Imposing obligations on an *ex ante* basis would also provide MCT providers with greater legal and regulatory certainty. We are minded to regard this as appropriate in the context of the widespread impact of the potential detriments stemming from market power discussed above. SMP conditions would also enable us to intervene more quickly if required.
- 4.29 We are minded to take a different view in relation to the potential discriminatory supply of MCT services and to clarity and certainty in the circumstances of these markets today. In particular, our provisional assessment is that unduly discriminatory behaviour and effects are unlikely to occur to the extent necessary to justify *ex-ante* regulation. In the unlikely event they were to occur, we could seek to use *ex post* competition law to address them.

Provisional conclusion on the harm arising from SMP absent regulation and insufficiency of *ex post* competition law

- 4.30 On these bases, we provisionally conclude that – in the absence of regulation – MCT providers have the ability and incentive to set excessive MTRs as well as act in other ways that would harm competition and result in consumer detriment in the period covered by this market review. Absent regulation, such conduct would result in a structure and level of prices, in retail and wholesale markets, that would be less efficient, distort customer choice and would be liable to restrict or distort competition.
- 4.31 We provisionally find that *ex post* competition law, under Article 102 of the EU Treaty and Chapter II of the Competition Act 1998, would be insufficient to address the lack of effective competition in the markets defined in Section 3 and prevent some of the problems we have referred to above. Therefore, we propose that *ex ante* regulation is required in the respects described.

Question 4.1: Do you agree with our assessment of the harm that could result from a lack of effective competition in MCT markets?

*Question 4.2: Do you agree with our assessment that *ex post* competition law alone would not be sufficient to address the competition problems we have identified, and that therefore *ex ante* regulation is required?*

Legal background to the imposition of remedies

- 4.32 There are a number of legal tests we need to consider when imposing remedies on MCT providers designated as having SMP.
- 4.33 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in a particular market, it must set such SMP services conditions as it considers appropriate and as are authorised under the Act. Section 87(1) implements Article 8 of the Access Directive and Article 16(4) of the Framework Directive.

- 4.34 Paragraphs 21 and 114 of the SMP Guidelines state that NRAs must impose one or more SMP services conditions on an undertaking having SMP, and that it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.
- 4.35 Sections 45-49 and 87-91 of the Act set out, among others, the obligations we can impose if we find that any undertaking has SMP (SMP services conditions).⁸⁸ They include obligations of access to and use of specific network elements, transparency, non-discrimination, accounting separation, price control and cost accounting.
- 4.36 SMP services conditions must be appropriate (section 87(1) of the Act) and must satisfy the tests set out in section 47(2) of the Act. These are that each condition must be: (a) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates; (b) not such as to discriminate unduly against particular persons or against a particular description of persons; (c) proportionate to what the condition or modification is intended to achieve; and (d) in relation to what it is intended to achieve, transparent.
- 4.37 We must also act consistently with our general duties under section 3 of the Act, including our primary duty to further the interests of citizens and consumers, where appropriate by promoting competition (see further Annex 5, paragraphs 5.33 to 5.37).
- 4.38 Section 4 of the Act sets out the six Community requirements on Ofcom which flow from Article 8 of the Framework Directive (see further Annex 5, paragraphs 5.38 to 5.42). In considering what remedies may be appropriate, we have considered these requirements. In particular, the requirement to promote competition in relation to the provision of electronic communications networks and electronic communications services. We consider that no conflict arises between these requirements and our duties in section 3 of the Act that we consider relevant.
- 4.39 We are also required by section 4A of the Act to take due account of applicable recommendations issued by the EC under Article 19(1) of the Framework Directive. Where we decide not to follow such a recommendation, we must notify the EC and explain why. Under Article 3(3) of the BEREC Regulation, we must take utmost account of any relevant opinion, recommendation, guidelines, advice or regulatory practice adopted by BEREC.⁸⁹ Insofar as they are relevant to the remedies under consideration, we have therefore taken the required account of the applicable documents.
- 4.40 In addition, specific legal requirements need to be satisfied, depending on the SMP condition in question. For example, in determining whether a dominant provider should be obliged to provide network access, we must take into account factors including the feasibility of the provision of the proposed network access, the investment of the provider initially providing or making available the relevant network and the need to secure effective competition in the long term.⁹⁰
- 4.41 We can only impose a price control where it appears to us from our market analysis carried out for the purpose of setting the condition that there is a relevant risk of

⁸⁸ Sections 87-91 implement Articles 9 to 13b of the Access Directive and Article 17 of the Universal Services Directive.

⁸⁹ Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office, 25 November 2009. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0001:0010:EN:PDF>

⁹⁰ Section 87(4) of the Act and Article 12(2) of the Access Directive.

adverse effects arising from price distortion, and that the setting of the condition is appropriate for the purposes of:

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of public electronic communications services.⁹¹

4.42 Section 88(3) of the Act says that, for these purposes, there is a relevant risk of adverse effects arising from price distortion and lack of effective competition if the dominant provider might set and maintain prices at an excessively high level, or impose a price squeeze, with adverse consequences for end-users.

4.43 In setting a charge control, we must also take account of the extent of the investment in the matters to which the conditions relate, by the MCT provider to whom it is to apply.⁹²

Network access obligation

2015 MCT Statement

4.44 Following our 2015 MCT Statement, all MCT providers with SMP have been required to provide network access on reasonable request on fair and reasonable terms and conditions.⁹³ We propose to retain that SMP condition on all such providers.

Legal Tests

4.45 Section 87(3) of the Act authorises the setting of SMP services conditions requiring the dominant provider to provide network access, as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), include provision for securing fairness and reasonableness in the way in which requests for network access are made and responded to, and for ensuring that the obligations in the conditions are complied with within the periods and at times required under the conditions. When considering the imposition of such conditions in a particular case, Ofcom must have regard to the six factors set out in section 87(4) of the Act. In imposing this condition, we have taken into account all of these (in particular the technical and economic viability of installing other competing facilities, the feasibility of the network access and the need to secure effective competition in the long term).

4.46 In our provisional view, it is not technically or economically feasible to install competing facilities for the purpose of providing call termination services to a particular MCT provider's end users in the period considered by this review. However, given that MCT providers are currently providing network access of the type envisaged by this condition (that is, terminating voice calls to numbers within the relevant market), we are minded to consider that provision of network access is feasible. Likewise, we are minded to consider that the condition would help to secure effective competition in the long term as it would ensure that purchasers of MCT are

⁹¹ Section 88 of the Act and Article 13 of the Access Directive.

⁹² Section 88(2) of the Act and Article 13(1) of the Access Directive.

⁹³ Section 5.2, 2015 MCT Statement.

not disadvantaged in retail markets by the imposition of unreasonable terms and conditions by terminating MCT providers.

- 4.47 Our further provisional assessment is that this condition would meet the criteria set out in section 47(2) of the Act because it is:
- i) objectively justifiable, in that we have identified distortions to competition liable to arise from refusals to supply MCT (or only to do so on unreasonable terms) and the condition would have the aim of ensuring that call termination services are provided by all MCT providers on fair and reasonable terms, such that competition develops to the benefit of consumers;
 - ii) not unduly discriminatory, in that it would apply equally to all MCT providers which, in our preliminary view, hold a position of SMP;
 - iii) proportionate, because it would be the least restrictive means of ensuring that MCT providers are unable to refuse to provide network access to their wholesale call termination services to other providers, in that it would not require MCT providers to provide access if the request is unreasonable; and
 - iv) transparent, in that the condition would be clear in its operation and has been accompanied (in this document) by an explanation of its intended operation and effect.
- 4.48 We have considered our duties under section 3 of the Act. The proposed condition would further the interests of consumers in relevant markets by the promotion of competition because it prevents MCT providers from (i) denying network access with the intention of deterring entry or reducing competition and (ii) providing network access subject to unreasonable terms with the intention and/or result of reducing competition.
- 4.49 We also provisionally consider that this condition would meet the Community requirements set out in section 4 of the Act. In particular, the requirements to promote competition in the provision of electronic communication networks and electronic communication services, and to encourage network access for the purposes of securing efficient and sustainable competition and the maximum benefit for retail consumers.

Question 4.3: Do you agree with our proposal to impose an obligation to provide network access on reasonable request on all MCT providers with SMP? If not, please explain why.

Charge control obligation

2015 MCT Statement

- 4.50 In the 2015 MCT Statement, we applied a charge control to all MCT providers to prevent excessively high MTRs. We noted that many smaller MCT providers, previously subject to a fair and reasonable (F&R) pricing condition, had been pricing considerably above the benchmark rate.⁹⁴ We considered that imposing a charge

⁹⁴ See 2015 MCT Statement, paragraphs 5.108–5.111 for discussion of MTR pricing by smaller MCT providers. The MTR benchmark is the cap that, prior to 2015, applied only to the four largest mobile CPs. See 2015 MCT Statement, paragraphs 4.49-4.54.

control would provide greater clarity and regulatory certainty, and would be easier to enforce, than the F&R obligation.

Proposed charge control

- 4.51 In the absence of an MTR charge control, MCT providers would have the incentive and the ability to charge excessive MTRs even if they were subject to the other remedies discussed in this section. Such excessive wholesale prices would be expected to harm the interests of consumers, including through higher retail prices. Our provisional view is that a cost-orientated charge control would be the most effective way to address our concerns about the risk of excessive MTRs. It would also provide regulatory certainty and eases compliance for MCT providers while enabling more effective enforcement by Ofcom.
- 4.52 We propose that the most suitable approach for preventing excessive MTRs would be a charge control which reflects the costs of a hypothetical efficient mobile provider.
- 4.53 In imposing any price regulation on MCT, we must take due account of the 2009 EC Recommendation which, among other things, recommends setting termination rates based on the costs incurred by an efficient operator and calculated using a bottom-up LRIC model. The 2009 EC Recommendation also states that termination rates should be symmetric, i.e. set at a uniform level across providers, with any deviation being based on objective cost differences outside the control of the individual providers.
- 4.54 The analysis of the appropriate cost standard to adopt for the proposed charge control and the design of that charge control are discussed later in this section and in the next section, respectively, and form part of our overall assessment on the appropriateness of a charge control remedy.

Application to all MCT providers

- 4.55 Prior to the 2015 review, we considered that a price transparency obligation, a requirement to provide network access on fair and reasonable (F&R) terms, and F&R guidance would sufficiently constrain the MTRs of new entrants and smaller MCT providers and would be proportionate given the size of these MCT providers.⁹⁵ However, as set out in the 2015 Review, evidence gathered by Ofcom indicated that these remedies resulted in many smaller MCT providers charging MTRs above – and in some cases far above – the benchmark rate.⁹⁶ Originating providers responded to these high MTRs by excluding calls to these MCT providers from call bundles and increasing the price of calls to these MCT providers. We noted that this could have led to consumer harm through unexpectedly high bills, reduced calls to these numbers and competition distortions.⁹⁷ Our provisional view is that such outcomes would be likely to arise again if all MCT providers were not subject to a charge control, and in particular if smaller MCT providers were subject only to a F&R obligation. Their incentives and ability would be as they previously were.

⁹⁵ 2011 MCT Statement, paragraph 6.88. See also 2015 MCT Statement, paragraph 5.107.

⁹⁶ Some smaller MCT providers are still charging above the regulated rate. However, the number of companies doing so has decreased significantly since the previous review and we are currently undertaking an enforcement programme to address this. See Ofcom Competition Bulletin: https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/open-cases/cw_01193

⁹⁷ 2015 MCT Statement, paragraph 5.112.

- 4.56 We recognise that a charge control has the potential to be more intrusive than a F&R obligation for smaller MCT providers. However, we propose that we could limit the burden on smaller MCT providers, while also addressing our concerns, by setting a single maximum rate with only minimal reporting obligations.
- 4.57 We also recognise that the incurred costs of smaller MCT providers may be below the costs of larger ones, particularly in the case of *asset-light* MCT providers, or above the costs of larger MCT providers.⁹⁸ In principle, our remedies could incorporate some flexibility to reflect differences in efficiently incurred costs, or we could adopt a two-cap MTR system with a lower cap for those smaller MCT providers which might be expected to have lower costs.
- 4.58 However, our provisional assessment is that setting separate MTR caps for different groups of MCT provider is unlikely to deliver a better outcome than our proposed approach, because:
- Any economic inefficiency resulting from *asset-light* MCT providers being allowed to charge above their efficiently incurred costs but under the cap would likely be of very limited scale, particularly given the low level of the current (and proposed) MTR.⁹⁹
 - Regarding smaller MCT providers with potentially high costs, we would expect the level of efficiently-incurred MCT costs to be no higher than the level of the charge-controlled MTR cap.
 - Given the diversity of technological approaches used by different smaller MCT providers and the large number of smaller MCT providers, it would not be proportionate for us to generate multiple cost models – particularly as we consider the efficient costs should be benchmarked to those of an average efficient national provider (as forms the basis of the 2017 Model).
 - In some cases, it may also be difficult for us to determine if a given MCT provider should be treated as an *asset-light* MCT provider.
- 4.59 On those bases, therefore, any negative impact on economic efficiency or consumer harm that may arise would be very limited compared to the benefits of a single charge control. Applying separate price regulation to smaller MCT providers could increase regulatory uncertainty and compliance costs for these MCT providers, while also making it more difficult for Ofcom to enforce effectively.
- 4.60 We accordingly propose that setting a single charge control for all MCT providers is an appropriate remedy.¹⁰⁰ We also propose to monitor the charge control through a

⁹⁸ Asset-light MCT providers are those MCT providers which do not operate or directly incur the costs of operating, a radio access network, and instead use over the top (OTT) solutions to terminate calls to their mobile numbers. For further discussion of *asset-light* MCT providers see paragraphs 5.113 – 5.119 and 5.125 - 5.130 of the 2015 MCT Statement.

⁹⁹ In the 2015 MCT Statement, we said that we considered the scale of the economic inefficiency resulting from *asset-light* MCT providers being allowed to charge above their efficiently incurred costs, to be limited, particularly compared to the consumer harm resulting from the levels and the number of cases of excessive MTRs in the period preceding the 2015 MCT Statement. We are minded to regard this assessment as remaining valid for the present review also.

¹⁰⁰ We also propose that, in any case where the charge control did not apply, for example because it had expired, the network access obligation would continue to apply and would require in that case that access charges should be fair and reasonable. Our provisional view is that a similar assessment

new condition which would require all MCT providers with SMP in their relevant market to notify Ofcom annually of the MTRs charged. MCT providers would be required to submit us with this information within a month of the charge control period finishing (i.e. by 30 April each year). This would enable us to ensure that all MCT providers are complying with the charge control and that we can take swift action where this is not the case. It would give us a more effective way of monitoring compliance than the previous price transparency obligation which we discuss in the section below.

Proposed position on alternative forms of MTR regulation

- 4.61 In the last but one MCT review (i.e. the 2011 Review), we considered alternatives to a “traditional” charge control, including de-regulation (i.e. whether regulation of MTRs was necessary at all), capacity-based charges, mandated fixed-mobile termination rate reciprocity, and mandated “bill and keep”,¹⁰¹ and explained why we did not consider them to be appropriate.¹⁰² In the 2015 Review, we briefly revisited this issue and came to the same conclusion.¹⁰³
- 4.62 If, as expected, net MCT revenues continue to fall, it is possible that they will be too low to cover the associated transaction costs, so that bill and keep may be more efficient. In those circumstances, or if there were strong evidence of outstanding externality benefits (e.g. call externalities or compelling competition arguments), there could be a case for mandating bill and keep. However, we are not proposing to mandate bill and keep in the present review. Although net termination revenues continue to fall, we are not aware of other substantial changes which, for the period of this review, would be sufficient to change the positions set out in the 2011 and 2015 reviews. On that footing, our provisional assessment is that adopting an alternative approach would not be appropriate at this point.¹⁰⁴ We have therefore restricted our assessment to a charge control which takes the traditional form of a cost-based cap on MTRs (i.e. LRIC or LRIC+).

Legal tests

- 4.63 The satisfaction of the legal tests by the charge control condition is discussed in section 6 (from paragraph 6.29) after we have presented the design of the proposed charge control condition. Our provisional conclusion is that a charge control remedy for all MCT providers based on the costs of an average efficient mobile provider would be the most appropriate means to prevent excessively high MTRs.

Question 4.4: Do you agree that our proposal to impose a charge control on all MCT providers with SMP is appropriate? If not, please explain why.

under sections 47 and 87 of the Act would apply in this respect as would apply in respect of the network access obligation generally. Likewise, that, in so far as the requirement would place a control on network access pricing, a similar assessment would apply as in relation to the proposed charge control condition (see section 6).

¹⁰¹ An arrangement under which both interconnecting providers do not charge an MTR (i.e. the MTR is set to zero ppm).

¹⁰² Section 7 of the April 2010 MCT Consultation.

¹⁰³ 2015 MCT Statement, paragraphs 5.138 to 5.144.

¹⁰⁴ See also paragraphs 1.8 to 1.9.

Cost standard for the MTR charge control

Criteria and assessment in the 2015 MCT Statement

- 4.64 In the 2015 MCT Statement,¹⁰⁵ our assessment focused primarily on comparing the LRIC and LRIC+ costs standards.¹⁰⁶ We did not consider there was a case for any other cost standard. We assessed these two candidate cost standards against the following criteria:
- Economic Efficiency: This includes static efficiency (with a focus on allocative efficiency which is concerned with whether the allocation of resources is optimal) and dynamic efficiency (which is concerned with incentives to invest and innovate).
 - Competitive effects: The analysis of competitive effects seeks to identify whether one or other cost standard is more likely to encourage effective competition. Increased competition generally promotes both static and dynamic efficiency;
 - Distributional effects: In particular, the implications for vulnerable consumers;
 - Commercial and regulatory consequences: Whether either of the cost standards could have unintended commercial and/or regulatory consequences.
- 4.65 In the 2015 MCT Statement we considered in detail which cost standard was appropriate and proportionate for the 2015-2018 market review period. We decided that LRIC was the appropriate cost standard because, amongst other things:
- We considered that LRIC facilitates more effective competition.¹⁰⁷ MTRs would be higher if set at LRIC+ than when set at LRIC. This would raise the cost to mobile (and fixed) providers of their customers making calls to other networks, and so could reduce incentives (and/or ability) for providers to compete on retail calls or subscribers. MTRs above LRIC risk reducing effective competition, adversely affecting, in turn, consumers.
 - Allocative efficiency considerations do not necessarily point to an optimal MTR which is above LRIC.¹⁰⁸ While it could in theory be efficient for MTRs to contribute to common costs, in practice the correct level of any mark-up over LRIC is highly uncertain – particularly when considering the opportunity to recover common costs on the retail-side of the market through a variety of tariffs and that MCT is a situation of two-way access (i.e. charges are paid by competing providers and if traffic were balanced it would net off). Effective retail competition should give MCT providers an incentive to minimise costs (as required for productive efficiency) under either cost standard and so provides little to choose between LRIC or LRIC+.

¹⁰⁵ Section 6, 2015 MCT Statement.

¹⁰⁶ Long Run Incremental Cost (LRIC) measures the incremental cost to an operator of providing a service in the long-run. It includes the variable and fixed costs associated with the service increment in question, in this case MCT. LRIC+ includes a mark-up for joint and common costs, such as the cost of the spectrum used by the network. By definition, the LRIC standard, as currently used to set the charge control, does not include such a mark-up.

¹⁰⁷ For example, see paragraphs 6.93 to 6.162 and 6.202, 2015 MCT Statement.

¹⁰⁸ For example, see paragraphs 6.17 to 6.56 and 6.202, 2015 MCT Statement.

- A LRIC cost standard is unlikely to discourage efficient investment and any potential adverse impact on dynamic efficiency from a LRIC cost standard would be very small.¹⁰⁹
- There was little empirical evidence of MTR reductions harming vulnerable consumers.¹¹⁰
- Regulatory certainty is important and a LRIC cost standard is consistent with the 2009 EC Recommendation and the approach to FTRs, then (as now) also set at LRIC.¹¹¹ We did not consider any other commercial or regulatory consequences justified capping MTRs at a level above LRIC.

Applicability to this review

4.66 Our provisional view is that the criteria adopted in the 2015 MCT Statement remain appropriate when considering the cost standard to be used for the 2015-18 period. As regards the pro-competitive benefits of LRIC, we recognise that retail competition has become increasingly focussed on data offers, but voice calls remain important with most packages typically offering high volumes of inclusive calls (which is more commercially viable when MTRs are low). Our provisional assessment is that the market developments we have seen do not alter the conclusion in favour of LRIC. There is still a gap between LRIC and LRIC+ and retail competition in calls that means that the previous reasoning would hold.

Updated empirical evidence

4.67 In addition, our further provisional view is that the available empirical evidence does not support departing from a LRIC cost standard:

- In the 2015 MCT Statement, we estimated the maximum net effect on mobile providers' revenues from MTRs set at LRIC rather than LRIC+ to be around £65 million in 2015/16.¹¹² We noted that would be less than 2% of EBITDA for the largest four providers and that mobile providers could recoup foregone revenues from the retail market.¹¹³ Based on this we said the financial impact of using LRIC rather than LRIC+ would be relatively small.¹¹⁴ Updated estimates of EBITDA and EBIT¹¹⁵ for the four largest mobile providers and aggregate retail revenues.¹¹⁶

¹⁰⁹ For example, see paragraphs 6.57 to 6.92 and 6.202, 2015 MCT Statement.

¹¹⁰ For example, see paragraphs 6.163 to 6.193 and 6.202, 2015 MCT Statement.

¹¹¹ See paragraph 6.199, 2015 MCT Statement.

¹¹² See paragraph 6.75, 2015 MCT Statement.

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ Above £4 billion and £1 billion respectively in each year from 2009 to 2015, in December 2015 prices.

¹¹⁶ £15.2bn in 2015. From figure 4.1, Ofcom, CMR 2016.

remain very large relative to the likely maximum difference in mobile provider revenues under a LRIC and LRIC+ cost standard.^{117 118}

- In our Award of the 2.3 and 3.4 GHz spectrum bands consultation document, we said “the [retail mobile] market appears to be operating well at present”.¹¹⁹ We cited several factors supporting this including the growth in take-up, growth in the market share of H3G and MVNOs, relatively low prices for UK consumers, high levels of satisfaction and continued investment in new services. In line with these considerations, the shift to a LRIC cost standard does not appear to have adversely affected retail competition.
- As in the 2015 MCT Statement, we have assessed distributional effects by considering the impact of the choice of cost standard on the affordability of mobile voice services for those with low incomes (below £11,500 per year) and/or in lower socio-economic groups (D and E). In this context, these groups are the most vulnerable as they can least afford an increase in price. There continues to be little empirical evidence of MTR levels adversely impacting upon vulnerable customers. In 2016, only 3% of adults who made decisions on purchasing communication services reported experiencing ‘affordability issues’ related to mobile.¹²⁰ Additionally, between 2011 and 2016, the share of households with no mobile phone fell from 16% to 11% among those with reported total incomes below £11,500, from 12% to 9% among those in social groups D and E and from 7% to 5% overall.¹²¹

4.68 We also note the regulation of MTRs at LRIC would be consistent with the 2009 EC Recommendation. We further note that it is in line with our 2016 Narrowband Market Review Consultation (which proposed continuing to cap FTRs at LRIC for the period to September 2020) and the approach of most other European NRAs.

Provisional conclusion

4.69 In light of the above, we provisionally conclude that LRIC remains the appropriate cost standard for setting the MTR charge control.

¹¹⁷ The estimation of the maximum net effect on MCT providers’ revenue from MTRs set at LRIC rather than LRIC+ requires an estimate of LRIC+. We can use the MCT Model to calculate LRIC+ (any inputs not updated as part of calculation of LRIC will be the same as those used for the 2015 MCT Statement), and then calculate the difference compared to LRIC. We can produce an illustrative estimate of the maximum net effect by combining this difference (in 2018/19 at 2015/16 prices) with the most recent (i.e. 2016) termination volumes from our s135 data requests to the four largest mobile providers. This leads to an estimate of about £46m per year.

¹¹⁸ We also note aggregate capital expenditure for the four largest mobile providers was over £2bn in 2015 and continues to be above the levels observed before the shift from LRIC to LRIC+ in 2009.

¹¹⁹ Ofcom, “Award of 2.3GHz and 3.4GHz spectrum bands” Paragraph 3.5, <https://www.ofcom.org.uk/consultations-and-statements/category-1/award-of-the-spectrum-bands>, published November 2016. See also Annex 7 of the same document.

¹²⁰ Ofcom, Affordability of Communications Services, July 2016, slide 21 https://www.ofcom.org.uk/_data/assets/pdf_file/0026/95138/Affordability-of-Communications-Services-Tracker-2016.pdf. Affordability issues are defined as those who have been behind on their payment for any communications services by one month or more in the last year, or have sold items/taken out a loan as part of their monthly spending in order to afford communications services.

¹²¹ QD1, Ofcom Technology Tracker H2 2016, https://www.ofcom.org.uk/_data/assets/pdf_file/0032/93596/Ofcom-Technology-Tracker-H2-2016.pdf; Ofcom Technology Tracker Wave 2 2011, https://www.ofcom.org.uk/_data/assets/pdf_file/0027/42669/wave2sept2011.pdf

Question 4.5: Do you agree with our proposal that LRIC should continue to be the appropriate cost standard? If not, please explain why.

Application of a charge control to all terminated calls, including from outside the EEA

- 4.70 As we explain in Annex 11, it has been argued by certain providers that they should be afforded the freedom to price above the MTR cap for certain calls originating outside the UK. In particular, for calls from non-EEA countries where termination rates are sometimes well in excess of the UK MTR (and in excess of MTRs in European countries that have followed the 2009 EC Recommendation). Another provider has argued that differential regulation of MTRs based on country of origin would raise competition distortions and consumer harm. Regulatory practice by European NRAs varies on this issue.
- 4.71 For the reasons explained more fully in Annex 11, we propose that the same MTR cap should apply to all calls regardless of the country of origin. This is derived from our provisional assessment that termination rates capped at LRIC would facilitate more effective competition, be consistent with our efficiency objectives and further consumers' interests. That being so, our prima facie view is that we would need good reasons (and evidence) to consider that these interests and objectives would instead be better served by differential regulation with some calls charged above LRIC.
- 4.72 While there may in principle be some benefits from differential regulation, these depend on where rates would settle and whether any benefits are passed from mobile providers to consumers. In particular, for the benefits to be material, it requires either:
- a) high termination rates in other countries being reduced through negotiation and strong pass-through of these cost reductions to UK retail call prices; or
 - b) a waterbed effect whereby higher wholesale revenues for UK mobile providers are used to reduce retail prices for UK consumers or to invest more in UK mobile networks to the benefit of consumers.
- 4.73 Our assessment at this stage is that these benefits are either unlikely to materialise or would be small. In addition, there are risks that allowing UK mobile providers to set higher MTRs could have negative consequences for consumers, particularly if it led to a 'race-to-the-top' in setting MTRs, or contagion to countries where there are currently reciprocal low rates. A likely increase in UK MTRs, owing to differential regulation, is liable to cause a reduction in calls to UK consumers from outside the EEA.
- 4.74 We therefore make the provisional regulatory judgment that the same controlled rate should apply to all mobile calls terminated in the UK and that this would be consistent with our efficiency objectives and more likely to further consumers' interests in line with our principal duty under section 3 of the Act.

Question 4.6: Do you agree with our proposal to apply the charge control to all calls, including those originated outside the EEA?

Absence of a need for *ex-ante* protection in relation to discrimination

- 4.75 The role of a no undue discrimination obligation is to address the risk of price and non-price conduct that could act to significantly distort competition.
- 4.76 In 2015 we imposed a no undue discrimination obligation on the four largest mobile providers based on the potential for discrimination with adverse effects on competition.¹²²
- 4.77 In relation to discriminatory pricing, our concern in the 2015 MCT Statement was that even with a charge-controlled MTR cap, MCT providers may still have charged purchasers of MCT different MTRs below the cap with the intention or the effect of reducing competition or deterring entry. For example, if two or more of the larger MCT providers entered a bilateral bill and keep agreement, but charged competing providers an MTR above zero, they may have been at an unfair advantage. This could, in principle, have distorted competition. In principle, distortions of competition could also arise if large mobile providers coerced smaller ones into entering bill and keep arrangements which are unfavourable to the smaller provider.
- 4.78 We have considered these matters again in the context of the new review period. In doing so, we recognise that bill and keep could bring certain efficiencies and in the longer-term may become the basis by which providers (both mobile and fixed) agree to exchange voice traffic between their networks. While we do not propose that the time has come to mandate bill and keep as the basis for price regulation of termination, providers may find it efficient to agree bill and keep between themselves.
- 4.79 Going forward, we are not minded to impose a no undue discrimination obligation to prohibit these sorts of arrangements or forms of undue discrimination. On balance, our provisional assessment is that the likelihood of, or adverse consequences from, price and non-price discrimination are now much reduced and imposing that obligation would not, therefore, be proportionate. There are three main reasons for this.
- 4.79.1 First, MTRs are proposed to be maintained at LRIC, but with further reductions in the cap compared to previous review periods. As such, MTRs would be at historically low rates. Set against this, retail competition and network costs are increasingly driven by data rather than voice traffic.¹²³ As a result, a providers' incentive to enter into unduly discriminatory pricing arrangements in relation to MCT, and the likelihood of doing so, appear to us to be limited. Similarly, the consequences for a provider of being excluded from a B&K arrangement would also be more limited than when MTRs were higher.
- 4.79.2 Second, it is unlikely one MCT provider would in practice be able to coerce another to enter into a distortive B&K arrangement under threat of refusal to interconnect. Regulation would prohibit this since all providers would be

¹²² 2015 MCT Statement, paragraph 5.74-5.93.

¹²³ For example, we note at the start of the last market review period (Q1 2015/16) voice accounted for 2.2% of the total network traffic accounted for by voice, data and messages, when demand is expressed in the common unit of busy hour megabits per second. By the end of the new review period (Q4 2020/21) it is forecast to be just 0.7%. Source: MCT 2017 Model.

under a network access obligation requiring them to provide interconnection (and MCT). Moreover, BT is interconnected with all the major mobile providers and so at the point of entry and interconnect negotiation, BT will always provide an outside option for the smaller or entrant provider to complete calls (given BT's presence as a transit provider and coupled with BT's end-to-end connectivity obligation).

- 4.79.3 Finally, as far as non-price discrimination is concerned, we take account that interconnection arrangements are well established, with larger operators having direct interconnection and smaller operators interconnecting via transit providers. Furthermore, compared to fixed voice services, there are significantly fewer points of physical interconnection and the non-geographic nature of calls to mobiles means issues related to where a call is handed over do not arise in the same way as for interconnection to BT's terminating nodes for fixed call termination. These factors would limit the scope for non-price discrimination to distort competition and to have a detrimental impact on consumers.
- 4.80 Accordingly, our provisional view is that a no undue discrimination obligation would be unnecessary. A flat rate cap on MTRs at LRIC would provide sufficient protection against our primary concern of excessively high MTRs. In the unlikely event that an MCT provider did engage in unduly discriminatory behaviour distorting competition, *ex post* competition law would apply.
- 4.81 Not imposing a no undue discrimination obligation would also be consistent with the approach to deregulation outlined in our Strategic Review of Digital Communications. There (in paragraph 8.5) we said we would “...*continue to look for opportunities to simplify the regulation of call termination, but it is likely that some form of protection against high termination costs [i.e. high MTRs] will need to continue.*”

Question 4.7: Do you agree with our proposal to remove the non-discrimination obligation on the four largest mobile providers?

Absence of a need for a separate price transparency obligation

Position in 2015 MCT Statement

- 4.82 In our 2015 MCT Statement we imposed a price transparency obligation that required all MCT providers designated with SMP to publish their MTRs (M4.1, M4.2) and to publish proposed changes to their MTRs at least 28 days in advance of those changes coming in to effect (M4.3). We also said that such publication would be required to be effected by (i) sending MTR information to any person who may reasonably request it and (ii) by placing such information on any relevant website operated or controlled by the dominant provider (M4.4). We set out the minimum information that any such notification of a change in MTRs must include (M4.5).
- 4.83 Concerns were raised by Telefónica in response to our 2014 Consultation regarding the need for a price transparency obligation.¹²⁴ In particular, it argued that a price transparency obligation would be redundant if there was a charge control obligation on all MCT providers with SMP and argued that smaller MCT providers were likely to price MCT at the maximum MTR permitted by the charge control. Telefónica also

¹²⁴ https://www.ofcom.org.uk/data/assets/pdf_file/0031/67945/telefonica.pdf

noted that Ofcom publishes the regulated cap in advance which gives the market clarity regarding charges.¹²⁵

- 4.84 We did not agree with these arguments in the 2015 MCT Statement as we considered that the price transparency obligation would provide certainty to MCT providers and help to facilitate monitoring and compliance.

Proposal for MCT 2018

- 4.85 In principle, we still consider that the absence of reasonable clarity with respect to MTRs could harm competition and consumers' interests. Transparent charges enable providers to plan retail offers with certainty and monitor potentially discriminatory conduct. They also help Ofcom enforce compliance with the charge control.

- 4.86 We have considered the extent to which these considerations remain relevant over the review period. Our provisional assessment is that there will be a high level of transparency of MTRs. We also consider that the current obligations have not been particularly effective in helping secure compliance. On those bases, we are minded to regard the obligations as no longer necessary and that imposing them would be disproportionate.

- 4.87 Clarity in relation to MTRs would exist without the price transparency obligation for the following reasons:

- First, the MTR cap is, and under our proposals will continue to be, published on the Ofcom website annually.¹²⁶ This reflects the MTR cap that comes into force on 1 April of each year, adjusted for inflation. This is used by MCT providers to ensure that they are compliant with the regulated MTR cap for the following year. We propose to publish the MTR cap annually, two months in advance of the change in MTR cap (in February of each year). This will give MCT providers clear information on the maximum MTR that they can charge and all providers (fixed and mobile) the maximum MTR they can expect to pay for MCT.
- Second, evidence collected during this review has shown that most smaller MCT providers and all the large mobile providers are charging the regulated cap.¹²⁷ So, in most cases the MTR published by Ofcom will reflect the rate that providers will pay for termination.
- Third, the BT Carrier Price List (CPL) provides the termination rates for all MCT providers who interconnect with BT. The CPL is fully available to all users who complete a simple registration form on BT's website.¹²⁸ The CPL is a mechanism that is understood by industry stakeholders. Although not every small MCT provider interconnects with BT, the CPL contains the MTRs charged by most MCT providers.

- 4.88 As to aiding compliance and enforcement, in the 2015 MCT Statement we concluded that the price transparency obligation would enable Ofcom to monitor compliance

¹²⁵ Telefónica has raised similar concerns with us informally in the current review.

¹²⁶ <https://www.ofcom.org.uk/about-ofcom/latest/media/analysts/regulated-prices>

¹²⁷ Information provided under s135 of the Communications Act in February and March 2017.

¹²⁸ BT's CPL is available at: <https://www.btwholesale.com/pages/static/help-and-support/pricing/carrier-price-lists.htm>. Users must register for access and can then view section 1.02.1 of the CPL which lists all of the companies that interconnect with BT for MCT and the MTRs that they charge.

with the charge control. Having considered whether it is effective for that purpose, our provisional assessment is that it has not been as effective as anticipated.

- 4.89 We recognise that some smaller MCT providers have not complied with the price transparency obligation in this review period and many have not published their MTRs on their website. We currently have an open enforcement programme which is looking at compliance with the MCT charge control. In gathering information on MTRs charged, we have used our formal information gathering powers rather than the price transparency obligation to check compliance.
- 4.90 To monitor compliance with the charge control by more effective alternative means, we propose, as outlined in the charge control section above, to introduce a requirement to notify Ofcom annually of the MTRs charged in the previous charge control year. MCT providers will be required to provide Ofcom with this information within a month of the charge control year finishing and, if they fail to provide it, we will be able to take enforcement action.

Absence of a need for other reporting obligations

- 4.91 We have also considered whether to impose Accounting Separation and Cost Accounting remedies on MCT providers, noting that we have not done so in previous MCT reviews. We do not consider it would be appropriate in the context of this market as we anticipate that the total cost of requiring each MCT provider to invest in and develop appropriate accounting separation and cost accounting systems could be significant.

Question 4.8: Do you agree with our proposal to remove the price transparency obligation on all MCT providers with SMP? If not, please explain why.

Section 5

Calculating the efficient cost of MCT

Introduction

- 5.1 In Section 4 we provisionally concluded that it is appropriate to set cost-based charge controls on all MCT providers with SMP and that the appropriate cost standard to use for MTRs was LRIC. This section summarises how we propose to calculate the efficient costs of MCT. Further details of our calculations are provided in Annex 9, and an explanation of how we propose to implement the charge control can be found in Section 7.
- 5.2 In order to calculate the efficient level of costs for MCT for the purposes of this consultation, we have used a cost model ('the 2017 MCT model') which is published alongside this consultation. The 2017 MCT model is the same as the 2015 MCT model that was published as part of the 2015 MCT Statement,¹²⁹ with minimal updates.¹³⁰ To calculate the efficient costs for MCT for the purposes of any charge control we impose in the Statement we propose to publish a further version (the '2018 MCT model') alongside the Statement.
- 5.3 In considering whether to use the 2015 MCT model, we have considered whether the approach taken in that model remains appropriate. In particular, we have gathered data from the MCT providers and tested the impact of updating inputs and assumptions on the results. We have found that while updating some parameters in isolation would have some impact on the results, when the updates are considered in the round they would not have a material impact on MTRs. Our provisional assessment is that the likely impact would only be in the order of a decrease in the LRIC of MCT of less than 0.2%.
- 5.4 As a result, we make no changes to the key inputs to the 2017 MCT model compared to those in the 2015 MCT model. This means that we have not updated the technologies modelled, traffic volumes, real equipment unit costs or the cost of capital. We make the minimum set of changes necessary to ensure that a new price cap could be applied to MTRs from today, so update the model only for inflation and to focus on presenting results for the next charge control period of 2018/19 to 2020/21.¹³¹ Our provisional view is that the same should apply to the 2018 MCT Model, for the same reasons, and that is the approach we propose to take.

Approach to updating the MCT model

- 5.5 The 2015 MCT model used a bottom-up approach to calculate the cost of MCT for an average efficient national mobile provider.¹³² The model was designed to be independent of any particular mobile provider's business model or choice of technology, and calculates the LRIC of MCT on a forward-looking basis, including estimates of costs for the forthcoming charge control period.

¹²⁹ See <https://www.ofcom.org.uk/consultations-and-statements/category-1/mobile-call-termination-14>

¹³⁰ The 2017 MCT model remains capable of replicating the base case results of the 2015 MCT model, if 'Scenario 1' is selected.

¹³¹ These updates form the 2017 base case scenario, which is 'Scenario 2' of the model.

¹³² By 'national mobile provider' we mean a mobile provider with a national RAN, which has independent control of spectrum.

- 5.6 Like any model, the 2015 MCT model sought to approximate reality through simplifying assumptions and it also involved inherent uncertainty because it is forward-looking in nature. Nevertheless, in the 2015 MCT Statement we considered that it produced reasonable estimates of the costs of MCT over the period 2015/16 to 2017/18. The question we have considered at the outset of this review is whether the 2015 MCT model continues to provide a reasonable approximation of reality that is appropriate as a basis for estimating the unit costs of MCT for the next market review period of 2018/19 through to 2020/21.
- 5.7 To answer this question, we have identified the key inputs to the 2015 MCT model and investigated the likely impacts of updating them on the model results. We have done this first by adjusting individual parameters and then by considering the impact of those adjustments on a cumulative basis. We would be concerned if the cumulative impact of any adjustments were material as this might suggest that the 2015 MCT model was no longer a reasonable approximation of reality (even if the individual impact of a particular adjustment were material, it could be offset by other adjustments such that the cumulative impact of all of them were not). This reflects the fact that the 2015 MCT model contained an internally consistent set of inputs and hence we are wary of introducing inconsistency by changing some inputs in isolation.
- 5.8 To inform our testing we have collected data from the four largest MCT providers using our information gathering powers under section 135 of the Act. We sent information requests to the four largest MCT providers on 16 February 2017 requesting detailed information in relation to:
- Technology choice;
 - Subscription information;
 - Network traffic volumes; and
 - Forecasts for traffic growth.
- 5.9 We have also considered updates to unit equipment costs and the WACC, and in the following subsections discuss each of technology, volumes, equipment costs and WACC, before considering the impact of updates in the round.
- 5.10 Having undertaken the above analysis, we have found that updating the key input data and assumptions would not materially affect the 2015 MCT model outputs and consequently we propose to use that the model to calculate the MTR cap for the 2018-2021 review period. Our analysis is explained in the following sub-sections, with further detail provided in Annex 9.

Choice of technology

- 5.11 The 2015 MCT review involved an extensive modelling exercise to reflect developments since the previous review in 2011. This included major structural changes to incorporate a 4G network (including 4G voice, i.e. VoLTE technology), active infrastructure sharing and single-RAN deployment. Since the construction of the 2015 MCT model there have been incremental developments in technology but our provisional view is that there have not been the sort of significant technological or spectrum deployment changes that we needed to take into account in the 2015 MCT review.

- 5.12 We have tested this using information gathered from the MCT providers under our statutory powers and in particular they have confirmed that:
- they have no plans to turn off their 2G networks;
 - while 5G technology is being developed, it will not be deployed in this charge control period to the extent that it would significantly affect MCT; and
 - although there has been some deployment of VoWiFi technology, this is not currently material and it is unclear that it will be over this charge control period.
- 5.13 We have considered the impact of the possible introduction of VoWiFi technology. Were VoWiFi to be introduced, this would have the effect of reducing the blended LRIC of MCT because it takes traffic off the modelled radio network, but would also involve lower utilisation in the usage of existing capacity (and thus a potentially off-setting effect in relation to unit costs). As we explain further in Annex 9, implementing VoWiFi robustly in the model would be a significant piece of work as it would require us to update certain elements in the mobile core network.¹³³
- 5.14 To assess the possible impact, and accordingly the need for this further work, we have tested the position using certain assumptions. In particular, it appears reasonable to assume that the incremental cost of a Wi-Fi terminated minute is zero: most of the costs to terminate a mobile call arise from the mobile radio access network (which is not used in the case of a VoWiFi call).
- 5.15 We also require an assumption for the extent of VoWiFi traffic in 2020/21. As noted above the information gathered from the MCT providers under our statutory powers suggests that the extent of VoWiFi is currently low, but varies between operators. As we explain further in Annex 9, the extent to which it might grow is unclear and we have tested a range of assumptions for this and consider a forecast of 3% of termination traffic being on VoWiFi in 2020/21 is reasonable. The impact of these assumptions (which ignore the lower utilisation of 2G, 3G and 4G voice assets) would be to reduce the LRIC of MCT by around 2-3% compared to our updated base case. This test and its limitations are explained further in Annex 9.

Traffic volumes

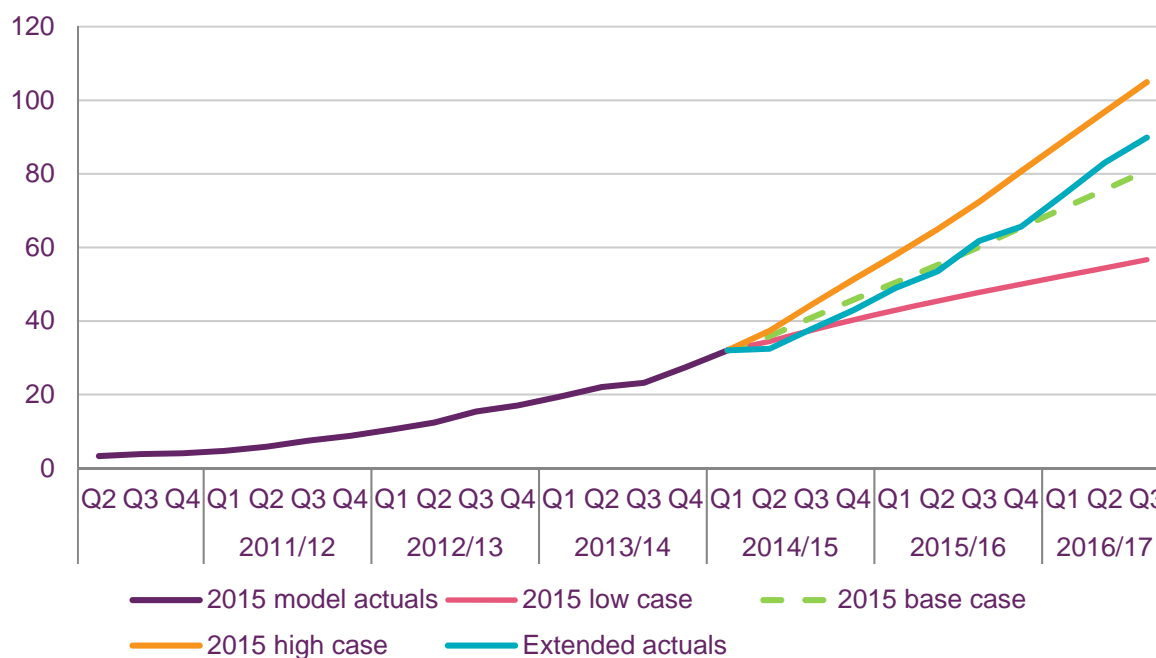
- 5.16 Telecommunication networks are characterised by economies of scale: greater volumes of traffic, caused by market growth or increased market share, lead to a smaller proportionate increase in total network cost. Similarly, the presence of common costs means that there are economies of scope from the provision of more services. This means that network traffic volumes can have an important bearing on the unit costs of network services.¹³⁴
- 5.17 The 2015 MCT model was dimensioned to carry the total demand of an average efficient mobile provider for 2G, 3G and 4G voice, data and SMS/MMS services. We have tested the accuracy of the forecasts we made in 2015 against actual traffic volumes now obtained under our statutory powers. Although there are some issues with the compatibility of the data over time, our provisional view is that (at a high level) our traffic forecasts were reasonable. As an example, Figure 4 below shows

¹³³ For example, it would require us to include the cost of the Evolved Packet Gateway (ePG) and Authentication, Authorization, and Accounting (AAA) network function. These elements terminate the secured IP-based connection and update the subscriber data, respectively.

¹³⁴ We would expect to see an inverse relationship between traffic volumes and the LRIC+ per unit of network services. Traffic volumes and the LRIC per unit of network services do not always have such a clear relationship due to LRIC not including common costs.

forecast and actual data traffic, which was a particular source of uncertainty and comment from stakeholders as part of the 2015 MCT review.

Figure 4 Total data volumes (Peta Bytes per quarter)



Source: 2017 MCT Model.

5.18 As explained further in Annex 9, when we update voice and data traffic volumes and the blend of subscribers between 2G, 3G and 4G technologies to reflect the outturn figures the cumulative impact is an increase in the LRIC of MCT of a little under 3%, compared to our updated base case. If we were to update our forecasts of 4G data traffic volumes alone, it appears to us that this would lead to a reduction in the updated LRIC of MCT of approximately 0.5% compared to our updated base case.

Equipment unit costs

5.19 The 2015 MCT model includes around 120 assets, each with a unit cost and a cost trend over time. In order to assess the validity of the assumptions used in the 2015 MCT model we have drawn comparisons for key assets with the very recently published French MCT model for consultation which, like our 2015 model, was developed with Analysys Mason.

5.20 These comparisons are not entirely straightforward and, in general, the French MCT model shows more significant reductions in equipment costs than those in our 2015 MCT model. However, for cell sites or backhaul, which are the two main assets contributing to the LRIC of MCT, the trends are almost identical. We note that where there are differences in cost trends they appear to be driven by standard assumptions in the French model which apply to large numbers of assets in all years. In addition, the French trends do not show variation in recent years, and equipment capacities (which would drive additional changes in cost trends) do not appear to have changed significantly. On balance, our provisional assessment is that the equipment costs in our 2015 MCT model remain valid.

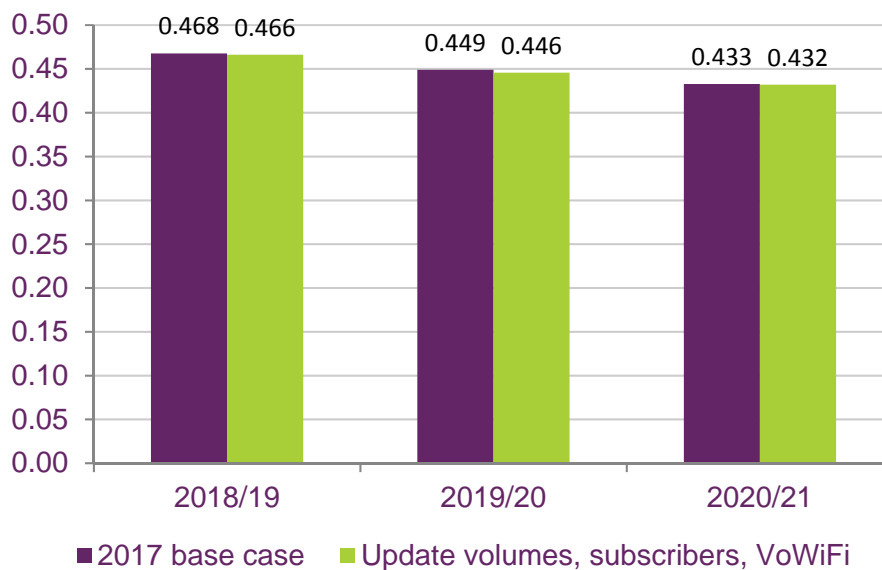
Cost of capital

- 5.21 The 2015 MCT model used a pre-tax real WACC of 7.0% for an average efficient mobile provider. We have updated the analysis such that the market-wide parameters used in the calculation are consistent with those in the recent WLA consultation¹³⁵ and reviewed the asset betas and debt premiums specific to the mobile operators.
- 5.22 This leads to a range of 6.1% to 7.7%. As explained further in Annex 10 we propose that, in light of this range, a WACC of 7.0% remains reasonable.

Summary of proposals on modelling updates

- 5.23 In considering how to model the costs of MCT for the next review period, therefore, our provisional view is that the 2015 MCT model provides an appropriate starting point.
- 5.24 As outlined above, we have identified and investigated the key inputs and assumptions in the 2015 MCT model and considered whether and to what extent updating these inputs would affect the outputs. When we update voice and data traffic volumes, the blend of subscribers between 2G, 3G and 4G technologies and the introduction of VoWiFi at an approximated zero cost, the net effect on the 2020/21 LRIC of MCT is a decrease of 0.2%, as shown in Figure 5 below.

Figure 5 LRIC of MCT (pence per minute, 2015/16 prices)



Source: 2017 MCT Model.

- 5.25 However, the update for VoWiFi might overstate the extent to which costs are reduced, as explained further in Annex 9. That said, were we to update our forecasts of 4G data traffic volumes, this could lead to a further reduction in the forecast LRIC of MCT of approximately 0.5% compared to the 2017 base case. To the extent that there might have been increases in equipment capacities, this would also have a modest downward impact on the updated result, although there are further

¹³⁵ See Annex 16 of the WLA Consultation, available from <https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review>

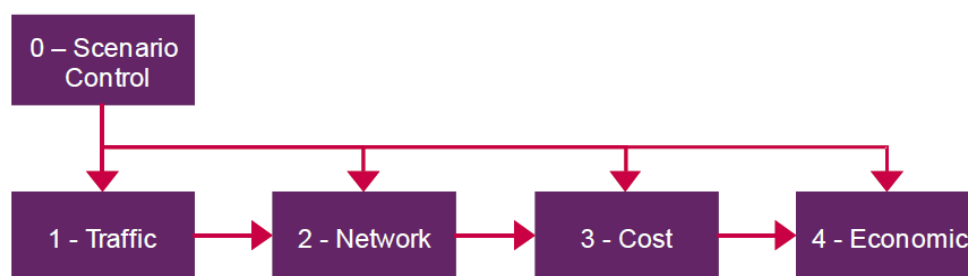
uncertainties in equipment cost trends such as the future replacement cost (especially if sourced overseas and given the depreciation of sterling since the last review¹³⁶).

- 5.26 Provisionally we find that, while updating some parameters in isolation could have a small percentage impact on the LRIC of MCT, when considered in the round the changes would not have a material impact on the LRIC of MCT. Therefore, it is not clear to us that updating the 2015 MCT model would make it a better approximation of reality. As a result, rather than construct a new model, we use a 2017 MCT model that is updated from the 2015 MCT model only to the extent necessary for general price inflation. This would mean updating for actual CPI to present costs in 2015/16 prices (rather than 2012/13 prices), and updating the model so that the outputs focus on the forthcoming charge control period of 2018/19 to 2020/21 rather than the 2015/16 to 2017/18 period.

Model design

- 5.27 Reflecting the above, the structure of the 2017 MCT model design is the same as that explained in the 2015 MCT Statement. The 2017 MCT model comprises five modules, each of which represents an Excel workbook, as shown in Figure 3 below.

Figure 6 Structure of the 2017 MCT model



Source: Ofcom.

- 5.28 The functions of these modules are described further in Annex 9, but the basic steps are as follows:
- Step 1: Calculate the network traffic (both voice and data) that is carried by the modelled mobile provider;
 - Step 2: Use cost drivers to dimension a network capable of carrying this traffic;
 - Step 3: Calculate the cost of the assets in the dimensioned network;
 - Step 4: Spread the costs of the network over time using an economic depreciation algorithm; and
 - Step 5: Recover the costs of the network across services based on the routing factors used to dimension the network.

¹³⁶ We note for example that since the publication of the 2015 MCT Statement the pound is worth roughly 16% less against the dollar.

Calculating LRIC

- 5.29 We do not propose to change our approach to calculating the LRIC of MCT from that proposed in the 2015 MCT model. Consistent with the 2009 EC Recommendation, our proposed approach would involve considering MCT as a 'final increment' with no common costs (such as the common costs of a 'coverage network') being allocated to MCT.
- 5.30 The incremental costs associated with incoming voice traffic would be derived by first calculating the model outputs (i.e. service demand, asset volumes and cashflows for each network element) with incoming voice traffic included and, second, with incoming voice traffic excluded. The incremental service demand, asset volumes and cashflows for each network element would then be used as inputs to the economic depreciation algorithm. The output of this algorithm being the LRIC of an incoming minute of voice traffic in pence per minute (ppm) terms.

Other modelling issues

Spectrum holdings

- 5.31 Consistent with our maintenance of other inputs to the 2017 MCT model as they were in the 2015 MCT model, we maintain the same spectrum holdings. In the absence of material changes in the spectrum holdings or usage of spectrum by the national mobile providers our provisional view is that the spectrum holdings in Table 4 below reflect the holdings that an average efficient mobile provider could be assumed to hold, although we note that these do not necessarily reflect the actual holdings of any current mobile provider.

Table 4: Spectrum holdings of average efficient MCT mobile provider in the 2017 MCT model

Band	Holding (paired MHz)	Technology
800MHz	10	4G
900MHz	0	n/a
1800MHz	30	2G
	10	4G ¹³⁷
2.1GHz	10, increasing to 15 in 2012/13	3G
2.6GHz	10	4G

Source: 2017 MCT model.

Non-network costs

- 5.32 In addition to network costs, non-network costs were included in the 2015 MCT model, specifically administrative costs. These costs are only used to calculate the LRIC+ of MCT and have no impact on the LRIC results because they are not incremental to MCT. Since we propose to set MTRs on the basis of a LRIC cost

¹³⁷ Following refarming in 2012/13.

standard, as explained in Section 4, we have not updated the non-network costs from those in the 2015 MCT model.

Calibration

5.33 Calibration was an important part of the process of developing the 2015 MCT model in order to ensure that the modelled asset counts and costs were reasonably in line with those of the 2G/3G/4G national mobile providers.¹³⁸ Since we are not proposing to make any significant changes in developing the 2017 MCT model, we propose to maintain the calibration carried out in 2015.

Summary of model results

5.34 In Table 5 below we present the current MTR and our provisional base case LRIC forecasts calculated using the 2017 MCT model (the latter being expressed in 2015/16 prices).

Table 5: Current MTR, and forecast LRIC of MCT and consultation range (pence per minute ppm)

	From 1 April 2017	From 1 April 2018	From 1 April 2019	From 1 April 2020
Current MTR (nominal)	0.495			
Cost (2015/16 prices)	0.489	0.468	0.449	0.433
Range (2015/16 prices)		0.355–0.602	0.338–0.583	0.323–0.567

Source: 2017 MCT model.

Consultation question

Question 5.1 Do you agree with our proposed modelling approach as discussed in Section 5, the supporting annexes and the 2017 MCT model? If not, please discuss the specific proposals that you disagree with.

¹³⁸ See Annex 9 of the 2015 MCT Statement.

Section 6

Implementation of the proposed charge control

Summary of our proposals

- 6.1 In Section 4, we proposed a charge control on all MCT providers with SMP, and we proposed that MTR charges should be capped on the basis of LRIC.
- 6.2 This section explains how we propose to implement the proposed charge control and assess compliance with it. We set out here our proposals to:
- Index the MCT charge control using a CPI-X formulation;
 - Set a three-year charge control between 1 April 2018 and 31 March 2021;
 - Set a single MTR cap for all MCT providers with SMP;
 - Set a maximum cap charge control (rather than one based on a weighted average of time of day rates); and
 - Align the cap to the forecast LRIC for each year of the charge control rather than use a glide path.
- 6.3 We also set out our provisional view on whether the relevant legal tests would be satisfied if we were to impose a single charge control based on LRIC on all MCT providers with SMP.
- 6.4 We note that our proposed approach mirrors that in the 2015 MCT Statement, with the exception that we propose to align the cap to the forecast LRIC in each year of the charge control, rather than from the second year onwards (i.e. we do not propose a glide path or any transition period).
- 6.5 Annex 7 sets out the draft SMP conditions in relation to the proposed charge control for MTRs. We conclude this section by summarising our proposed approach for this review as set out in Section 1.

Form of charge control

Inflation indexed charge control

- 6.6 We propose to apply price-cap regulation in the form of an inflation indexed control, in which the cap is updated annually for inflation minus an adjustment (i.e. “X” in CPI-X) where X represents the average annual percentage by which MTRs are expected to change in real terms.
- 6.7 An inflation indexed charge control is a well-established way to provide regulated firms with incentives to seek efficiency savings. It also provides a degree of certainty and stability to all industry players during the charge control, and protects the regulated firm and customers from a forecast error.

Choice of inflation index for the charge control

- 6.8 In implementing the charge control we propose to continue to use CPI as our preferred measure of inflation.¹³⁹ We also propose that the term X in the CPI-X formula contains a conversion factor to ensure that the real unit cost target is hit.¹⁴⁰ This requires a forecast of inflation in the calculation of X, and we have used the average of independent forecasts compiled by the Office for Budget Responsibility (OBR).¹⁴¹ While there is a risk that reality will not turn out as forecast, using unbiased forecasts of inflation should, on average, achieve the forecast level.

Timing and duration of charge control

- 6.9 We propose to commence the 2018 MCT charge control on 1 April 2018, with a three-year charge control period that would run from 1 April 2018 to 31 March 2021.¹⁴² This commences immediately after the expiry of the current charge control.

Scope of charge control

- 6.10 The charge controls for the regulated MCT providers would cover all the MTRs charged for call types that fall within our proposed market definition. We identified the proposed scope of the defined markets in Section 3.
- 6.11 MCT can be provided using different technologies and each MCT provider's technology mix will vary. When calculating the costs of a hypothetical efficient mobile provider, we have two options regarding technology and cost modelling:
- Separate charge controls for each call termination technology (e.g. 2G, 3G or 4G); or
 - Technology and operator neutrality: i.e. a single charge control for MCT provided by each of the charge controlled MCT providers.
- 6.12 In our provisional view, separate charge controls for each call termination technology would have the following drawbacks:

¹³⁹ Our reasons for this are unchanged from those explained in Section 8 of the 2015 MCT Statement, which no stakeholders commented on as part of the consultation process.

¹⁴⁰ This is to avoid a mathematical error from the difference between a cap expressed in additive terms (i.e. $CPI+X$, where for a CPI-X cap X is negative) and the fact that inflation (CPI) and the required real reduction in prices combine in a multiplicative way. That is, for a cap on prices (P) of the form $P1 = P0 \times (1 + CPI + X)$, the value of X in the formula is given by $X = Y \times (1+CPI)$, where Y is the real reduction in prices required to achieve the unit cost target at the end of the control.

¹⁴¹ We used OBR's independent average medium-term forecast of CPI for the years 2018-2021 for the purposes of this statement (source: Office for Budget Responsibility, *Supplementary economy tables*, March 2017, Table 1.7). The value of CPI for each of these calendar years is 2.3%, 2.0% 2.0% and 2.0%.

¹⁴² The 2018 MCT review has a forward-looking period of three years, in line with the requirement in the Act and the Directives (as amended). See Article 16 of the Framework Directive 2001/21/EC, as amended by Directive 2009/140/EC. The Act was amended on 26 May 2011 to include these requirements under section 84A following amendment to the Directives on 19 December 2009.

- 6.12.1 Separate charge controls would fail to achieve technological neutrality, which is an important policy objective.¹⁴³
- 6.12.2 MCT providers levy a single charge for termination independent of technology. In addition, callers and providers cannot identify which technology a call is terminating on, and MCT providers may transfer between these technologies during a call (for example, from 3G termination to 2G termination).
- 6.13 Furthermore, we also provisionally assess that a technology and operator neutral cap on all MCT would produce other benefits:
- 6.13.1 By modelling the efficient technology mix, MCT providers with higher costs¹⁴⁴ would be unable to pass these higher costs through to calling parties – particularly when callers would gain no benefit.
- 6.13.2 Callers are more likely to face the same charge for all calls. As consumers are generally unaware of, and largely indifferent to, the type of network their calls terminate on and the technology used, this is likely to benefit consumers.
- 6.14 Therefore, we propose a single charge control cap, i.e. technology and operator neutrality. This would also be consistent with the 2009 EC Recommendation.¹⁴⁵
- 6.15 This does not imply that the assessment of forward-looking costs can ignore the question of which technologies are available to MCT providers. For example, when we model efficient costs we need to make certain assumptions about the technology mix available. Our assumptions regarding the choice of technologies in the 2017 MCT model are discussed in more detail in Section 5 and Annex 9.

An absolute maximum rate cap

- 6.16 Allowing MCT providers the ability to set different MTRs by the time of day could in principle be used for efficient traffic management. However, we are minded to regard the abuse of the flexibility allowed within the pre-2011 charge controls (via the practice of “flip-flopping”¹⁴⁶) as likely to operate counter to this efficiency objective on the basis it was harmful to originating providers and ultimately consumers.
- 6.17 In addition, retail pricing is not set on a time of day basis and, with the costs of call termination having fallen (and the costs of mobile networks driven more by data demands), our provisional view is that the potential efficiency benefits of MTR variation are modest at best.

¹⁴³ Technological neutrality is recognised as having value as a regulatory principle in the European Framework and UK law (s.4(6) of the Act).

¹⁴⁴ If an MCT provider is less efficient in network deployment than the average efficient MCT provider, it can purchase access from a wholesale provider.

¹⁴⁵ See paragraph 16 of the 2009 EC Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU.

¹⁴⁶ “Flip-flopping” refers to the practice of MCT providers imposing regular and substantial changes in their MTRs to take advantage of the averaging method in the charge formula and thus increase their revenues beyond what was envisaged when the cap was set. We consider this harmful as it allows MCT providers to gain extra revenue beyond the efficient level and increases risks and costs for originating providers in a way not susceptible to competitive pressure.

6.18 Accordingly, we propose an absolute maximum cap on MTRs.

Profile of MTRs over the charge control period

- 6.19 In our 2015 MCT Statement we implemented a partial adjustment towards the new LRIC rate in the first year of the charge control (i.e. then 2015/16), before capping the MTR at the new LRIC rate from the start of the second year. The partial adjustment set MTRs in the first year mid-way between the previous nominal MTR and the new forecast nominal LRIC rate. This arose from a desire to balance the benefit of moving to the new LRIC rate as quickly as possible with the short-term constraints faced by mobile providers when adjusting their retail prices. General Condition 9.6 regulates the ability of MCT providers to increase post-pay subscription charges during the period of a contract.¹⁴⁷ To the extent it operates as a short-term constraint, this may lead MCT providers to target price increases on certain customer segments (e.g. pre-pay) or on certain charges (e.g. out-of-bundle charges).
- 6.20 When considering the profile of MTRs over the charge control period, our starting position is that it is desirable for MTRs to be set at LRIC as soon as possible (in order for the benefits of MTRs at LRIC to be realised quickly).¹⁴⁸ We are only minded to consider the use of a glide path if making this change immediately would have a material adverse impact on the industry.
- 6.21 In forming our provisional view on this matter, we take account that, in the context of termination markets, we are less concerned about the effect on incentivising investment in cost reducing activities. This is because MCT is one-side of a two-sided market; and since there is competition in retail mobile access and origination between individual mobile providers, and because termination assets are also used to provide other services (such as origination), we would expect that MCT providers already have incentives to make cost efficient investments.¹⁴⁹
- 6.22 We also take into account our estimate that the net reduction in MTR revenues as a result of the proposed MTRs (when compared to the current rate) would be less than £5 million in 2018/19 (in 2016/17 prices).¹⁵⁰ This would represent a negligible proportion of mobile provider revenues (of around £15.2bn in 2015) and EBITDA (of around £4bn per annum).¹⁵¹ This would be less than 10% of the estimated revenue impact of a one-off adjustment found in the previous charge control period.
- 6.23 We acknowledge that many post-pay mobile subscribers will be committed to existing contracts at the start of the first year of the charge control. Even so, given the

¹⁴⁷ Ofcom has issued guidance on GC9.6. See Ofcom, Price rises in fixed term contracts: Decision to issue Guidance on General Condition 9.6, 23 October 2013, Annex 1 Guidance on “material detriment” under GC9.6 in relation to prices and notification of contract modifications: <http://stakeholders.ofcom.org.uk/binaries/consultations/gc9/statement/guidance.pdf>. We have also consulted on modifying the General Conditions, including GC9.6. In broad terms, we propose that we should adopt a new simplified condition to the same effect as GC9.6 and to remove our guidance. We propose that the overall substantive effects on providers would be the same. See https://www.ofcom.org.uk/_data/assets/pdf_file/0032/95873/Review-of-the-General-Conditions-of-Entitlement-Consultation-on-the-general-conditions-relating-to-consumer-protection.pdf

¹⁴⁸ The benefits of MTRs set at LRIC are outlined in Section 4.

¹⁴⁹ This contrasts with one-way access settings, where incentivising cost reducing investment is a critical part of the regulatory trade-off.

¹⁵⁰ Based on 2017/18 LRIC of 0.495ppm and 2018/19 LRIC of 0.468ppm (both in 2016/17 prices) and total MCT provider non-mobile to mobile off-net call volumes of 17.19bn minutes.

¹⁵¹ Revenue data from Ofcom, *Communications Market Report 2016*, Figure 4.1. Profit data based on analysis of financial statements.

negligible revenue impact of an immediate adjustment to LRIC, our provisional assessment is that MCT providers would have sufficient opportunity to recover efficiently incurred costs by making adjustments to other prices if necessary.

- 6.24 In light of these factors, we provisionally assess that the disruptive effect on mobile providers of moving quickly to the new LRIC level of MTRs is likely to be very small, and considerably less marked than in the 2015 MCT review. We similarly assess that a glide path would not provide any significant incentives for MCT providers to be more efficient.
- 6.25 Accordingly, we propose that MTRs should be set with reference to LRIC (as determined by our MCT cost model) in each and every year of the charge control. We note that this would be consistent with our Narrowband Market Review 2017 consultation on the charge control for wholesale call termination, where we did not propose to implement a glide path.

Measuring compliance with the control

- 6.26 We propose to publish the nominal cap that applies to MCT on our website two months prior to each year of the control (i.e. in the February of each year).
- 6.27 We would monitor compliance annually using data submitted by MCT providers under a requirement to notify the MTR in the proposed charge control remedy.¹⁵²
- 6.28 When judging compliance with the cap, we would round the pence per minute MTRs billed by MCT providers to three decimal places. This would be consistent with our approach in the 2015 MCT review and the 2011 MCT review.

Legal tests

- 6.29 Section 87(9)(a) of the Act authorises the setting of an SMP condition imposing charge controls in relation to matters connected with the provision of network access. Section 88(1) of the Act authorises the setting of an SMP condition falling within section 87(9) where it appears to us that there is a relevant risk of adverse effects arising from price distortion and it also appears to us that the setting of the condition is appropriate for the purposes of:
- promoting efficiency;
 - promoting sustainable competition; and
 - conferring the greatest possible benefits on the end-users of public electronic communication services (PECS).
- 6.30 As discussed in Section 3, based on our market analysis we propose that there is a relevant risk of adverse effects arising from price distortion as, absent regulation, MCT providers would have the ability and incentive to set excessive MTRs which would have adverse consequences for end-users of PECS.
- 6.31 We provisionally judge that the proposed charge control condition would be appropriate for promoting efficiency as it would address the inefficient structure of

¹⁵² This is discussed in more detail in paragraph 4.60.

charges that results from excessive MTRs. Setting MTRs at LRIC would encourage efficient consumption of services, as prices more closely reflect true resource costs.

- 6.32 We similarly judge that the proposed charge control condition would be appropriate for the purposes of promoting sustainable competition as it would seek to address the distortions of competition which arise from excessive MTRs. In particular, a LRIC cost standard would best promote sustainable competition, as it would intensify retail price competition, eliminate the barriers to expansion that would otherwise exist, and ensure a level playing field between calls from fixed and mobile providers (since FTRs are also capped – and further proposed to be capped – at LRIC).
- 6.33 We propose that the charge control condition would also be appropriate for the purpose of conferring the greatest possible benefits on end-users of PECS. Our provisional view is that consumer benefit would be maximised by our proposed choice of a LRIC cost standard.
- 6.34 We have taken account of the extent of investment by MCT providers, as required by section 88(2) of the Act. In designing the proposed charge control, we have taken into account the reasonable rates of return on investment required by an average efficient provider. Mobile providers would continue to have the ability and incentive to invest, following the proposed imposition of our Draft SMP Condition.
- 6.35 Our provisional view is that the proposed charge control condition would meet the criteria set out in section 47 of the Act because it would be:
- i) Objectively justifiable, in that it would be aimed at ensuring that MCT services are provided at a price level that will secure efficient and sustainable competition and maximise consumer benefits. As explained in Section 4, we propose it is appropriate to impose a charge control on all MCT providers (regardless of retail position) on the basis that, on balance, this approach would be more effective at remedying the harm that would be caused by excessive MTRs than if some MCT providers were not to be subjected to this SMP condition;¹⁵³
 - ii) Not unduly discriminatory, in that it would apply equally to all providers designated as having SMP in MCT;
 - iii) Proportionate, because it would be the least restrictive means to address our concerns about the harm arising from MCT providers' ability and incentives to charge MTRs above cost. In forming this view, we have considered whether we could achieve the same outcome by imposing an obligation to ensure MTRs are fair and reasonable. Our provisional assessment, however, is that we could not. Applying the simple charge control proposed to all relevant MCT providers is liable to be more effective at remedying the harm caused by excessive MTRs, and would involve only minimal reporting obligations; and
 - iv) Transparent, in that the form and operation of the charge control (a maximum charge ceiling) would itself be clear and would maintain the simple mechanism set by and explained in our 2015 MCT Statement. We have also set out in this document a transparent explanation of the operation and objectives of the proposed condition.

¹⁵³ We also take account that the 2009 EC Recommendation says termination rates should be symmetric, i.e. they should be set at a uniform level across providers, with any deviation based on objective cost differences outside an individual provider's control.

- 6.36 We have carefully considered our duties under Section 3 of the Act. Our preliminary judgment is that the imposition of the proposed condition would be consistent with our primary duty to further the interests of citizens and to further the interests of consumers, where appropriate by promoting competition.
- 6.37 We have had regard, in particular, to the interests of consumers in respect of choice, price, quality of service and value for money. Of the prescribed statutory objectives in section 3(2), we consider that securing the availability throughout the UK of a wide range of electronic communication services is particularly relevant to this review. In Section 4, we assessed the impact on consumers of basing a charge control on a LRIC cost standard. Our provisional view is that, on balance, the use of a LRIC cost standard is beneficial to consumers.
- 6.38 We have also considered our other duties under section 3, particularly the obligation to have regard to the needs of the disabled, the elderly and those on low incomes (section 3(4)(i)). In Section 4, we have given careful consideration to the distributional impacts of imposing a charge control based on LRIC and made the provisional assessment that vulnerable customers are unlikely to be adversely affected under LRIC MTRs, relative to LRIC+.
- 6.39 In the same section, we also took into account our other duties under section 3(4) of the Act as relevant. In particular, the desirability of promoting competition in relevant markets and the desirability of encouraging investment and innovation.
- 6.40 Finally, we are minded to regard our proposals as in accordance with the six European Community requirements set out in section 4 of the Act. Particularly relevant are the requirements to promote competition in the provision of ECN and ECS, to take account of the desirability of acting in a technologically neutral manner, to promote the interests of all persons who are EU citizens, and to encourage the provision of network access for the purpose of securing efficient and sustainable competition and the maximum benefit for customers of communication providers.
- 6.41 We have explained above our provisional assessment that the proposed charge control condition and our choice of a LRIC cost standard would be an appropriate and proportionate means to address our competition concerns and promote the interests of end-users. In seeking to maximise consumer benefit, we would be promoting the interests of EU citizens. In this context, we have also considered the needs of specific social groups of consumers and take the view that our proposals would not result in significant equity concerns. In our design of the charge control (which applies to the termination of calls to mobile numbers regardless of the underlying network technology – e.g. 2G, 3G or 4G), and by proposing a charge control ceiling on all MCT providers, we have taken into account the desirability of acting in a technologically neutral manner.

Approach for this review

- 6.42 As set out above, our provisional view is that there are opportunities in this review to simplify the approach we take, and the remedies we propose, applying a lighter touch where appropriate.
- 6.43 A number of the fundamental issues involved in MCT regulation, such as the LRIC cost standard to be applied to the charge control for MTRs, have been considered in detail in successive reviews and are now more settled.

- 6.44 In particular, having checked the 2015 MCT model remains sufficiently robust, we propose not to update the key input data and assumptions and to use those of the 2015 model. We have also considered whether all the remedies previously imposed remain appropriate and proportionate, or whether there is scope to remove or simplify them. Having done so, as set out above, we are now consulting on removing two of the four remedies currently in place and retaining only a network access obligation and a charge control.

Consultation question

Question 6.1: Do you agree with our proposed approach to implementing the MCT charge control? If not, please discuss the specific proposals that you disagree with

Question 6.2: Do you have any other comments on the matters raised in this consultation?