
Mobile Call Termination Market Review 2018-2021

Final Statement

About this document

Mobile call termination is a wholesale service offered by a mobile provider to connect 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 a wholesale charge to the mobile provider which terminates the call. This charge is called a mobile termination rate. Mobile termination rates are set on a per-minute basis and are currently subject to regulation.

We published a consultation document on 27 June 2017 outlining our regulatory proposals for mobile call termination markets in April 2018 – March 2021. We published a further consultation on 17 November 2017 (and a supplementary document on 24 January 2018) which included an updated list of providers whom we provisionally identified as having significant market power. We have taken account of points raised by stakeholders in response to our consultations, and information we have collected since the consultations.

On 23 February 2018, we notified our intended measures and an explanatory draft statement setting out the reasons for them to the European Commission (EC), BEREC and other National Regulatory Authorities (NRAs) and we published our draft statement on the Ofcom website. In its decision letter of 23 March 2018, the EC stated that it had examined the notification and had no comments.

In this document we set out our decision on how we will regulate mobile call termination provided by each mobile provider active in the relevant markets.

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1. Executive Summary

- 1.1 Mobile Call Termination (MCT) is a wholesale service offered 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 a wholesale charge to the mobile provider which terminates the call to the call recipient. The level of this charge is a Mobile Termination Rate (MTR). MTRs are set on a per-minute basis and are currently subject to regulation.
- 1.2 The purpose of reviews like this one is to assess competition in the provision of services in a market and to consider the appropriate form of *ex ante* regulation, if any, that should be imposed in this market to protect consumers from harm arising from market power.
- 1.3 The last MCT market review, covering the period April 2015 – March 2018, concluded on 17 March 2015 ('the 2015 MCT Review'). In that review, Ofcom found that 72 MCT providers had significant market power (SMP) in termination.¹ We imposed three remedies on all providers with SMP: a network access obligation, a price transparency obligation and a charge control, which, for the first time was imposed on all MCT providers with SMP, not just the four largest mobile providers.² We also imposed a no undue discrimination obligation on the four largest mobile providers.
- 1.4 In June 2017, we published our proposals for the regulation of MCT for the period April 2018 - March 2021 ('the June 2017 Consultation'). We proposed to identify 80 separate markets, each corresponding to a mobile provider able to set an MTR for calls to UK mobile numbers allocated to it by Ofcom. We proposed to impose two remedies on all 80 MCT providers designated with SMP: a network access obligation and a charge control.
- 1.5 In November 2017, we published a further consultation ('the November 2017 Consultation') which updated our list of providers with SMP, following a process of gathering information for companies that have been allocated mobile number ranges by Ofcom. In that document, we refined the list so it included 79 MCT providers. On 24 January 2018 we published a further statutory notification proposing to add a further provider to the list, bringing the total back up to 80. Following the notification process, we have confirmed that a number of providers are no longer offering termination services in the UK, so the number of designated providers is now lower, as summarised in the box below.
- 1.6 This statement sets out our decision on the regulation of the wholesale MCT market for the period 1 April 2018 – 31 March 2021. These, too, are summarised in the box 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 The four largest mobile providers are EE, Hutchison 3G (H3G), Telefónica and Vodafone. These providers each 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.

Key decisions

67 separate markets for MCT. Each market corresponds to a provider able to set termination rates for calls to UK mobile numbers allocated by Ofcom. We have designated each of the 67 providers with significant market power with respect to the (wholesale) market for terminating calls to the numbers it controls.

Two sets of regulatory obligations on all providers with Significant Market Power (SMP). We have decided to impose a network access obligation and a charge control on all MCT providers with SMP.

A single maximum cap on MTRs. The MTR cap is based on the long run incremental cost of MCT. From 1 April – 31 May 2018 the MTR cap will be 0.495 ppm and from 1 June 2018 – 31 March 2019 it will be 0.489 ppm. We forecast an MTR cap of 0.480ppm from 1 April 2019 – 31 March 2020, and 0.471 ppm from 1 April 2020 – 31 March 2021.

The same cap on all MTRs, including for calls originated outside the European Economic Area (EEA). We have decided that the same charge control on MTRs should apply for the termination of all calls to UK mobile numbers, regardless of origin.

Remove two remedies imposed in the 2015 MCT Review. We have decided that the price transparency obligation on all providers and the no undue discrimination obligation on the four largest mobile providers are no longer necessary or proportionate.

Our approach to this review

- 1.7 We have considered the appropriate approach to take to this review and the remedies we will impose, in light of both the current circumstances and those likely to prevail over the period covered by this review. In our Digital Communications Review (DCR) we explained that, while we will seek opportunities to simplify regulation, including for call termination, we thought it likely that protection against high termination charges would continue to be necessary.³ Our aim in this review has been to ensure that the outcome protects consumers' interests while imposing no more regulatory burden than is necessary.
- 1.8 Since we began regulating the market(s) for MCT we have consistently found that mobile providers have market power in the provision of such termination services. This is mainly because when a call is made to a mobile network, the caller, or the originating provider on behalf of the calling customer, has no other choice other than to buy termination services from, and pay the MTR set by, the terminating mobile provider. If unregulated, mobile providers have strong incentives to set a very high wholesale charge (i.e. MTR). This in turn may significantly increase retail prices of calls to mobile numbers (from both fixed and mobile services) because of the direct pass-through from the higher wholesale charge or because of competitive distortions created by excessively high MTRs.

³ 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.

- 1.9 MTRs were relatively high in the past. The charge for terminating a minute of a voice call on a mobile network was on average more than 13 pence per minute (ppm) in 1998.⁴ With our regulatory intervention and reductions in the cost of provision, MTRs have been progressively decreasing, dropping to around 0.5 ppm 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 of, or unlimited, voice minutes. UK consumers are typically unaware of the wholesale charge paid by their provider to terminate calls to their mobile phone.
- 1.10 MTR reductions combined with reductions in call volumes from fixed-to-mobile networks make MCT markets worth less to providers today than at the time of our previous reviews. In 2016-17, the total revenues from MCT in the UK were around £350m. This reduces to around £85 million if we exclude mobile-to-mobile calls (i.e. include only “net” termination).⁵ Considering that the total UK retail mobile revenues amounted to £15.3 billion in 2016, net termination now accounts for a small proportion of mobile providers’ total revenues (net termination represents around 0.5% of UK retail mobile revenues).⁶
- 1.11 There has also been a change in consumer demand. Consumers increasingly use mobile networks for data connectivity: mobile data use has seen unprecedented growth in recent years. From 2011 to 2016, average monthly mobile data usage increased from 0.1 GB to 1.3 GB per connection, representing a 1200% increase in traffic. This contrasts with average monthly outbound mobile call minutes which grew only from 142 to 158 minutes per subscription, representing around 11% growth over the same period.⁷ 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.
- 1.12 Given the increasing focus on data services in retail offers, and the effectiveness of previous regulation of MTRs on retail voice services (e.g. with increasing call allowances and growth in off-net traffic), we have taken the opportunity in this review to simplify our approach to regulation and the remedies we impose. We have applied a lighter touch where it is appropriate to do so whilst taking steps to promote effective competition and protect consumers where necessary.
- 1.13 A number of fundamental issues involved in MCT regulation, such as the cost standard to be applied to the charge control for MTRs, have been considered in detail in successive reviews both in the UK and in Europe and are now more settled.
- 1.14 Additionally, in the next three years we do not foresee that any significant network investments or the deployment of a new generation of mobile technology (such as 5G)

⁴ Around 19.5ppm in 2018 prices.

⁵ Termination revenues are obtained by considering total and net termination volumes of 68.79 and 17.19 billion minutes, respectively and the 2016-17 MTR of 0.503 ppm. Volumes refer to the four largest mobile providers and include traffic carried on behalf of, or for, MVNOs or other third parties.

⁶ 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.

⁷ See Ofcom, Communications Market Report 2017 (pages 151-153), https://www.ofcom.org.uk/data/assets/pdf_file/0017/105074/cmr-2017-uk.pdf.

would have a significant impact on MCT markets.⁸ This differs from the 2015 MCT Review, when our analysis considered for the first time the deployment of 4G networks and the trend towards greater network sharing.

- 1.15 This has enabled us to continue to use the model used to calculate the MTR cap in the 2015 MCT Review, which is capable of estimating costs for the 2018-2021 review period. We have also considered whether the other remedies imposed in the last review remain appropriate and proportionate, or whether there is scope to remove or simplify them. We have decided to remove two of them and impose only a network access obligation and a charge control.

Our decisions for regulation up to 31 March 2021

- 1.16 Having carefully considered the latest market developments and stakeholders' responses to the June 2017 Consultation, we set out in this document our decision to define the markets in the same way as in previous reviews. On this basis we have defined 67 separate markets, each corresponding to a provider able to set a termination rate for calls to the UK mobile numbers allocated to it by Ofcom.⁹ We consider 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 Over The Top (OTT) services which do not use mobile number ranges, such as FaceTime, Skype or WhatsApp, are not part of the relevant markets.
- 1.17 We have concluded that each provider holding UK mobile numbers has SMP with respect to the (wholesale) market for terminating calls to the numbers it controls. Defining the market based on number ranges in this way reflects the fact that control of the number range provides the mechanism by which each provider can price termination for these calls or (potentially) refuse to allow other providers to connect calls to these numbers. Applying this approach means that we designate 67 mobile providers with SMP. These providers are listed in Annex 12.
- 1.18 We will regulate all providers who have SMP by imposing two remedies:
- i) *An access obligation*: an obligation to provide network access on fair and reasonable terms and conditions;
 - ii) *A charge control*: a single maximum cap on MTRs, based on the long-run incremental cost (LRIC) of MCT, the levels of which are summarised in the table below.

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 a better user experience. Technical standards are still under development and are likely to include both an evolution of existing and new wireless technologies.

⁹ 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.

Table 1: Final MTR caps and costs (pence per minute), and X values

	From 1 April 2017	From 1 April 2018	From 1 June 2018	From 1 April 2019	From 1 April 2020
MTR (nominal) ¹⁰	0.495	0.495	0.489	0.480	0.471
Value of X in CPI-X formula	n/a	n/a	n/a	CPI-4.1%	CPI-3.7%

Source: 2018 MCT Model.

- 1.19 We have set a nominal MTR cap of 0.489 ppm from 1 June 2018 (reducing from 0.495 ppm in the period between 1 April and 31 May 2018) and forecast a cap of 0.480 ppm to apply from 1 April 2019, and 0.471 ppm from 1 April 2020. The actual nominal MTR caps will depend on inflation to adjust the prices as set out in the bottom row of Table 1 above. We will publish the nominal MTR cap for each control period two months in advance of the cap becoming effective (i.e. publish by 1 February of each year).
- 1.20 We are allowing a transitional period from 1 April 2018 to 31 May 2018 in order to allow the relevant changes to be made and notified to other telecoms providers. During this period we have set a nominal MTR cap of 0.495 ppm, matching the level of the cap we set in the previous charge control for the period 1 April 2017 to 31 March 2018.
- 1.21 We have decided that this charge control will apply to all MCT providers with SMP in respect of all calls to their mobile numbers.
- 1.22 We carefully considered whether the same price obligation for MCT should apply to calls originated outside the European Economic Area ('non-EEA calls'). We have taken account of the arguments for and against differential regulation, including the practical implications. Our judgment is that the prospect of differential regulation for MCT for calls originating from overseas (in particular from non-EEA countries) realising material consumer benefits is limited. Our assessment is that the most likely outcome of differential regulation is reciprocal high termination rates, and that, on balance, the outcome would likely to be to the detriment of consumers. Differential regulation could lead to a not insignificant administrative burden on industry and Ofcom, increasing complexity in markets where we are seeking to simplify regulation. Accordingly, we have decided that the same controlled rate should apply to all calls to UK mobile numbers regardless of origin.
- 1.23 We have also considered whether it remains appropriate to impose a no undue discrimination obligation on the four largest mobile providers and a set of general price transparency obligations on all providers with SMP. We have decided that neither is necessary.

¹⁰ Note that the nominal rates to apply from 1 April 2019 and 1 April 2020 are forecasts.

- 1.24 Our regulatory judgment is that the remedies we are imposing will promote effective competition and further UK consumers' interests in line with our statutory duties.
- 1.25 On 23 February 2018, we notified our intended measures and an explanatory draft statement setting out the reasons for them to the European Commission, BEREC and other National Regulatory Authorities (NRAs) and we published our draft statement on the Ofcom website.¹¹ On 6 March 2018, the EC requested further information regarding the notified draft statement, which we provided on 9 March 2018. In its decision letter of 23 March 2018, the EC stated that it had examined the notification and had no comments.

¹¹ <https://www.ofcom.org.uk/consultations-and-statements/category-1/mobile-call-termination-market-review>

2. Introduction and Background

Structure of the Document

2.1 This statement consists of six main sections and 16 supporting annexes, which together set out our analysis of, and decisions regarding, mobile call termination services:

- Section 1 summarises our conclusions;
- In this section, we set out the background to the review including the regulatory framework, summarise the process we followed to gather evidence, refer to our impact assessment and recap our June 2017 Consultation proposals.
- In Section 3, we set out our 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 conclusions on SMP. Section 4 explains our decisions on the appropriate remedies, including that among others a charge control is necessary and appropriate and what cost standard should be used for that charge control. The level of the charge control is set out in Section 5. Section 6 concludes with details of how we will implement the charge control.
- The annexes support the analysis in the main body of the document and are an integral part of our reasoning. Annex 1 sets out our equality impact assessment; Annex 2 our regulatory framework; Annex 3 our approach to market definition and SMP; Annex 4 our SMP conditions; Annex 5 our approach to smaller MCT providers; Annexes 6, 7 and 8 our approach to calls which originate outside the EEA; Annex 9 our MCT cost modelling; Annex 10 our approach to the Weighted Average Cost of Capital (WACC); Annex 11 the model outputs and sensitivities; Annex 12 the list of companies with SMP; Annex 13 how voice calls are delivered; Annex 14 the sources of evidence; Annex 15 the glossary; and Annex 16 NERA's report on the evidence for differences in risk for fixed vs mobile telecoms.

Regulation of MCT in the UK

Mobile Call Termination Rates

2.2 Call termination – that is, the completion of a call from a customer of another network – is a service which network operators offering voice services provide to each other. 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 allocated mobile numbers. 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 to its allocated mobile numbers and have regulated fixed and mobile termination rates, typically capping them at cost-related rates.

The Digital Communications Review (DCR) 2016

- 2.4 In our DCR, published in February 2016, we set out our long-term approach to regulating communications markets. We noted that a consumer making a call to a specific number has no choice which network delivers that call, which means that the charge levied by that network for terminating the call is not subject to competition. We therefore said that we will continue to look for opportunities to simplify regulation of call termination, but that it is likely that some form of protection against high termination rates will continue to be necessary.¹²

The June 2017 Consultation

- 2.5 In June 2017, we published our proposals for the regulation of MCT for the period 2018-2021 ('the June 2017 Consultation'). We proposed to identify 80 separate markets, each corresponding to a mobile provider able to set an MTR for calls to UK mobile numbers allocated to it by Ofcom. We proposed to designate each MCT provider holding UK mobile numbers as having SMP with respect to the (wholesale) market for terminating calls to such numbers.
- 2.6 We proposed the following remedies on all 80 MCT providers designated with SMP:
- i) a network access obligation (on reasonable request and reasonable terms and conditions); and
 - ii) a charge control set using the Long Run Incremental Cost (LRIC) cost-standard (for all calls regardless of origin).
- 2.7 We proposed a three-year charge control, starting from 1 April 2018, and to set MTRs with reference to the forecast LRIC (as determined by our MCT cost model) in each year of the charge control.

Stakeholders' responses to our June 2017 Consultation

- 2.8 We received 14 responses to our June 2017 Consultation.¹³ All non-confidential responses are published on the Ofcom website.¹⁴ We have carefully considered points made by

¹² Paragraph 8.5 of Ofcom DCR Statement "Initial conclusions from the Strategic Review of Digital Communications".

¹³ We received the 14th, from AT&T, after we had sent our draft statement to the European Commissions. It is published on our website with the other responses.

¹⁴ Stakeholder responses are available at: <https://www.ofcom.org.uk/consultations-and-statements/category-1/mobile-call-termination-market-review>.

stakeholders in their responses and summarised and addressed them in the relevant sections of this statement.

The November 2017 Consultation

- 2.9 We published a further Consultation on 17 November 2017 (and a supplementary document on 24 January 2018) that updated our list of providers that we proposed had SMP following a process of gathering information from companies that have been allocated mobile number ranges by Ofcom. We received two responses to the November 2017 Consultation and all non-confidential responses are published on our website.¹⁵

The February 2018 draft statement

- 2.10 On 23 February 2018, we notified our intended measures and an explanatory draft statement setting out the reasons for them to the EC, BEREC and other NRAs and we published our draft statement on the Ofcom website.¹⁶ On 6 March 2018, the EC requested further information regarding the notified draft statement, which we provided on 9 March 2018. In its decision letter of 23 March 2018, the EC stated that it had examined the notification and had no comments.

Regulation of fixed termination rates

- 2.11 On 30 November 2017, we published our Narrowband Market Review Final Statement which includes fixed geographic call termination.¹⁷ In the Final Statement, amongst other remedies, we decided to impose a charge control, based on LRIC, on the fixed termination rates charged by all telecoms providers that have SMP in wholesale fixed call termination. This aligns the approach in fixed call termination with that in mobile termination and replaces our previous approach in fixed call termination where BT was subject to a charge control, while other providers with SMP were subject to a fair and reasonable charges requirement.

MCT market players

- 2.12 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.¹⁸ We refer to these providers (EE, Vodafone, Telefónica and H3G) as the ‘four largest mobile providers’.
- 2.13 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. Some mobile providers combine infrastructure rollout with

¹⁵ <https://www.ofcom.org.uk/consultations-and-statements/category-3/further-consultation-mobile-call-termination-market-review>.

¹⁶ <https://www.ofcom.org.uk/consultations-and-statements/category-1/mobile-call-termination-market-review>

¹⁷ <https://www.ofcom.org.uk/consultations-and-statements/category-1/narrowband-market-review>.

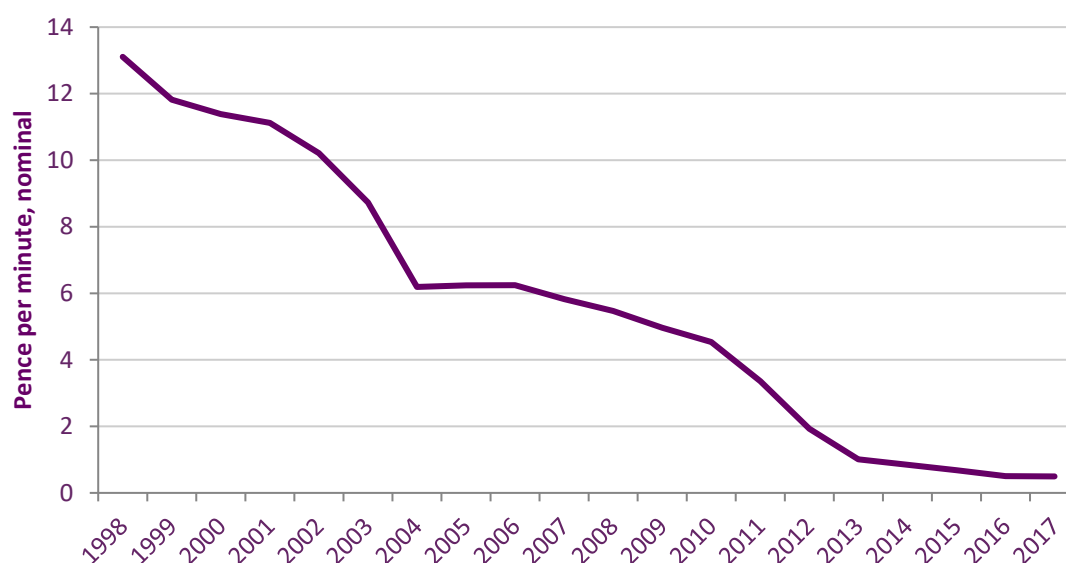
¹⁸ There are two national RAN sharing agreements: EE and H3G share their RANs through the joint venture company Mobile Broadband Network Ltd (MBNL), and Vodafone and Telefónica share their RANs through the joint venture company Cornerstone Telecommunications Infrastructure Ltd (CTIL).

roaming or other wholesale arrangements to provide a mobile service. Some mobile providers are often referred to as mobile virtual network operators (MVNOs), e.g. Tesco Mobile, Virgin Mobile, Asda Mobile, 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.

Regulation of MTRs in the UK and Europe

2.14 MTRs in the UK have decreased significantly over recent years. In 1998, the average MTR was more than 13 ppm. With our regulatory intervention and reductions in the cost of providing MCT, 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)

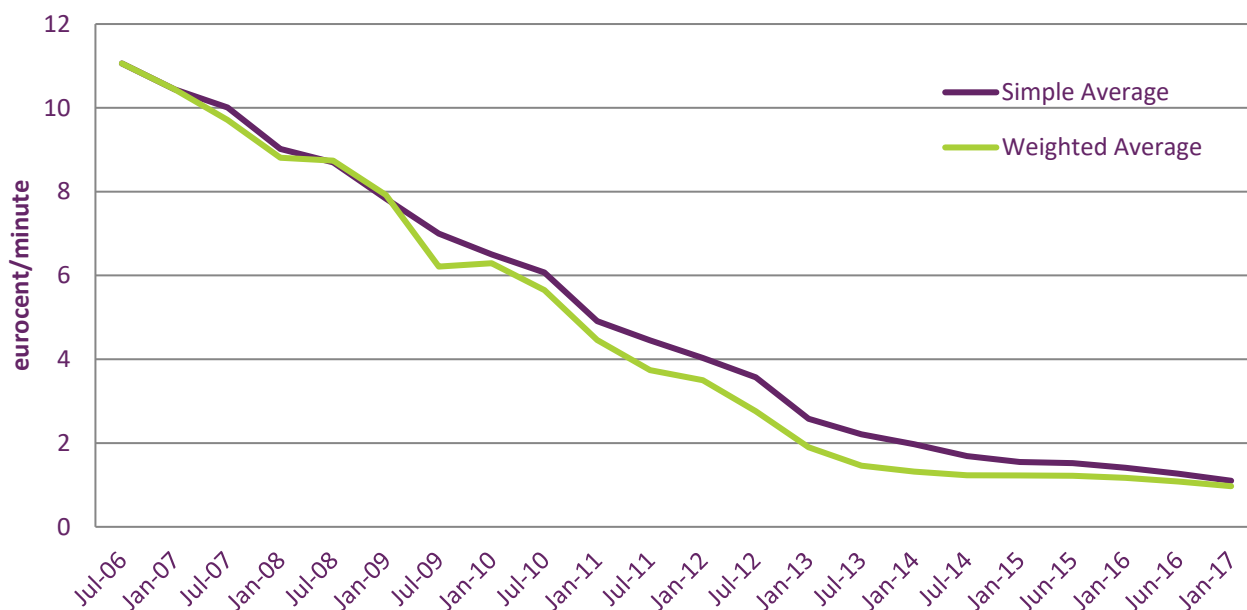


Source: Ofcom.

2.15 Our review concerns the market 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.

- 2.16 According to the latest European benchmark, the simple average MTR in Europe stands at 1.1 eurocents per minute, and the subscriber weighted average is estimated at 0.97 eurocents per minute.¹⁹
- 2.17 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 eurocents per minute to about 1 eurocent per minute as shown in Figure 2 below.

Figure 2: Average MTRs in Europe – time series



Source: BEREC, Termination rates at European level, January 2017.

Regulatory framework

- 2.18 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. 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 Annexes 2 and 3. In this section we set out, in summary, what the market review process involves.

¹⁹ http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7095-termination-rates-at-european-level-january-2017.

The market review process

2.19 A market review assessment is carried out in three stages:

- i) we first identify and define the relevant markets, appropriate to national circumstances;
- 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) then finally we 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.

2.20 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”.²⁰ 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’)²¹ and SMP Guidelines.²² 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’).²³

The 2014 EC Recommendation

2.21 The Commission Recommendation on relevant markets (2014/710/EU)²⁴ of 9 October 2014, which replaces the 2007 EC Recommendation, sets out product and service 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:

²⁰ 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>.

²¹ 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>.

²² 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>.

²³ 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>.

²⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014H0710&from=EN>.

- 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 failures(s) concerned.

2.22 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.²⁵

The SMP Guidelines and their application to this review

2.23 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').²⁶

The 2009 EC Recommendation

2.24 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.²⁷ This recommends that Member States adopt a common approach when setting price controls in termination markets.

2.25 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

2.26 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.

²⁵ 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.

²⁶ 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.

²⁷ 2009 EC Recommendation.

- 2.27 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 have therefore decided that the remedies in this Statement will apply for a period of (at least) three years noting that the charge control will expire on 31 March 2021, but the network access obligation will remain valid afterwards (and we propose in that case that access charges should be fair and reasonable). If we need to look at the position sooner because of developments in the review period, we will be able to.

Evidence-gathering process for this review

- 2.28 We have based our analysis on evidence gathered during this review and note throughout the document what sources we have relied upon. The evidence includes information gathered using our statutory powers (under section 135 of the Act), as well as questionnaires sent to other NRAs regarding their approach to the regulation of MCT, both prior to the June 2017 Consultation and again later in 2017 in order to ensure our analysis is based on appropriately updated information. It also includes submissions from stakeholders following conversations about our approach.

Information-gathering using statutory powers (section 135)

- 2.29 For this market review, we have issued notices under section 135 of the Act ('Notices') requiring various providers to provide specified information as set out in the notices. These included:
- 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 originated outside the EEA. We also requested clarification regarding informal submissions made by mobile providers regarding calls from outside the EEA.
 - 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 the numbers, the level of MTRs charged, and other information in relation to the business of these providers.
 - Notices of 14 June 2017 sent to four providers holding number ranges allocated by Ofcom who were not offering MCT over these number ranges. We requested information about whether the numbers are used for international call forwarding services.
 - Notices sent on various dates between October and December 2017 to the 17 providers with future plans to offer MCT, the three providers that had previously informed us that they intend to cease offering MCT, two notices to the one provider that had acquired number ranges since the June 2017 Consultation and to the nine providers who had previously said they did not offer MCT. We requested information about whether the providers' plans had changed.

- Notices of 16 November 2017 to the four largest mobile providers requesting information for our assessment of calls originated outside the EEA.

Impact assessment

- 2.30 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 an impact assessment 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 we are 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.²⁸
- 2.31 Our June 2017 Consultation document comprised an impact assessment, as defined in section 7 of the Act, of our proposed courses of action.

Equality Impact Assessment (EIA)

- 2.32 Annex 1 sets out our 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, 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.
- 2.33 For the reasons explained in Annex 1, 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 dependents. 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

- 2.34 The following paragraphs provide some further background to our review in relation to the latest developments in the provision of MCT.

How voice calls are delivered

- 2.35 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. Traditionally voice calls have been carried over Public Switched Telephone

²⁸ https://www.ofcom.org.uk/data/assets/pdf_file/0026/57194/better_policy_making.pdf.

Networks (PSTNs) using Circuit Switched (CS) technology.²⁹ In CS networks the communication takes place over a dedicated circuit and as such the call quality can be fully controlled.

- 2.36 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. A PS voice call is typically carried over Internet Protocol (IP) and more commonly referred to as a Voice over IP (VoIP) call.
- 2.37 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.³⁰ 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. More detail on how voice calls are delivered is provided in Annex 13.

Technology developments in mobile services during the review period

- 2.38 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.
- 2.39 For example, based on the information we have received using our statutory information gathering powers, we do not believe that in the next three to four years that any investments in 5G will have a significant effect on the market to an extent that would cause us to need to incorporate this technology in our analysis. 5G technology has the potential to provide very high speed data and access and is expected to be used for enhanced mobile broadband, communications between machines and ultra-reliable and low latency communications. The industry expects wider deployment of 5G networks and commercial launch after 2020.³¹
- 2.40 This is different from the 2015 MCT 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.

²⁹ 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.

³⁰ 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.

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

Review of Donor Conveyance Charges

- 2.41 Donor Conveyance Charges (DCCs) are wholesale charges levied for the provision of 'onward routing' of calls to mobile numbers that have been ported from one mobile provider (the donor provider) to another (the recipient provider). 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 cost of providing portability.
- 2.42 Ofcom has a duty under Article 30(2) of the Universal Service Directive of the EC (USD)⁷ to ensure that pricing between Communications Providers 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).
- 2.43 Our 2015 DCC Direction drew heavily on the then recently published 2015 MCT model, and we committed to linking the timing of future reviews of DCCs with our 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. In July 2017 we consulted on updating the 2015 DCC model in a similar way to the way we proposed to update the MCT model. We will publish a new DCC Direction at the same time as this Statement.

³² See https://www.ofcom.org.uk/data/assets/pdf_file/0026/79424/statement_on_porting_charges_under_gc18.pdf.

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

3. Market Definition and SMP Assessment

Summary

3.1 This section sets out:

- a) our analysis and decisions for the product and geographic market definition for MCT; and
- b) our conclusions on whether any MCT provider operating in a relevant market is able to act, to an appreciable extent, independently of competitors, customers, and ultimately consumers – that is, whether it has SMP in that market.

3.2 We conclude that we should adopt 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 identified a total of 67 separate markets for wholesale MCT services. These correspond to each of the four largest mobile providers and 63 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 conclude that each MCT provider has SMP in the corresponding relevant market. These MCT providers are listed in Annex 12.

3.5 This is the market definition that was proposed in our June 2017 Consultation and is consistent with the market definition in our 2015 MCT Statement, although there have been some changes to the list of MCT providers.³⁷

3.6 In the remainder of this section, we first briefly discuss the regulatory background. We then discuss our assessment of stakeholders’ responses to the consultation in relation to market definition, and our market power assessment and our conclusions and reasoning.

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 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.

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 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 3.

Market definition

- 3.9 As explained in Annex 3 (in particular, paragraphs A3.13 to A3.16), while we are ultimately seeking to define wholesale markets, consideration of the relevant retail services is a key element of the analysis. 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

Summary of our consultation document and stakeholder comments

- 3.10 Our provisional conclusion was 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 (see further below). We considered voice calls using OTT to be the most likely potential demand-side substitute, but provisionally considered that the use of OTT applications was unlikely to be a sufficiently close substitute for calls to a mobile number at the present time.
- 3.11 While Manx Telecom, Verizon and [X] agreed with our retail market definition, BT/EE, Vodafone and Telefónica submitted that we have underestimated the competitive constraint posed by OTT voice services.
- 3.12 In particular, BT/EE said that we have wrongly excluded OTT voice services (and potentially also other OTT services, such as messaging services) from the market by not applying an empirical or quantitative SSNIP test and not focussing sufficiently on the position of marginal customers, and that it believed further analysis is required. In BT/EE’s view, this is likely to reveal that OTT services will potentially become a sufficient constraint to traditional mobile voice services over the duration of the charge control period.

Focal product

- 3.13 As described in Annex 3 (paragraphs A3.18 to A3.21), the starting point for market definition is to identify a focal product, and consider whether the price of this product is

³⁸ Market 2, 2014 EC Recommendation.

constrained to competitive levels by the presence of substitute products. In the June 2017 Consultation our focal product was that of calls to a UK mobile number.³⁹ This focal product:

- a) includes all calls to UK mobile numbers that are active, or which we expect to be active, within the review period;
- b) does not depend on 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), or how the call may be originated; but
- c) excludes services that establish voice calls between two users using data connections (OTT VoIP calls) without using mobile telephone numbers.

3.14 In our June 2017 Consultation (paragraph 3.10-11) we also proposed to include, in the starting point for our analysis, all calls to UK mobile numbers held by any foreign-based mobile providers that provide MCT services in the UK (other than OTT VoIP calls). 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 MCT to these numbers is provided in the UK.⁴⁰

3.15 Having carefully considered relevant points made in consultation responses, we continue to take calls to UK mobile numbers as our focal product, as we have done consistently in our MCT market reviews. We note that the competitive conditions and pricing constraints on calls are broadly homogeneous between calls from different sources (e.g. fixed or mobile) and locations.

3.16 As in our 2015 MCT Statement, we conclude 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, a number range holder may move the numbers onto its own network. 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.

3.17 A caller, however and wherever calling, has no choice but to use the relevant number, and cause the MTR to be incurred, in order to make a call to the relevant mobile call recipient. For the reasons we set out in the following paragraphs, the MCT provider controlling the relevant number range is likely to have similar incentives and abilities with regard to the pricing of MCT for calls (how and wherever originated) to the numbers it controls.

³⁹ See footnote 10 for a definition of a UK mobile number.

⁴⁰ See paragraphs 3.86-3.88.

Assessing indirect constraints

- 3.18 The analysis of retail demand is logically prior to the definition of wholesale markets because the demand for the upstream wholesale service is a derived demand – i.e. the level of the demand for the upstream input depends on the demand for the retail service.
- 3.19 Hence the range of available substitutes at the downstream (retail) level will inform the extent of price constraint on the upstream (wholesale) service. This is because a rise in the price of a wholesale service which is passed through in the price of downstream retail services may cause retail customers to switch to substitute retail products, reducing demand for the wholesale input. We refer to this as an indirect constraint. Such indirect constraints might lead to products being included in the same relevant market even if those products do not constrain each other directly at the wholesale level.
- 3.20 Market boundaries are determined by identifying the constraints on price setting behaviour of firms. There are two main constraints to consider:⁴¹
- first, to what extent it is possible for a customer to substitute other services for those in question in response to a relative price increase ('demand-side substitution'); and
 - second, to what extent suppliers can switch, or increase, production to supply the relevant products or services in response to a relative price increase ('supply-side substitution').
- 3.21 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.

Demand-side substitution – general considerations

- 3.22 Originating providers (fixed or mobile) must complete the calls that their subscribers make. Without retail demand-side substitution, wholesale demand-side substitution will not arise given current charging arrangements (calling party pays) and technical limitations (i.e. routing to mobile number ranges cannot typically be by-passed at the wholesale level).
- 3.23 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.
- 3.24 It is of course possible that call recipients could respond to an increase in the price that others pay to call them, by switching provider. However, because call recipients do not pay for calls they are likely to have a limited incentive to switch provider. We therefore believe that a SSNIP of 5-10% for calls to mobiles is unlikely to cause a significant reaction by call

⁴¹ See paragraph 38 of the SMP Guidelines, which also notes that potential competition also acts as a third source of competitive constraint on an operator's behaviour, but is taken into account in the SMP assessment.

recipients. For this to occur, mobile subscribers would need to be very sensitive to the price charged to others, which we do not believe to be the case.⁴²

- 3.25 Because MTRs are a wholesale charge, the effect of a wholesale SSNIP on a caller's behaviour will depend on the pass-through rate to retail prices and the extent of dilution (i.e. a 10% increase in a wholesale price will amount to a less than 10% increase in retail prices even with full pass-through of a given ppm MTR increase). Whilst MTRs are charged on a per minute basis for every call received by an MCT provider at the wholesale level, retail prices are often not charged on a per minute basis – rather many calls (especially from mobiles, and in some cases, from fixed lines) are made as part of an inclusive call allowance (i.e. bundle of minutes). Where retail prices are charged on a per minute basis, the retail prices are often very high.⁴³ Even for the most keenly priced pay-as-you-go (PAYG) tariffs, the MTR can represent only around one-sixth of the call price.
- 3.26 As a result of these three effects (pass-through, dilution and retail bundling of calls), a 10% increase in the MTR will typically not manifest itself as a 10% increase in retail price. Other things being equal, this increases the likelihood that a 10% SSNIP for MCT would be profitable.

Potential demand-side substitutes

- 3.27 Focusing on callers, we note that 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. To the extent that each number corresponds to a different receiving party, calls to different numbers are not substitutes for 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 9% of consumers have multiple mobile phones (including mobile phones for work purposes)⁴⁴, and in general on-net and off-net retail prices are now the same.
- 3.28 Considering the other alternatives available to callers, a number of retail services could in principle act as demand-side substitutes to MCT. These include VoIP calls using OTT (such

⁴² Research conducted as part of 2015 MCT Review (see paragraph 3.74 of the 2015 MCT Statement) suggests that this is not the case: when respondents were asked about the factors determining their choice of mobile (including network provider, mobile handset and tariff) no one mentioned unprompted the cost of others calling them as a factor. This factor was only selected by 2% of respondents when it was presented as a prompted choice. Similarly, few respondents (6%) mentioned friends and family on the same network as a factor in their choice of mobile provider (which may reflect considerations about the price paid by others to call them). When prompted, this rose to 11% having friends and family as a factor influencing their choice of provider.

⁴³ Retail prices for out of bundle calls vary by provider. Both Three (www.three.co.uk/Store/Pay_As_You_Go_Price_Plans - page accessed on 8 February 2018) and O2 (www.o2.co.uk/shop/sim-cards/pay-as-you-go - page accessed on 8 February 2018) price these calls at 3ppm. Vodafone price these at 20ppm (www.vodafone.co.uk/shop/bundles-and-sims/pay-as-you-go-plans/pay-as-you-go1/ - page accessed on 8 February 2018) and EE price these at 40ppm (www.ee.co.uk/help/my-account/pay-as-you-go/view-standard-rates - page accessed on 8 February 2018).

⁴⁴ Source: Ofcom Technology Tracker, Half 2 2017 (www.ofcom.org.uk/data/assets/pdf_file/0017/107360/Ofcom-Technology-Tracker-H2-2017-data-tables.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.

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.

3.29 We consider voice calls using OTT to be the most likely potential demand-side substitute, and this is the focus of the following discussion. However, we first briefly explain why we do not consider the other potential demand-side substitutes above to be sufficiently strong to be included in the relevant market.⁴⁵

- a) 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.
- b) Text-based communications (SMS, email, OTT messaging): Text-based communications 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. We continue to believe that the characteristics of these alternative forms of communication mean they are unlikely to be close enough substitutes to be included in the same relevant market.

3.30 These conclusions are consistent with our previous market reviews and we have no reason to believe that either of these types of service will emerge as a constraint over the review period.

OTT VoIP calls

3.31 In our June 2017 Consultation we presented a range of evidence about the extent of current OTT use, and described reasons why OTT may not be attractive for many calls. We provisionally considered that, at present, the use of OTT applications was unlikely to be a sufficiently close substitute for calls to a mobile number to be included in our market definition.

3.32 BT/EE said in its response to the June 2017 Consultation that we had not adequately captured the significant impact of OTT competition on traditional markets for voice calls, and the steady erosion of SMP in relation to the MCT service. It said that we had wrongly excluded OTT voice services (and potentially other OTT services) from the market. In particular, BT/EE commented that we had not carried out a quantitative SSNIP test, and that we had not focused sufficiently on the position of marginal customers. It also said that we should consider a SSNDQ (small but significant, non-transitory decline of quality) test as a variant of the SSNIP test for in-bundle calls to mobile with a zero-incremental price. Similarly, Telefónica, in its response to the June 2017 Consultation, said that we had failed to recognise the importance of the evolving constraint posed by OTT voice services.

3.33 In response to BT/EE's comments, the SSNIP test is a conceptual framework for assessing relevant evidence on the market definition.⁴⁶ Whilst in some cases a quantitative SSNIP test

⁴⁵ A detailed discussion of the other potential demand-side substitutes mentioned in paragraph 3.29 can be found in the 2015 MCT Statement pages 30-32 and 37.

⁴⁶ The SMP Guidelines note (footnote 26) that:

may be particularly appropriate (e.g. on particularly contentious questions on the proximity of demand-side substitutes) and/or feasible (e.g. because reliable consumer survey evidence, and econometric or information on avoided costs, is available), this will not always be the case.

- 3.34 BT/EE has not presented any quantitative evidence in support of a broader market, or suggested how a quantitative SSNIP test would appropriately address the complications arising from dilution, pass-through and bundling.⁴⁷ Additionally, as set out below, there are in any event grounds to consider that a 5-10% SSNIP above the competitive level would not result in callers switching to make OTT VOIP calls to such a degree as to make the price rise unprofitable.
- 3.35 In so far as a SSNDQ analysis might attempt to by-pass complications arising from dilution, pass-through and bundling by focusing on variables other than price, it is hard to see how this makes the analysis more straightforward in practice. If anything, the analysis is more complicated when quality is multi-faceted and consumer preferences are heterogeneous (i.e. when consumers value different aspects of quality). It is therefore hard, for example, to phrase meaningful consumer survey questions on what a 5-10% quality reduction would mean or how these would be analogous to a 5-10% SSNIP. A 10% reduction in coverage or a 10% increase in dropped calls, say, may be equivalent to a retail price increase of more than 10%.⁴⁸
- 3.36 Such complications from implementation may mean that the SSNDQ framework is more suited as a conceptual framework for analysis (e.g. when competition is focused more on

Although the SSNIP test is but one example of methods used for defining the relevant market and notwithstanding its formal econometric nature, or its margins for errors (the so-called 'cellophane fallacy', see below), its importance lies primarily in its use as a conceptual tool for assessing evidence of competition between different products or services.

OFT guidance on Market Definition (paragraph 2.6) notes that:

Before describing the test in detail, it should be emphasised that defining a market in strict accordance with the test's assumptions is rarely possible. Even if the test described below could be conducted precisely, the relevant market is in practice no more than an appropriate frame of reference for analysis of the competitive effects. Nevertheless, the conceptual framework of the test is important as it provides a structure within which evidence on market definition can be gathered and analysed.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/284423/oft403.pdf

⁴⁷ Even if reliable evidence were available on consumer responses to price changes, it unclear how a wholesale 5-10% SSNIP would affect retail prices. For example, even if pass-through were 100%, a 0.05ppm increase in MTRs (roughly a 10% wholesale SSNIP from current cost-based levels) would translate to a 0.05ppm increase in retail prices. But, if the retail price is six times the MTR (e.g. Three's PAYG 3ppm call rate on the 3-2-1 tariff), a 10% increase in MTR would translate to a 1.7% increase in retail price. In practice, many PAYG or out of bundle call prices are even more than this. For example, on a 10ppm retail call price a 10% wholesale SSNIP represents a 0.5% increase in retail price.

With bundles the marginal call price is zero, while typically the average bundle price will be much higher than the current termination costs attributable to provision of the bundle. For example, one of the cheapest bundled call plans is Three's £5 monthly SIM tariff with 200mins, 500MB of data and unlimited texts. If, for illustration, we assume zero data and text usage, and full use of the call package, this would imply a 2.5ppm average price of calls, i.e. still five times the MTR.

⁴⁸ More generally, it will be difficult to identify which variable of quality would be most meaningful to consumers. Different variables of quality will have very different cost implications and whilst some are network level features (e.g. coverage and dropped call rates), others are retail-level variables with very different costs (e.g. the range of handsets offered, the "look and feel" of the MCP's website, customer support waiting times, etc.).

quality than price), rather than an alternative avenue for quantification if SSNIP quantification is itself difficult to implement.⁴⁹

- 3.37 In relation to OTT VoIP calls specifically, we note that such traffic is growing by around 40% per year,⁵⁰ enabled by increasingly widespread use of smartphones.⁵¹ Ofcom's Communication Markets Report 2016 (CMR 2016)⁵² noted the trend as follows:

"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."

- 3.38 Data from CMR 2017 indicates that mobile call volumes have also been increasing over the past five years, from a year on year increase of 1% in 2012 to 6% in 2016.⁵³ The growth in both OTT and mobile appears to be at the expense of fixed call volumes, which have been declining at around 10% per annum over the same period.⁵⁴

- 3.39 In its response to the June 2017 Consultation, BT/EE highlighted a report from Analysys Mason which shows increasing use of OTT voice services. The report noted that up to the end of 2015 OTT was mainly used for international and video calling, but predicted that this would change in future to include greater substitutability of OTT with national calls over the forecast period 2016-2021:

"VoIP services have been largely limited to niche use cases (such as international calls and videocalling) in Western Europe. We estimate that OTT voice penetration of smartphones was less than 30% at the end of 2015."

*We expect OTT voice usage to become normal for many app users as the user experience improves and the service becomes better integrated into apps and operating systems. Service penetration of smartphones is forecast to increase to 56% by 2021. Average minutes of use (MoU) will also increase, as OTT voice replaces some domestic usage."*⁵⁵

⁴⁹ The use of SSNDQ has been discussed in practitioner circles. For example a 2013 OECD Competition Policy Roundtable ([www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP\(2013\)17&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP(2013)17&docLanguage=En)) noted that 'The SSNDQ test is posited as one means by which a quantitative focus on quality might be realised in relation to market definition... The SSNDQ test faces criticism that in practice it is unworkable, however, given the inherent difficulties of measuring quality alongside the existing complications of the applying the SSNIP test itself within real market situations'.

⁵⁰ Based on data from several providers of unmanaged VoIP provided in response to a s.135 notice as part of the Narrowband Market Review 2017. Volumes refer to minutes of voice calls (including video calls) over the Internet using a device such as a PC, tablet, smartphone or other device in the year to Q4 2016/17. This data does not cover all telecoms providers in the market, but does include Skype, Google, Vonage and Facebook (including WhatsApp), and so we consider this data is likely to be indicative of the overall trend in OTT volumes. See Ofcom *Narrowband Market Review Statement*, November 2017, paragraph 4.145, p.79.

⁵¹ 78% of UK adults have a smartphone. Source: Ofcom Technology Tracker, Half 2 2017: QD4 (QD24B). *Do you personally use a smartphone?*

⁵² See Ofcom, *Communications Market Report 2016*, page 1, https://www.ofcom.org.uk/_data/assets/pdf_file/0024/26826/cmr_uk_2016.pdf.

⁵³ CMR 2017, page 151.

⁵⁴ CMR 2017, page 141.

⁵⁵ Analysys Mason, *Communication Services: Worldwide Trends and Forecasts 2016–2021*, published 2016. Estimates and forecasts are for Western Europe.

3.40 In assessing whether our market definition should include OTT services, we need to consider whether OTT services act as a competitive constraint on MTRs. Such a constraint would require 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.

We consider each of these in turn.

Effect of termination rates on mobile retail prices

3.41 As noted above, 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 relative importance of voice calls in fixed and mobile bundles declines,⁵⁶ the fraction of consumer expenditure on mobile services accounted for by MTRs will reduce further. 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 to OTT VoIP services would be unchanged.

3.42 In our view, 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,⁵⁷ and it is also unlikely that such an increase in the MTR would lead to a change in the overall price or size of inclusive call allowances for a bundle including voice calls.

Awareness of mobile price increases

3.43 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.⁵⁸

3.44 The increasing prevalence and size of inclusive bundles of calls, texts and data at the retail level may also serve to further reduce consumer awareness of the retail price of making a call to a particular mobile number (or mobile number range). Our previous market review

⁵⁶ While outgoing mobile voice call volumes increased by 5.7% in 2016, mobile data volumes increased by 44%. See CMR 2017, pages 151 and 153. Furthermore, calls from fixed-to-mobile have declined by an average 7.9% per year since 2011, and the proportion of average monthly retail voice revenue per fixed line associated with calls to mobiles has declined by 16.9% per year over the same period. See CMR 2017, Figures 4.6 and 4.8, pages 140 and 141.

⁵⁷ The relevant question for the SSNIP test is the sustainability of a price rise above the competitive level rather than above current price levels. However, MTRs have been regulated at cost for several years meaning this distortion to the SSNIP test is unlikely to be present in this case.

⁵⁸ Source: Ofcom analysis of operator data provided in response to an s135 information notice of February 2017.

found that consumers have limited awareness of changes in the retail price for calls to mobiles, with only 5% knowing the exact cost and 28% agreeing that “I know the rough cost”.⁵⁹

Likelihood of OTT Substitution

- 3.45 Even for those consumers who may perceive an increase in the price of making a call to a particular mobile number (i.e. if an MTR increase were passed on through call prices), we assess that price-based substitution to OTT is unlikely for a number of reasons:
- a) While OTT volumes are increasing, it remains an infrequently-used service compared to mobile voice calls, even among those who have experience of using it.⁶⁰ Only around 16% of those who have ever used the internet to make voice or video calls do so daily while only 27% of mobile phone users made voice or video calls using VoIP in the past week.⁶¹ On the other hand, 70% of mobile phone users make telephone voice calls at least daily with 92% making a telephone voice call at least once a week.⁶² Furthermore, a minority of consumers claim to have used OTT VoIP calls on a smartphone.⁶³ This suggests consumers see traditional mobile numbers as the “go-to” service.
 - b) 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 landline calls.⁶⁴
 - c) OTT usage is far more prevalent for making international calls⁶⁵, which are typically excluded from inclusive call allowances, and often have relatively high retail prices.⁶⁶
 - d) The consumers who are most likely to face a non-zero marginal price for making voice calls to mobiles are pre-pay consumers. However, they are also the least likely to make

⁵⁹ Of the remainder, 26% had a vague idea of the cost of making a call to a mobile, and 35% had no idea. See MCT Consultation June 2014, Annex 18, page 83.

⁶⁰ Kantar Media survey evidence for the 2015 MCT Statement found that 61% of OTT users use OTT for less than 10% of their calls with only 7% using it for 50% or more (see 2015 MCT Statement paragraph 3.45).

⁶¹ Source: Ofcom Technology Tracker Half 2 2017: *QE29 (QE50)*. *How often do you or does anyone in your household use these services [make voice or video calls using the internet at home]? QD9 (QD28B)*. And, *which of these activities have you used your mobile for in the last week?* 16% made voice calls over VoIP in the last week, 22% made video calls.

⁶² Source: Ofcom Technology Tracker Half 1 2017: *QD11B (QD4B)*. *And how often, if at all, do you use your mobile phone to make calls?* (see: https://www.ofcom.org.uk/__data/assets/pdf_file/0015/101292/technology-tracker-data-tables-h1-2017.pdf).

⁶³ 24% of UK mobile phone users claim to have made OTT voice calls on their mobile, while 32% claim to have made OTT video calls using their mobile. 38% of UK mobile phone users have used their mobile phone to make video or voice calls using VoIP Source: Ofcom Technology Tracker Half 2 2017: *QD8 (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.

⁶⁴ Jigsaw research for Narrowband Market Review 2017 (see www.ofcom.org.uk/__data/assets/file/0015/103830/2015-Jigsaw-market-research-report.zip). The question asked was ‘If the overall monthly price of your landline calls were to increase by 10%, how likely would you be to switch some calls from landlines to VoIP?’.

⁶⁵ Jigsaw research for 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. See Ofcom, *Narrowband Market Review Statement*, November 2017, Table 4.1, p.76.

⁶⁶ As set out in Annex 7 (Table A7.4 and paragraphs A7.33 to A7.35) the average retail price charged for UK international calls is much higher than the average termination rate faced for these calls. We note that there are some call packages available with far lower retail prices for calls to certain non-EEA countries.

use of voice calls using an OTT service. Only 8% of all pre-pay consumers have made voice calls using an OTT service.^{67 68}

- 3.46 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.⁶⁹
- 3.47 Considering the evidence above in the round, we consider that an MCT provider is unlikely to be constrained from raising termination rates above competitive levels by the prospect that this would be passed through to retail prices, and that a sufficient number of customers would (a) experience this as a material increase in the price of making a mobile call, (b) be aware of this price increase, and (c) respond in sufficient volumes to make the increase in termination rates unprofitable, including by substitution to OTT.
- 3.48 We therefore conclude that the use of OTT applications is unlikely to be a sufficiently close substitute for calls to a mobile number at the present time.
- 3.49 In our June 2017 Consultation, we noted that our proposed approach was 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*’.⁷⁰ Telefónica said in its response to our June 2017 Consultation that relying on a recommendation that is three years old did not seem appropriate in a sector where technological developments occur very frequently. We recognise that there are frequent technology developments in this sector, but the basis of our conclusion that OTT services are not sufficiently close substitutes for calls to a mobile number at the present time is based on reasoning and evidence, not just an EC Recommendation. We also note that all EU NRAs continue to regulate MCT on the basis that they are not constrained to competitive levels by the presence of OTT voice services.

Calls originated outside the EEA

- 3.50 In this section, we consider whether, in the case of calls originated outside the EEA, indirect constraints from the retail level might be greater than for domestically and EEA

⁶⁷ 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.

⁶⁸ In its response to our June 2017 Consultation, BT/EE note that its own internal consumer research suggests a higher penetration of OTT services for EE PAYG customers than estimated by Ofcom – it estimates that 21% of its PAYG customers made video calls using 4G alone (excluding OTT calls) and note that if OTT voice calls were included these percentages would be even higher.

⁶⁹ 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.

⁷⁰ Explanatory Note to the 2014 EC Recommendation, page 17.

originated calls⁷¹ and whether we should define separate markets based on the origin of calls.

- 3.51 Vodafone's submission contends that, for each MCT provider, we should define separate markets in respect of (a) domestically and EEA originated calls⁷² and (b) those originated outside the EEA. BT/EE said that OTT calls are substitutes for international calls to the UK, with OTT competition being particularly strong for international calls.
- 3.52 Our retail assessment focuses on the potential response of callers rather than call recipients. This means the focus is on callers outside the EEA seeking to call recipients in the UK.
- 3.53 Reflecting the arguments put forward by stakeholders, we again consider voice calls using OTT to be the most likely potential demand-side substitute, and this is the focus of our discussion. We consider that the reasons outlined in paragraph 3.29 as to why other potential demand-side substitutes are not sufficiently strong to be included in the relevant market are also likely to hold for calls originated outside the EEA.
- 3.54 Having concluded in paragraphs 3.31 to 3.47 above that OTT voice calls are unlikely to be a sufficiently close substitute for domestic calls in the UK, we now consider whether there is evidence that they are a substitute for inbound calls from non-EEA countries to an extent that MTRs for such traffic would be constrained to the competitive level.
- 3.55 Vodafone has contended that consumer behaviour is likely to differ when placing calls to international mobile destinations than for domestic calls, for example with greater planning of the timing of calls and greater consideration of options for origination and termination of the call. However, we disagree that this is evidence that MCT for the non-EEA originated traffic constitutes a separate economic market, and in particular that a SSNIP in the MTR charged by a UK MCT provider for non-EEA originated traffic would lead to substitution to OTT, to a degree that would make the SSNIP unprofitable.
- 3.56 We noted in the June 2017 Consultation that OTT use by UK consumers is more prevalent for making international calls than domestic calls. Its use for making international calls also appears to be increasing - as we noted in the CMR 2017, outgoing international call minutes on mobiles was down 8.5% in 2016, which may be due to the growing use of OTT services.⁷³ However, we do not have evidence of the extent of OTT use by non-EEA callers to the UK.
- 3.57 In order for non-EEA callers to switch to OTT to reach call recipients in the UK both parties need to own a smartphone and have downloaded the relevant OTT application.⁷⁴ Ofcom

⁷¹ We treat calls from within the EEA alongside domestically originated calls as EU regulation requires MCT providers to treat most retail calls originating in a Member State in the same way as domestically originated mobile calls.

⁷² In its submission, Vodafone assumed that calls originating from the UK and from other parts of the EEA fall into the same market.

⁷³ CMR 2017, Figure 4.19.

⁷⁴ VoIP calls could be made from a PC or tablet rather than a smartphone. However, research from Analysys Mason shows that the vast majority of OTT voice users worldwide connect using smartphones. They expect this to reach 87% in 2021. Analysys Mason, Communication Services: Worldwide Trends and Forecasts 2016, published 2016.

research found that 78% of UK adults have a smartphone.⁷⁵ However, this is high by international standards, with Pew Research Center estimating that the global median was 43% (and 68% in the UK⁷⁶) in 2015.⁷⁷ Based on these figures, the chances of both parties having a smartphone would only be around one third. The true figure may be somewhat different depending on the propensity of people making/receiving international calls to both have smartphones, which will vary by country. For example, smartphone ownership rates are low in Africa⁷⁸, which accounts for a material proportion of non-EEA calls to the UK.

- 3.58 If it were the case that OTT constrained MCT for calls from non-EEA countries to the UK, we might expect to see a similar constraint on MCT for calls from outside the country concerned. However, OTT voice calls from the UK (or elsewhere) do not appear to be constraining the price of MCT in other countries. On the contrary, UK MCT providers have expressed concern about the high level of MTR in a material number of countries where they are not regulated.⁷⁹ We have no evidence that market conditions in the UK are so different from these countries that, absent regulation, the price of MCT for calls to the UK would be constrained to competitive levels by OTT voice calls. Whilst at some level of MTR, OTT calls might act as a constraint, this is likely to be at rates an order of magnitude above any reasonable estimate of the competitive level (i.e. cost-oriented MTRs).⁸⁰
- 3.59 We also note that Vodafone and other MCT providers said that if we allowed flexibility in the MTRs they charge for non-EEA originated calls they could use this to negotiate MTRs with non-EEA providers, and as Vodafone acknowledges *'UK MCPs will most likely raise MTRs for calls from some countries.'*⁸¹ This suggests that OTT substitution would not be sufficient to prevent an increase in MTRs above competitive levels being profitable. If OTT constrained MTRs to competitive levels, UK MCT providers would not be likely to increase them, and could not credibly threaten to do so as a negotiating tactic.
- 3.60 For these reasons we do not consider that OTT services are a sufficient demand-side constraint to be included in the same market as non-EEA originated calls to UK mobile numbers.
- 3.61 Additionally, we take account that UK recipients of non-EEA calls have a limited incentive to influence MTRs, because the calling party pays principle means they do not bear the cost of the call. As set out in paragraph 3.24 we believe that a SSNIP for calls to mobiles is unlikely to cause a significant reaction by call recipients. These features are common across

⁷⁵ Source: Ofcom Technology Tracker, Half 2 2017: QD4 (QD24B). *Do you personally use a smartphone?*

⁷⁶ This is similar to the CMR 2015 estimate of 66%. See CMR 2015, page 3, https://www.ofcom.org.uk/data/assets/pdf_file/0022/20668/cmr_uk_2015.pdf.

⁷⁷ Pew Research Center's Spring 2015 Global Attitudes survey. See www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/.

⁷⁸ Ibid. Regional median of adults who report owning a smartphone in Africa is 19%.

⁷⁹ For example, see Table A7.3 in Annex 7 which shows that, based on data provided by the four large UK MCT providers, the average MTR charged across 60 non-EEA countries is 19 ppm.

⁸⁰ This would be an example of the 'cellophane fallacy'.

⁸¹ Vodafone's response to the June 2017 Consultation, page 36.

all the mobile numbers controlled by a given MCT provider and common across domestically and non-EEA originated calls to those mobile numbers.

- 3.62 Accordingly, we do not consider that indirect constraints from the retail level for non-EEA originated calls are likely to be greater than for domestically originated calls, nor that we should define separate markets (or define them differently).

Conclusion on indirect constraints from the retail level

- 3.63 In light of the analysis above, our 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

- 3.64 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.
- 3.65 No responses to the June 2017 Consultation suggested that either demand or supply-side substitution should lead us to widen the wholesale product market definition.

Demand-side substitution

- 3.66 Once the originating provider's retail subscriber has chosen to call a particular mobile number, the originating provider generally has no alternative but to purchase MCT from the provider controlling that mobile number.
- 3.67 OTT bypass⁸² 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.⁸³ This can occur without the knowledge of the calling party.⁸⁴ While OTT bypass could theoretically act as a price constraint, we have no evidence that it is likely to do so over the review period.

Supply-side substitution

- 3.68 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.

⁸² We note that this could also be characterised as wholesale supply-side substitution or potential market entry.

⁸³ On our understanding, for OTT by-pass of this nature, both the calling party and recipient would need to be subscribers to the OTT service. As such it shares many of the features of OTT voice calls discussed at paragraphs 3.31 to 3.48 above.

⁸⁴ A mobile provider cited "TelecomsXChange" as an example of the practice.

3.69 Hence, we conclude that supply-side substitution does 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

3.70 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 be reasonable to widen the individual product market by aggregating individual product markets if at least one of two conditions is satisfied:⁸⁵

- a) The individual markets face sufficiently homogeneous competitive conditions, meaning that suppliers' conduct would be the same in each; and/or
- b) There is a common pricing constraint, which means that suppliers' pricing and behaviour is likely to be the same in each market being considered.

3.71 As set out in the June 2017 Consultation, 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 sufficient homogeneity of competitive conditions. In addition, on current arrangements, 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.

3.72 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.⁸⁶

Conclusion on wholesale product market definition

3.73 Therefore, we aggregate termination to individual mobile numbers into a wider product market encompassing termination to all mobile numbers controlled by a particular MCT provider (regardless of where the call is originated from), but no further.

Numbers and call types falling within our market definition

3.74 Here, we clarify which 'types' of termination services are covered by our market definition.

⁸⁵ See, for example, the Explanatory Note to the 2014 EC Recommendation section 2.5 and the SMP Guidelines, paragraph 56. In these documents, the focus of these paragraphs is on geographic markets. Nonetheless, as we have done consistently in our MCT market reviews, we judge it appropriate also to consider these factors in the context of the product market for MCT.

⁸⁶ See paragraph 3.112.

MCT market definition is technology neutral

- 3.75 We consider that 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.

MCT market definition includes ported-out numbers because the donor provider sets the MTR

- 3.76 Our market definition includes ported-out numbers, but excludes ported-in numbers.⁸⁷ 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 and receives the termination revenue from them, even though they subsequently terminate on the recipient provider's network.⁸⁸ We therefore 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".

MCT market definition includes calls to voicemail and national roaming

- 3.77 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 would face the same competitive constraints, if any, 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 which terminate on voicemail and calls terminated by national roaming arrangements fall within the market of the MCT provider allocated the number.

MCT market definition includes calls to call forwarding services

- 3.78 We consider that calls to call forwarding services that use UK mobile numbers are within the market of the MCT provider allocated the number. It is our understanding that, similar to other calls to UK mobile numbers, for call forwarding services a caller, however and wherever calling, has no choice but to use the relevant mobile number, and cause the MTR to be incurred, in order to make a call to the relevant call recipient using that service.⁸⁹

⁸⁷ Under a process known as "porting", when customers change network they can take their current mobile number with them.

⁸⁸ Donor conveyance charges (DCCs) are regulated separately. As we note in Section 2, we intend to update our regulation of DCCs.

⁸⁹ There may be instances in which a caller has alternative means of calling the ultimate recipient, however, we have received no evidence that such alternatives impose a material competitive constraint on call termination charges by call forwarding services.

3.79 We include calls to call forwarding services that use mobile numbers for the following reasons:⁹⁰

- a) Access and pricing to the termination service is controlled by the MCT provider 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.
- b) Given these numbers are part of the range designated for mobile services, consumers should expect these services to be charged as a normal mobile call. Higher MTRs for such calls may be exploiting a structure of retail prices which follow from 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, even if the MTR is much higher than LRIC.⁹¹
- c) 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.

3.80 To this end, our SMP conditions (Annex 4) make clear they apply to all calls made to numbers in the ranges 071 - 075 and 077 - 079.⁹²

MCT market definition includes calls to UK mobile numbers when the recipient is roaming abroad

3.81 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 include these calls within the relevant MCT markets.

⁹⁰ 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

⁹¹ 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).

⁹² In June 2017, we consulted on amendments to the National Telephone Numbering Plan (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). We noted in the June 2017 Consultation that the proposed changes to the Numbering Plan may have had consequential effects on this market review. However, we are still considering the responses to the consultation on the Numbering Plan and have not yet decided whether and when to make changes to it. We have therefore decided to maintain the definition of a UK mobile number we set out in the June 2017 Consultation, namely as those numbers in the format 07xxx xxx xxx and beginning 071 to 075 and 077 to 079.

MCT market definition does not include calls to overseas mobile numbers when roaming in the UK

- 3.82 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.⁹³ 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 consider that these calls fall outside the relevant MCT markets.

MCT market definition includes test calls and other calls to UK mobile numbers

- 3.83 We also consider that other calls (e.g. test calls, calls to customer services) would be 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.
- 3.84 For the avoidance of doubt, our market definition includes termination of voice calls to UK mobile numbers originated internationally.
- 3.85 Table 2 below summarises the call types included within our wholesale product market definition, which is the same as in our June 2017 Consultation and 2015 MCT Statement.

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

Call type	2018 Decision
Off-net origination	✓
On-net origination	✗
Calls to ported-out numbers	✓
Calls to ported-in numbers	✗
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	✓

⁹³ 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.

Call type	2018 Decision
Calls to UK mobile numbers roaming abroad	✓
Calls to non-UK numbers roaming in the UK	✗
Calls originated internationally to UK mobile numbers	✓

Geographic market definition

- 3.86 Having defined the relevant wholesale product market, we now assess the geographic scope of the wholesale market. Manx Telecom agreed with our market definition but disagreed that it provided any services within that market. No other stakeholders raised any points about geographic markets.
- 3.87 At the wholesale level, MCT services are accessed by an originating provider at a relevant handover point on the terminating provider's network. Our understanding is that all such 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.
- 3.88 Therefore, we consider 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 MCT services to those numbers in the UK (i.e. at a handover point on their network in the UK), fall within our proposed market definition. Since the June 2017 Consultation, though, we have obtained evidence that eight of the nine providers that are allocated UK mobile numbers but which operate in the Channel Islands or Isle of Man do not offer termination services in the UK. We have, therefore, not included them within our market definition.⁹⁴

Conclusions on market definition

- 3.89 In light of the analysis set out in this section, we identify the relevant markets as follows:⁹⁵

⁹⁴ We have, however, included JT (Jersey) Ltd. Evidence collected under s135 of the Act indicates that number ranges allocated to this company are being used for termination services in the UK.

⁹⁵ 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).

“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”.

- 3.90 The relevant markets include any mobile provider which has requested transfers of relevant UK mobile numbers and offers (or plans to offer) MCT.⁹⁶
- 3.91 Annex 12 lists the 67 relevant MCT markets, comprising the four largest MCT providers and 63 smaller MCT providers.

Market power assessment

Summary

- 3.92 This section sets out our conclusions on whether any MCT provider operating in a relevant market is able to act, to an appreciable extent, independently of competitors, customers, and ultimately consumers – that is, whether it has SMP in that market.
- 3.93 In response to our June 2017 Consultation, H3G and Verizon supported our findings that all UK MCT providers have market power with respect to the termination of mobile calls while two smaller MCT providers said that they did not hold SMP in these markets. As discussed above, Vodafone said that MTR providers do not have SMP in relation to non-EEA originated calls. BT/EE contended that our market definition and SMP analysis “*does not adequately capture the significant impact of OTT competition on traditional markets for voice calls and the steady erosion of SMP in relation to the MCT service that could otherwise justify less intrusive remedies over the next charge control period and beyond.*”
- 3.94 Having carefully considered relevant consultation responses, and for the reasons explained below, we conclude that each MCT provider has SMP in the corresponding relevant market. This is in line with the proposals in our June 2017 Consultation.

Analytical approach

- 3.95 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:
- a) high current and future market shares;
 - b) high barriers to entry;
 - c) an absence of effective countervailing buyer power (CBP); and
 - d) evidence of pricing above competitive levels.

⁹⁶ Without prejudice to the question of whether any request would be granted.

- 3.96 Our assessment takes due account of the SMP Guidelines as required by section 79 of the Act. We have also had regard to the ERG SMP Position.⁹⁷

Market shares

- 3.97 Although a high market share alone is not sufficient to establish SMP, very large market shares are usually taken to indicate a presumption of SMP in the relevant market.⁹⁸ 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

- 3.98 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.
- 3.99 OTT bypass could be characterised as a form of market entry. However, we do not consider OTT bypass as a sufficient competitive constraint for the reasons explained at paragraph 3.67 above.
- 3.100 Our view is that barriers to entry are high, and are unlikely to be reduced materially over the review period. Accordingly, we do not consider that any threat of entry exists which would constrain MCT providers to set MTRs at a competitive level absent regulation.

Countervailing buyer power

- 3.101 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.
- 3.102 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.
- 3.103 In assessing CBP, we consider the effectiveness of the potential levers by which providers could attempt to exert CBP. The main levers are: refusing to interconnect; and setting retail prices so as to deter retail customers from originating calls to the network in question (for

⁹⁷ See ERG, Revised working paper on the SMP concept for the new regulatory framework, September 2005. We note in particular that, in respect of pricing, it 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."

⁹⁸ Paragraphs 75 – 77 of the SMP Guidelines.

example, through placing calls outside inclusive retail call allowances). Telecoms providers could also seek to exert some countervailing power by raising their own termination rate (if they are not already regulated).

3.104 In considering the effectiveness of these potential levers, we explain the important role of BT's end-to-end connectivity obligation:

- a) While BT is the largest transit provider, and largest overall purchaser of MCT, it is constrained in its ability to use its fixed termination rates, provision of interconnection circuits, or certain other network access services, as a bargaining tool, since these are constrained by regulation in those markets.⁹⁹ Therefore, we consider it unlikely that BT has sufficient CBP to constrain the MTR charged by the terminating provider.
- b) 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.
- c) 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.

3.105 Another option for exerting CBP would be for an originating provider to threaten to block the MCT provider's number ranges. However, in our June 2017 Consultation we provisionally considered 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.¹⁰⁰ Furthermore, even if such incentives did exist, the parties' expectation of our potential intervention in these cases (in terms of whether regulation and industry practices are sufficient to ensure end-to-end connectivity) could further weaken the credibility of this threat.

3.106 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.¹⁰¹

⁹⁹ 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.

¹⁰⁰ 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.

¹⁰¹ 2015 MCT Statement, paragraph 4.42.

However, this did not appear to have the effect of reducing the MTRs charged by the MCT providers in question. Rather, the significantly higher MTRs were sustained by these MCT providers.

- 3.107 In their responses to our June 2017 Consultation Core Telecom and Swiftnet told us that BT and the large mobile providers often placed smaller MCT providers' numbers out of call bundles (including according to Core Telecom even when the smaller MCT provider is charging MTRs at the regulated cap).¹⁰²
- 3.108 We asked the four largest mobile providers to confirm whether they excluded any UK MCT provider from their retail mobile call allowances, and if so the reason for exclusion. Three of the four confirmed that they do exclude certain numbers from their retail mobile call allowances. According to these providers, these are typically for non-mobile services such as international bypass or personal numbering services. One MCT provider [3<] stated that it only includes calls to a given MCT provider in its customers' call allowance if that MCT provider i) charges the regulated MTR and ii) requests to be included within call allowances. However, we do not consider that the prospect of exclusion from another provider's call bundles would be sufficient to constrain MTRs to the competitive level in the absence of regulation.
- 3.109 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.
- 3.110 Our conclusion therefore is that CBP is not present in the relevant markets to a sufficient degree to constrain MTRs to a competitive level absent regulation.

Pricing behaviour

- 3.111 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:
- a) All four large MCT providers charge the maximum allowed under the charge control;
 - b) All but four MCT providers charge at least the maximum allowed amount;¹⁰³ and
 - c) Some smaller MCT providers charge above the maximum allowed.

¹⁰² We would expect that, where a terminating provider charges (for relevant mobile services) at or below the regulated cap for MCT, calls to its numbers would be included in call bundles.

¹⁰³ These are [3<] Source: Data provided in response to s135 notice, various dates between January 2017 and April 2017 and BT Carrier Price List.

3.112 Prior to 2015, smaller MCT providers were not subject to charge control regulation,¹⁰⁴ 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 could potentially have been 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.¹⁰⁵ We also noted that prior to enforcement action, an even greater number of those designated as having SMP had been charging more than the benchmark rate. We similarly noted that, at the time of our MCT 2011 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.¹⁰⁶

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

Conclusion on market power assessment

3.114 We conclude that each MCT provider has SMP in the corresponding relevant market. These providers are listed in Annex 12.

¹⁰⁴ Those smaller MCT providers designated as having SMP were subject to a fair and reasonable charges obligation.

¹⁰⁵ Ofcom, 2015 MCT Statement, para 4.50 and Table 6, p.63, and Table 7, p.64.

¹⁰⁶ Ofcom, 2015 MCT Statement, para 4.48, p.62.

4. Remedies

Introduction

4.1 In Section 3, we identified 67 relevant markets each relating to a single MCT provider and set out our reasons for designating a particular MCT provider with SMP in each of those markets. In this section, we draw our conclusions on the appropriate remedies to address the harm arising from SMP in the provision of MCT.

4.2 Our decision on the appropriate remedies to address SMP is summarised in Table 3 below.

Table 3: Summary of Ofcom's decision on remedies for MCT

SMP Condition	Description	Applied to	Same Remedy as 2015 review	To be implemented from
M1	Network access obligation (on reasonable request on fair and reasonable terms and conditions)	All MCT Providers	Yes	1 April 2018
M2	Charge control (set using LRIC cost standard) for all calls regardless of origin	All MCT providers	Yes ¹⁰⁷	1 April 2018 (and at a lower rate from 1 June 2018)

4.3 Both the network access obligation and the charge control will apply from 1 April 2018. In the case of the latter, it will apply in the period from 1 April to 31 May 2018 (inclusive) at same rate as the existing charge control (0.495 ppm) and from 1 June 2018 at the new regulated rate (0.489 ppm).

4.4 The remainder of the section is structured as follows:

- We set out our assessment of the harm that would arise in the absence of regulation.
- We then discuss the legal background to the imposition of remedies.
- We explain the remedies imposed and set out our reasons for this, having carefully considered stakeholder responses to the June 2017 Consultation.

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

4.5 In Section 3 we conclude that each of the MCT providers listed in Annex 12 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 in

¹⁰⁷ We have added a condition associated with this remedy which requires all MCT providers with SMP to provide information to Ofcom annually on the MTR charged in the previous charge control year.

order to decide if competition law remedies are sufficient to address the problem and, if not, to impose appropriate *ex ante* remedies.

4.6 In our June 2017 Consultation, we explained that our primary concern is that, without regulation, MCT providers will have the incentive and the ability to engage in the following forms of conduct:

- i) Refusal to supply MCT or failure to do so on fair and reasonable terms;
- ii) Charging excessively high MTRs;
- iii) Supplying MCT on discriminatory terms or in discriminatory ways (including price and non-price elements); and
- iv) Not providing clarity or certainty in relation to MTRs.

4.7 Our assessment is that, for the reasons that follow, the first and second of these are likely to apply here. We think there are fewer grounds to be concerned about the last two forms of behaviour, again for reasons we explain below, and judge that maintaining the existing remedies in respect of them (i.e. no undue discrimination and price transparency) would be disproportionate.

Stakeholder responses on the case for regulation

4.8 Respondents generally agreed with our provisional conclusions on the harm arising from SMP. Core Telecom argued that refusal to supply MCT is an ongoing issue. Its contention, however, appears to relate more to other operators' refusals to originate calls to numbers allocated to it. That falls outside the scope of this market review.

4.9 Respondents also generally agreed that *ex post* competition law would not be sufficient to address the harm arising from SMP in MCT markets. However, Core Telecom argued that *ex ante* regulation in respect of smaller mobile providers is disproportionate.

Ofcom's assessment

4.10 In the absence of regulation, any of the forms of conduct listed at paragraph 4.6 could manifest itself, in isolation or in combination with others. We explain below in turn how these forms of conduct lead to harm and conclude by assessing why *ex post* competition law would not be sufficient to remove it. The extent of each of the harms discussed is likely to be proportionate 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 forms of conduct.

Refusal to supply MCT

4.11 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.

- 4.12 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 it were unable to do so, would have to absorb the higher charges, thereby putting it at a competitive disadvantage).
- 4.13 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

- 4.14 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.
- 4.15 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's customers, in aggregate, 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 and calls from overseas will also add to the net revenue flows for UK MCT providers.)
- 4.16 As described in Section 3, we have included in our market definition calls to all forwarding services that use UK mobile numbers. 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

- 4.17 The power to set high MTRs in the absence of regulation will generate profits which could affect competition in retail mobile markets. In our June 2017 Consultation, 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, which we now confirm, 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.
- 4.18 Competitive harm is also likely to arise if MTRs are asymmetric. Setting a high MTR, whilst rivals set (or are only able to set) lower MTRs, provides a distortionary competitive advantage because it allows the MCT provider setting a high MTR the opportunity to

discount its retail offers in a way not related to greater efficiency or a service better meeting the needs of consumers. The competitive 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.

- 4.19 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, as noted in paragraph 4.17, 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 (e.g. cost efficiency or quality of service). Even if the waterbed effect led to a full 'recycling' of higher MTRs, excessive MTRs could still harm consumers' interests by distorting competition in downstream retail markets.
- 4.20 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.
- 4.21 None of the responses to the June 2017 Consultation provided bases for us to reach different conclusions on any of these points.

Discriminatory supply

- 4.22 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 mobile providers or smaller providers in order to create barriers to entry or expansion for them.
- 4.23 For reasons we explain in more detail below, our conclusion 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 is likely that competition in retail markets would be distorted in the forthcoming review period by unduly discriminatory behaviour in MCT that requires *ex ante* regulation.

Clarity and certainty in relation to MTRs

- 4.24 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.

- 4.25 We consider, again for the reasons we outline below, that the level of transparency in the markets for wholesale MCT services (in particular, given other remedies) is sufficient to mean these forms of behaviour are either unlikely to occur, or if they do arise would have limited adverse effects.

Sufficiency of *ex post* competition law

- 4.26 Before considering *ex ante* regulation (i.e. SMP conditions) to remedy the problems arising from SMP in MCT markets, we must determine if *ex post* competition law remedies would be sufficient to address these problems. This is because *ex ante* regulation should only be imposed where such competition law remedies are insufficient to address the competition problem(s) identified.¹⁰⁸
- 4.27 We have considered in this connection Core Telecom's contention that *ex ante* regulation is disproportionate in relation to smaller providers. We recognise that the harm caused by the forms of behavior we have described is proportionate to the size of the MCT provider that engages in it. Nonetheless, harm still arises in connection with smaller providers and the following points apply to the generality of providers, bigger and smaller.
- 4.28 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 *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 likely to arise in the absence of regulation would be liable to justify *ex ante* intervention.
- 4.29 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*'.¹⁰⁹ In relation to the refusal to supply on fair and reasonable terms and excessively high MTRs, we agree with this proposition.
- 4.30 Imposing obligations on an *ex ante* basis in relation to these matters would allow consistent and timely intervention. Moreover, our view is that where, as here, fair and reasonable access to the infrastructure of competing firms is important, and where technology and/or demand conditions are unlikely to support commercially viable alternatives, *ex ante* SMP conditions are likely to be necessary.
- 4.31 Furthermore, *ex post* competition law focuses on past abuses of dominance, and so is less effective in bringing about or promoting competition by itself. *Ex ante* regulation is normally aimed at actively promoting the development of effective competition.
- 4.32 Imposing obligations on an *ex ante* basis would also provide MCT providers with greater legal and regulatory certainty. We regard this as appropriate in the context of the

¹⁰⁸ Recital 27 of the Framework Directive.

¹⁰⁹ Page 31 and 32 of the Explanatory Note to the 2014 EC Recommendation.

widespread impact of the potential detriments stemming from market power discussed above. SMP conditions enable us to intervene more quickly, if required.

- 4.33 We take a different view in relation to the potential discriminatory supply of MCT services and to the need for clarity and certainty in these markets today. In particular, for the reasons we set out further below, our assessment is that the risks of unduly discriminatory behavior, or at least the effects arising from this, are no longer sufficiently significant or likely to justify *ex ante* regulation. In the unlikely event they were to occur, *ex post* competition law would be available to address such conduct if the effects on competition were likely to be significant.

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

- 4.34 With regard to the period considered in this market review, we 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. 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.
- 4.35 We 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 consider that *ex ante* regulation is required.

Legal background to the imposition of remedies

- 4.36 There are a number of legal tests we need to consider when imposing remedies on MCT providers designated as having SMP.
- 4.37 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 Directive¹¹⁰ and Article 16(4) of the Framework Directive.
- 4.38 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.
- 4.39 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).¹¹¹ They include

¹¹⁰ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0019&from=EN>.

¹¹¹ Sections 87-91 implement Articles 9 to 13b of the Access Directive and Article 17 of the Universal Services Directive.

obligations of access to and use of specific network elements, transparency, non-discrimination, accounting separation, price control and cost accounting.

- 4.40 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.
- 4.41 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).
- 4.42 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 are relevant.
- 4.43 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.¹¹² Insofar as they are relevant to the remedies under consideration, we have therefore taken account of the applicable documents.
- 4.44 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.¹¹³
- 4.45 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 adverse effects arising from price distortion, and that the setting of the condition is appropriate for the purposes of:

¹¹² 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>.

¹¹³ Section 87(4) of the Act and Article 12(2) of the Access Directive.

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of public electronic communications services.¹¹⁴

4.46 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.

4.47 In setting a charge control, we must also take account of the extent of the investment in the matters to which the condition relates, by the MCT provider to whom it is to apply.¹¹⁵

Network access obligation

Proposals in the June 2017 Consultation

4.48 In our June 2017 Consultation we proposed to require all MCT providers with SMP to provide network access on reasonable request on fair and reasonable terms and conditions.¹¹⁶ We based our proposal on the kinds of reasons, providers' incentives towards and the effects of a refusal to supply network access on fair and reasonable terms as set out in 4.11-4.13 above.

Stakeholders' responses to consultation

4.49 All respondents to the June 2017 Consultation who responded on this issue agreed with our proposals to impose a network access obligation on all MCT providers.¹¹⁷

Ofcom's assessment and conclusion

4.50 For the reasons set out in the June 2017 Consultation and paragraphs 4.11-4.13 above, we conclude that a general network access obligation is necessary to ensure end-to-end connectivity and should apply to all MCT providers with SMP. Therefore, we have decided to retain an SMP condition that requires all MCT providers with SMP to provide network access on reasonable request on fair and reasonable terms and conditions. Having considered the matter carefully, we assess that such a condition satisfies the relevant legal tests as set out below.

Legal Tests

4.51 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.

¹¹⁴ Section 88 of the Act and Article 13 of the Access Directive.

¹¹⁵ Section 88(2) of the Act and Article 13(1) of the Access Directive.

¹¹⁶ Section 4.44, June 2017 Consultation

¹¹⁷ [3<], Core Telecom, Manx Telecom

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).

- 4.52 In our 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. 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 consider that the provision of network access is feasible. Likewise, we consider that the condition would help to secure effective competition in the long term as it would ensure that purchasers of MCT are not disadvantaged in retail markets by the imposition of unreasonable terms and conditions by terminating MCT providers.
- 4.53 Our further assessment is that this condition is appropriate for the purposes of section 87(1) of the Act and meets the criteria set out in section 47(2) 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 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.
- 4.54 We have considered our duties under section 3 of the Act. The condition will 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.
- 4.55 We also 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.

Charge control obligation

- 4.56 In the June 2017 Consultation we proposed that setting a single, LRIC-based charge control for all MCT providers with SMP was the appropriate remedy. We proposed that such a charge control would address MCT providers' incentive and the ability to charge excessive MTRs. Such charges would harm effective competition and the interests of consumers more generally (including through higher retail prices) and our provisional view was that a cost-orientated charge control would be the most effective way to address our concerns. It would also provide regulatory certainty and ease of compliance for MCT providers and enable more effective enforcement by us.

Stakeholder responses to consultation

- 4.57 The stakeholders who responded to the June 2017 Consultation on this issue generally agreed that setting a charge control for all MCT providers with SMP was the appropriate remedy.
- 4.58 Telefónica agreed with our proposal to impose a charge control on all mobile providers found to hold SMP, but it contended that smaller mobile providers should be regulated at a lower MTR because they incur lower costs than the four largest mobile providers. Telefónica said that the justifications of our approach were not strong enough to justify the imposition of asymmetrical conditions, which could give a competitive advantage to those operators who are able to charge above their LRIC. It said experience suggests that this would be exploited by some providers. Telefónica also submitted that applying a uniform charge control would risk contravening our statutory duty to ensure that any SMP conditions are "not such as to discriminate unduly against any particular persons or against a particular description of persons".¹¹⁸ Telefónica considered that smaller mobile providers should be regulated at a lower rate unless they could demonstrate to us that their costs justified the rate applicable to the four largest mobile providers.
- 4.59 Telecom2 submitted that certain services that they provide only to non-EEA countries (for example, voicemail redirection facilities and location-based sample surveys) have higher costs and this should be reflected in the charge control. Core Telecom said that it saw no requirement for a charge control.

¹¹⁸ Section 47(2) of the Act.

Ofcom's assessment and conclusions

- 4.60 In this section, we set out our assessment in relation to the charge control obligation, including our consideration of stakeholder comments and our conclusions in relation to the charge control obligation for the forthcoming review period.

Charge control

- 4.61 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 effective competition, and ultimately the interests of consumers, including through higher retail prices. Our view is that a cost-orientated charge control is the most effective way to address our concerns about the risk of excessive MTRs. It also provides regulatory certainty and eases compliance for MCT providers while enabling more effective enforcement by Ofcom.
- 4.62 We consider that the most suitable approach for preventing excessive MTRs is a charge control which reflects the costs of a hypothetical efficient mobile provider.
- 4.63 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.
- 4.64 Our views on the appropriate cost standard to adopt for the proposed charge control and the design of that charge control are set out 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

- 4.65 Prior to the 2015 MCT Review, we considered that a price transparency obligation, a requirement to provide network access on fair and reasonable (F&R) terms and conditions (accompanied by 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.¹¹⁹ However, as set out in the 2015 MCT 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.¹²⁰ Originating providers often

¹¹⁹ 2011 MCT Statement, paragraph 6.88. See also 2015 MCT Statement, paragraph 5.107.

¹²⁰ 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 have 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.

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 may have led to consumer harm through unexpectedly high bills, reduced calls to these numbers and competition distortions.¹²¹ Our 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.

4.66 We recognise that a charge control has the potential to be more intrusive than a F&R obligation for smaller MCT providers. However, we consider that setting a single maximum rate with only minimal reporting obligations will address the pricing concerns arising from SMP, while limiting the burden on smaller MCT providers.

4.67 We agree that the incurred costs of smaller MCT providers may be below the costs of larger providers, particularly in the case of asset-light MCT providers, or above the costs of larger MCT providers.¹²² Nonetheless, in our June 2017 Consultation we set out our provisional assessment that setting separate MTR caps for different groups of MCT provider was 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 MTR cap.¹²³
- We would expect the level of efficiently-incurred MCT costs to be no higher than the level of the charge-controlled MTR cap for smaller MCT providers with potentially high costs.
- 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.

4.68 We note that, in its response to the consultation, Telefónica did not provide any evidence to suggest that setting the same MTR cap for different groups of MCT providers has led to an adverse outcome. So, taking the above points in the round, we do not consider that there are sufficient benefits of separate price regulation of MCT providers to justify the additional complexity and regulatory uncertainty which this would entail. We do not judge

¹²¹ 2015 MCT Statement, paragraph 5.112.

¹²² 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.

¹²³ 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 regard this assessment as remaining valid for the present review also.

that approach to be unduly discriminatory, contrary to Telefónica’s contention, for reasons that draw on some of those points.

- 4.69 To re-iterate, in particular, some MCT providers may have higher costs (in terms of unit costs) anyway, particularly if they have small numbers of subscribers. For those with lower costs, the margin between the MTR cap and their unit costs of termination will in any event be small, giving them, at most, very limited competitive advantage.
- 4.70 Telecom2’s contention that costs in providing services to non-EEA countries are higher and should be reflected in the charge control also does not cause us to adopt different price caps for certain providers. It is not clear that such costs would be part of the cost of providing MCT in the UK. Rather, we see no reason why (and have no evidence that) the costs of providing termination to mobile numbers in the UK, as opposed to other aspects of the services,¹²⁴ would be higher. In the event that certain providers are in a similar position to an asset-light provider, in that they are unlikely to operate their own radio network, those costs are likely to be lower than the LRIC of MCT as estimated in our analysis (which assumes the use of a full radio network – see section 5).¹²⁵
- 4.71 Our decision to impose a single charge control on all MCT providers with SMP is consistent with the EC’s preference for mandated symmetric reciprocal termination rates.¹²⁶

Ofcom’s position on alternative forms of MTR regulation

- 4.72 In the 2011 MCT review, we considered alternatives to a “traditional” charge control, including removal of all MTR regulation, capacity-based charges, mandated fixed-mobile termination rate reciprocity, and mandated “bill and keep”.¹²⁷ We explained why we did not consider them to be appropriate. In the 2015 MCT Review, we briefly revisited this issue and came to the same conclusion.
- 4.73 If, as expected, net MCT revenues between UK providers continue to fall, it is possible that they will be too low to cover the transaction costs to MCT providers of collecting termination charges, so that bill and keep may be more efficient. In those circumstances, or if there were strong evidence of externality benefits (e.g. call externalities or compelling competition arguments), there could be a case for mandating bill and keep (that is, MTRs effectively set at zero). However, we did not propose to mandate bill and keep in this review. Although net termination revenues between UK mobile providers continue to fall, in our view they have not fallen to a sufficient level to change the positions set out in the 2011 and 2015 reviews.¹²⁸ We have therefore focussed our assessment on a charge control which takes the traditional form of a cost-based cap on MTRs. Even so, as recognised in our

¹²⁴ Which would likely be recoverable by other means, such as from the subscribers to the call forwarding services.

¹²⁵ For further discussion of asset-light MCT providers see paragraphs 5.113 - 5.119 and 5.125 - 5.130 of the 2015 MCT Statement.

¹²⁶ See, for example, the Explanatory Note to the 2009 EC Recommendation, in particular section 3.

¹²⁷ An arrangement under which both interconnecting providers do not charge an MTR (i.e. the MTR is set to zero ppm).

¹²⁸ In 2016/17 net termination revenues between UK mobile providers were £85 million (Section 1, paragraph 1.10), whereas in 2014/15 they were £141 million (2015 MCT Statement, paragraph 1.2).

June 2017 Consultation (paragraph 4.78), providers may find it efficient to agree bill and keep between themselves.

Cost standard for the MTR charge control

4.74 In the June 2017 Consultation, we set out our provisional view that LRIC remains the appropriate cost standard for setting the MTR charge control. This was consistent with the approach taken in the 2015 MCT Statement.

Stakeholder responses to the consultation

4.75 Where they agreed that cost-based MTR regulation should apply, most respondents to the June 2017 Consultation agreed with our proposal that LRIC is the appropriate cost standard.

4.76 Telefónica, however, submitted that the Competition Commission's support of a LRIC cost standard in 2012 does not preclude the need to re-consider the choice of cost standard in the light of different evolving factors which affect the next charge control. Telefónica said that we had failed to present reliable evidence that moving from LRIC+ to LRIC has provided material benefits to consumers, and that we had incorrectly considered that our options are limited to just LRIC and LRIC+. Furthermore, Telefónica said that a charge control set above the current LRIC level would inevitably increase consumer welfare by incentivising investment from the four largest mobile providers.

Ofcom's assessment and conclusion

Criteria and assessment in the 2015 MCT Statement

4.77 In the 2015 MCT Statement,¹²⁹ our assessment focused primarily on comparing the LRIC and LRIC+ costs standards.¹³⁰ We also considered whether some other level of cost standard, designed to be above LRIC, may be appropriate, but reasoned that the same considerations as for LRIC+ apply to any other level above LRIC. We assessed these two 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; and

¹²⁹ Section 6, 2015 MCT Statement.

¹³⁰ 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.

- **Commercial and regulatory consequences.** Whether either of the cost standards could have unintended commercial and/or regulatory consequences.

4.78 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.¹³¹ 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 the incentive (and/or ability) for providers to compete for 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.¹³² 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 and risks decreasing allocative efficiency – 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 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+.
- 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.¹³³
- There was little empirical evidence of MTR reductions harming vulnerable consumers.¹³⁴
- 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.¹³⁵ We did not consider any other commercial or regulatory consequences justified capping MTRs at a level above LRIC.

Applicability to this review

4.79 Our view is that the criteria adopted in the 2015 MCT Statement remain appropriate when considering the cost standard to be used for the 2018-2021 period. As regards the pro-competitive benefits of LRIC, we recognise that retail competition has become increasingly focused 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 assessment is that the market developments we have seen do not alter the conclusion (which is in favour of LRIC). MTRs at LRIC+ would exceed the incremental costs

¹³¹ For example, see paragraphs 6.93 to 6.162 and 6.202, 2015 MCT Statement.

¹³² For example, see paragraphs 6.17 to 6.56 and 6.202, 2015 MCT Statement.

¹³³ For example, see paragraphs 6.57 to 6.92 and 6.202, 2015 MCT Statement.

¹³⁴ For example, see paragraphs 6.163 to 6.193 and 6.202, 2015 MCT Statement.

¹³⁵ Ofcom, *Narrowband Market Review: Statement*, November 2017, paragraph 14.4, page 311.

of MCT, thereby creating a margin on inbound calls from other providers, in turn facilitating the competitive distortions previously identified. Even if the margin between LRIC+ and LRIC is now less than before in absolute terms, MCT traffic has increased.¹³⁶ We therefore consider that the previous reasoning would hold and, at the very least, from what we have seen in the mobile (and fixed¹³⁷) markets, there is not a compelling competition or efficiency case for reverting to LRIC+ after two market review periods of LRIC-based MTRs. We further consider that the threshold for reverting to LRIC+ is high, particularly in light of the 2009 EC Recommendation.

Updated empirical evidence

4.80 In addition, our 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+ was around £65 million in 2015/16.¹³⁸ We noted that would be less than 2% of EBITDA for the four largest mobile providers and that mobile providers could recoup foregone revenues from the retail market. Based on this we said the financial impact on the UK MCT providers of using LRIC rather than LRIC+ would be relatively small. We have updated these calculations and found a maximum net effect on mobile providers' revenues from MTRs set at LRIC rather than LRIC+ of around £46 million in 2018/19 (in 2016/17 prices).¹³⁹ This represents only around 1% of 2016 EBITDA (which was about £4bn¹⁴⁰), and 0.3% of 2016 retail revenues (which were £15.3bn¹⁴¹).¹⁴² As a result we maintain that the financial impact on the UK MCT providers of using LRIC rather than LRIC+ is relatively small, and smaller than it was in 2015.
- 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".¹⁴³ We cited several factors supporting this including the growth in take-up, growth in the market shares of the smallest national MNO, H3G, and MVNOs, relatively low prices for UK consumers, high levels of satisfaction and continued investment in new services. In line

¹³⁶ Although we have not updated the LRIC+ calculation in the 2018 MCT model, on the basis of the previous assumptions it suggests a margin of 0.268ppm in 2018/19 (in 2015/16 prices), which compares to an equivalent figure in the 2015 MCT model for 2015/16 of 0.390ppm. In the 2015 MCT Statement we estimated 2013/14 gross termination volumes at around 60bn minutes, whereas we estimate 2016/17 volumes at around 69bn minutes.

¹³⁷ See Ofcom, *Narrowband Market Review: Statement*, November 2017, paragraphs 14.41-14.52, pages 318-320.

¹³⁸ See paragraph 6.75, 2015 MCT Statement.

¹³⁹ This is calculated using the LRIC/LRIC+ difference of 0.268ppm in 2018/19 (in 2015/16 prices) explained above, and net termination volumes of around 17bn minutes for 2016.

¹⁴⁰ Based on Ofcom analysis of financial statements.

¹⁴¹ See Ofcom, Telecommunications market data tables Q3 2017, 25 January 2018

https://www.ofcom.org.uk/__data/assets/pdf_file/0012/110154/Q3-2017-Telecoms-Data.pdf

¹⁴² We also note aggregate capital expenditure for the four largest mobile providers has remained stable at over £2bn per annum in recent years, and continues to be above the levels observed before the shift from LRIC to LRIC+ in 2009.

¹⁴³ 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.

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.¹⁴⁴ Additionally, between 2014 and 2017, the share of households with no mobile phone fell from 9% to 5% among those in social groups D and E and from 5% to 3% overall.¹⁴⁵

4.81 Therefore, having considered stakeholders' responses to the June 2017 Consultation, we do not agree with Telefónica's argument that LRIC is an inappropriate cost standard for setting the MTR charge control. We remain of the view that LRIC remains the appropriate cost standard for setting the MTR charge control and is consistent with the 2009 EC Recommendation.

Notification

4.82 In the June 2017 Consultation we proposed to introduce a new condition associated with the MTRs capped under the charge control. It would require all MCT providers with SMP in their relevant market to notify Ofcom annually of the MTRs charged.

Stakeholder responses to the consultation

4.83 Telecom2 submitted that the notification requirement was not an efficient way of monitoring MTRs and it would be better for Ofcom to check BT's Carrier Price List (CPL) once a year for the MTRs charged by each company. Verizon questioned whether an annual notification requirement would be effective as it would create a significant time delay in enforcement and would create an administrative burden for Ofcom. Verizon contended that a requirement on all MCT providers with SMP to give 30-days notification of any change in MTR would allow industry to identify and resolve issues between themselves in the first instance, with only unresolved issues needing to be raised with Ofcom.

Ofcom's assessment and conclusion

4.84 We have decided to include the obligation requiring MCT providers with SMP to notify Ofcom annually of the maximum MTR they have charged, by submitting to us this

¹⁴⁴ 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

¹⁴⁵ QD1, Ofcom Technology Tracker H2 2017; Ofcom Technology Tracker Wave 2 2014,
https://www.ofcom.org.uk/_data/assets/pdf_file/0019/75052/main_set.pdf.

information within a month of the charge control period finishing. We note in this connection that BT's CPL is no longer readily available online. Its use to monitor compliance with the charge control would not be appropriate in any event. Ofcom should not rely on the practice and information provided by a third party in order to monitor compliance. The obligation properly rests with the MCT providers to comply with the charge control and to provide Ofcom with the information necessary to monitor that compliance.

- 4.85 We do not agree that our price notification obligation will place a significant administrative burden on us (or MCT providers). We will only require MCT providers to provide Ofcom with information regarding the maximum rate charged over the previous year, and in most cases we would expect this to be the MTR cap.
- 4.86 We also do not consider that requiring operators to give 30 days' notice of any change in MTR would help to ensure compliance with the charge control by allowing other providers to bring disputes to us where they face MTRs above the regulated cap. We consider that such an approach would be disproportionate and note that, although all MCT providers are currently subject to the MTR cap, some of the smaller MCT providers charged above the cap in this review period but no disputes have been referred to us. We were only able to ascertain this information in our enforcement programme through formal information notices.
- 4.87 We therefore consider that an annual notification strikes the appropriate balance between ensuring that we can monitor compliance with the charge control and the administrative and regulatory burdens of doing so.

Legal tests

- 4.88 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 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).
- 4.89 As discussed in paragraphs 4.14 to 4.21 above, based on our market analysis we assess that there is a relevant risk of adverse effects arising from price distortion. Absent regulation, MCT providers would have the ability and incentive to set excessive MTRs which would have adverse consequences for competition and end-users of PECS which we identified.
- 4.90 We judge that the charge control condition we have decided to impose would be appropriate for promoting efficiency as it will address the inefficient structure of charges that results from excessive MTRs. Setting MTRs at LRIC will encourage efficient consumption of services, as prices more closely reflect true resource costs.

- 4.91 We similarly judge that the charge control condition will be appropriate for the purposes of promoting sustainable competition as it will address the distortions of competition which arise from excessive MTRs. In particular, a LRIC cost standard will best promote sustainable competition, as it will 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 at LRIC).
- 4.92 The charge control condition will also be appropriate for the purpose of conferring the greatest possible benefits on end-users of PECS. The benefit for consumers will be maximised by our choice of a LRIC cost standard.
- 4.93 In particular, in ensuring that consumers are able to make (and receive) calls for which the price charged is set at a level which is efficient and designed to secure effective competition, consumer welfare is expected to be enhanced. Those consumers are able to choose from a range of providers who are incentivized to act efficiently and to compete intensively for their retail custom, while incentives for investment, which also benefit consumers, are maintained (see below). We also take account of the points in paragraphs 4.96 to 4.102 below in connection with our general duties.
- 4.94 We have taken account of the extent of investment by MCT providers, as required by section 88(2) of the Act. In designing the charge control, we have considered the reasonable rates of return on investment required by an average efficient provider. That is part of the LRIC cost methodology. Mobile providers will continue to have the ability and incentive to invest, following the imposition of the SMP Condition.
- 4.95 Our judgment is that the charge control condition, and the notification requirements that apply in association with it, also meets the criteria in section 47 of the Act because it is:
- Objectively justifiable, in that it is 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 above, it is appropriate to impose a charge control on all MCT providers (regardless of retail position) on the basis that 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;¹⁴⁶
 - Not unduly discriminatory, in that it applies equally to all providers designated as having SMP in MCT;
 - Proportionate, because it is 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 assessment, however, is that we could not. Applying the simple charge control (based on a maximum charge ceiling – see Section 6) to all relevant MCT providers is liable to be

¹⁴⁶ 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.

more effective at remedying the harm caused by excessive MTRs, and would involve only minimal reporting obligations; and

- Transparent, in that the form and operation of the charge control (a maximum charge ceiling) is clear and maintains 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.

The charge control would, in our judgment, be an appropriate remedy for the purposes of section 87(1) of the Act.

- 4.96 We have carefully considered our duties under Section 3 of the Act. Our judgment, in light of the foregoing and following points, is that the imposition of the proposed condition is consistent with our primary duty to further the interests of citizens and consumers, where appropriate by promoting competition.
- 4.97 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), securing the availability throughout the UK of a wide range of electronic communication services is particularly relevant to this review. In paragraphs 4.74 to 4.81 and 4.88 to 4.94 above, for example, we assessed the impacts on consumers of basing a charge control on a LRIC cost standard. Our view is that the use of a LRIC cost standard will go to secure each of the interests and matters described in this paragraph, and accordingly is beneficial to consumers.
- 4.98 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 paragraph 4.80 above, we have given careful consideration to the distributional impacts of imposing a charge control based on LRIC and made the assessment that vulnerable customers are unlikely to be adversely affected under LRIC MTRs, relative to LRIC+.
- 4.99 In the same paragraphs (4.74 to 4.81 and 4.88 to 4.94), 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. Again, in each of these respects, MTRs capped at LRIC would ensure consumers are able to make calls to UK mobile numbers for which they are not charged above the competitive level and in circumstances where providers have the appropriate incentives to operate efficiently and compete effectively.
- 4.100 Finally, we 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.

- 4.101 We have explained above our assessment that the charge control condition and our choice of a LRIC cost standard is an appropriate and proportionate means to address our competition concerns and promote the interests of end-users. In seeking to maximise consumer benefit, we are also promoting the interests of EU citizens (insofar as they are relevant consumers).
- 4.102 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.

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

Introduction

Our consultation position

- 4.103 In the June 2017 Consultation we considered whether it is appropriate to make an exception to our approach to the regulation of MCT 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).
- 4.104 Our starting point was our provisional assessment that termination rates capped at LRIC would facilitate more effective competition, would be consistent with our efficiency objectives and would further consumers' interests. On that basis, our prima facie view was that we would need good reasons and evidence to consider that these interests and objectives would instead be better served by differential regulation for certain calls.
- 4.105 Our provisional assessment was that it was unlikely that differential regulation in this form would lead to low termination rates replacing currently high termination rates. We also identified a number of other risks to introducing differential regulation.
- 4.106 We noted the potential for higher UK MTRs for international calls to have a positive "waterbed" effect on UK retail prices and investment. However, we expected the scale of such an effect to be limited.
- 4.107 We also noted the costs associated with implementing, and enforcing compliance with, selective differential MTRs based on country of origin.
- 4.108 Accordingly, we were minded to apply the same controlled rate to all mobile calls terminated in the UK, and we considered 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.

Stakeholder responses to consultation

- 4.109 The application of the charge control to calls originated outside the EEA was the main focus of responses to the June 2017 Consultation, with twelve respondents discussing non-EEA calls in their response. A summary of responses can be found in Annex 8.
- 4.110 Five respondents (AT&T, Colt, [3], Manx Telecom and Verizon) were supportive of our proposed approach while seven (BT/EE, Core Telecom, H3G, Swiftnet, Telecom2, Telefónica, and Vodafone) were not.
- 4.111 The main issues raised by respondents who were not supportive of our proposed approach were:
- a) that we had understated the potential benefits and overstated the risks of a reciprocity regime and that a reciprocity regime or variant of the approach taken by the German NRA could mitigate some of the risks we identified;
 - b) that an increasing number of EEA NRAs were introducing differential regulation and there was limited real world evidence of detriment arising from differential regulation; and
 - c) that with differential regulation, UK MCT providers would have an incentive to negotiate lower MTRs in non-EEA countries in exchange for holding down their own MTRs for calls from those countries.

Vodafone also provided a supplementary response in which it suggested that, absent our proposed regulation, it would set higher rates to countries that were charging it higher rates to “offset” these higher rates, rather than passing them through to higher retail prices or reducing investment.

- 4.112 Respondents also raised points about:
- a) the potential impact of Brexit (which we discuss in Annex 8); and
 - b) whether calls originating outside the EEA formed part of the same market as domestically originated calls and, if not, whether MCT providers had SMP in relation to these (which we discuss in Section 3).
- 4.113 We have considered these responses carefully. In light of them, we have reviewed our analysis of the potential benefits, costs and risks of differential regulation for calls originated outside the EEA. Our assessment is that the most likely outcome of differential regulation is reciprocal high termination rates, and that, on balance, the outcome would likely be to the detriment of consumers. Our judgment, in light of those assessments, is that differential regulation would not be appropriate. This analysis is set out in more detail in Annex 6 and summarised below.

Regulatory treatment to date of calls originated outside the EEA

Narrowband Market Review

- 4.114 The 2017 Narrowband Market Review (NMR) applied a single LRIC-based charge control on fixed termination rates to all calls, regardless of origin (i.e. no differential regulation). In our 2017 NMR Statement, we said that while there might be arguments both for and against pricing flexibility in the context of termination of calls originated outside the EEA, we considered that, consistent with our statutory duties including section 3 of the Act, consumers' interests were unlikely to be furthered by higher termination rates and differential regulation would raise implementation challenges – both in terms of the prospect for rates being successfully negotiated down and from a compliance and monitoring perspective.¹⁴⁷

Other EEA NRAs

- 4.115 In other EEA countries, NRAs have adopted varying approaches to the treatment of termination rates for calls originated outside the EEA:
- a) Some NRAs have included calls from outside the EEA within the defined market and applied a single MCT charge control to all of these calls (as is currently the case in the UK).
 - b) Some NRAs have excluded calls from outside the EEA from the definition of the relevant market for MCT, and hence from the charge control.
 - c) Some NRAs, while including calls from outside the EEA within the relevant markets, have either:
 - i) Excluded the termination of non-EEA originated calls from the MCT charge control; or
 - ii) Applied some form of 'reciprocity' condition for non-EEA originated calls.
- 4.116 The approach taken by EEA NRAs is shown in Table 4 below.

¹⁴⁷ Ofcom, *Narrowband Market Review: Statement*, November 2017, paragraph 14.72, page 324.

Table 4: Approaches to regulation of calls originated outside the EEA

Single MTR cap for all calls	Calls from outside the EEA excluded from market definition and, therefore, the Charge Control	Calls from outside the EEA exempted from the Charge Control	Reciprocity
Finland	Denmark	Austria	France
Ireland	Estonia	Belgium	Germany
Romania	Latvia	Croatia	Netherlands
Sweden	Luxembourg	Czech Republic	
United Kingdom	Poland	Greece	
		Hungary	
		Italy	
		Norway	
		Portugal	
		Slovenia	
		Slovakia (proposed)	
		Spain (proposed)	

- 4.117 We have sought information from other NRAs to understand the impact of differential regulation.¹⁴⁸ The information provided by other NRAs shows that, where MCT providers have responded to these changes, this has largely been to increase their termination rates for calls originating from certain countries outside the EEA. However, the UKE (the Polish NRA) noted one example of where differential regulation had resulted in negotiation between MCT providers leading to lower termination rates.

Our approach

- 4.118 As set out in paragraphs 4.36 to 4.47, we are required to consider our approach in light of our duties to UK and EU consumers and citizens in Sections 3 and 4 of the Act and Article 8

¹⁴⁸ We issued two questionnaires to other EEA NRAs (in January and November 2017) to understand their treatment of calls originating outside the EEA, the rationale for their approach and any impact they had observed as a result of differential regulation. See Annex 7 for a summary of responses.

of the Framework Directive, as well as the tests for setting SMP conditions in Section 88 of the Act.

- 4.119 We have considered, in light of these duties, whether it would be possible to realise the benefits of differential regulation in a way that would not be likely to have detrimental effects on consumers' interests. In particular, whether a scheme of such regulation would address the SMP held by MCT providers, meet the Section 88 tests and further the interests of consumers.
- 4.120 As set out in Section 3 we have decided not to exclude non-EEA originated calls from the market definition. The service provided by the terminating provider is the same irrespective of the location of the Communications Provider that seeks to buy the termination. Even if we were to define separate markets for calls originated outside the EEA, our view is that the MCT provider would have SMP in those separate markets.¹⁴⁹
- 4.121 The view underpinning MTR regulation in the UK to date (as elsewhere) has been that MCT providers with SMP have the incentive and ability to charge high MTRs, and that the promotion of competition, efficiency and consumers' interests, are best served by lower cost-based regulated rates.
- 4.122 As set out earlier in this section (paragraphs 4.74 to 4.81), we conclude that the capping of termination rates generally at LRIC would facilitate more effective competition and be to the benefit of consumers. Likewise, such rates would be consistent with our efficiency objectives, would produce regulatory certainty and be consistent with the 2009 EC Recommendation.
- 4.123 We therefore maintain the same starting point in our further assessment of non-EEA originated calls.
- 4.124 Our provisional view, reflected in our June 2017 Consultation (see paragraphs A11.27-A11.29), was that the capping of MTRs at LRIC in respect of calls originated outside the EEA would also be liable to secure, or be consistent with, the same outcomes.
- 4.125 Under this scenario of capping termination rates at LRIC, UK MCT providers would be able to recover their costs (including the cost of capital) on terminating calls from non-EEA countries. Our (provisional) expectation is that if we lifted the cap on MTRs in respect of these calls then MTRs would rise above cost.
- 4.126 We would, accordingly, need good reasons and evidence to move away from the cost-based regulation of MTRs. Doing so would mean relaxing or removing charge controls in markets where there is SMP, so we would need to be confident that it would operate in the interests of consumers in particular.
- 4.127 Therefore, we have carefully considered whether there would be a sufficient basis to take a different regulatory approach in respect of non-EEA originated calls. On the grounds that follow, we judge that there is not.

¹⁴⁹ See paragraphs 3.50 to 3.62.

Options considered

4.128 We have considered three options for the treatment of MTRs from calls originating outside the EEA:

- **Option 1: No differential regulation** (i.e. maintain the status quo) – this option would maintain the current approach and apply the same charge controlled MTR to all calls terminated in the UK regardless of origin.
- **Option 2: Exclude the termination of non-EEA originated calls from the MCT charge control** - this option would remove the charge control cap for non-EEA originated calls, giving UK MCT providers freedom in setting MTRs for non-EEA originated calls.
- **Option 3: A reciprocity condition for non-EEA originated calls** - this option would remove the charge control for non-EEA originated calls, but require that any negotiated rate must be reciprocal, i.e. that the MTRs charged to a non-EEA provider cannot be higher than the MTR offered by that non-EEA provider.

Consumer outcomes

4.129 We have considered these options in light of our general duties – in particular, our principal duty to promote the interests of citizens and consumers, where appropriate by promoting competition, as set out in Section 3 of the Act.

4.130 We also take due account of our duties in Section 4 of the Act and Article 8 of the Framework Directive. These include acting in accordance with the six Community requirements. As well as promoting competition in the provision of electronic communications networks and services, those requirements include:

- a) promoting the interests of all EU citizens; and
- b) encouraging the provision of network access and service interoperability to the extent we consider appropriate for the purposes of securing:
 - i) efficiency and sustainable competition;
 - ii) efficient investment and innovation; and
 - iii) the maximum benefit for customers of communications providers.

4.131 In the round, these duties require us to further the interests of consumers. Given our view that the promotion of competition, efficiency, and consumers' interests are generally best served by cost-based MTRs, we have a preference for MTRs to be maintained at such levels. However, we do not regulate MTRs outside the UK, and the current position in relation to many non-EEA countries is a cost-based (i.e. 'low') UK MTR and a 'high' non-EEA MTR. We therefore also have to consider whether, in this context, consumers' interests are best served by differential regulation.

4.132 Our consultation proposal was to adopt Option 1 (i.e. no differential regulation). If we instead moved to Option 2 or 3, allowing pricing freedom in relation to calls originated outside the EEA, UK MCT providers would have the option to either use the threat of

charging high MTRs to negotiate down the rates paid for terminating calls in non-EEA countries, or increase their MTRs, potentially to a large multiple of cost.

- 4.133 If differential regulation led to reciprocal low termination rates, this would have the potential to deliver gains for UK consumers (e.g. in the form of lower UK retail prices) and in any case we would not expect it to lead to any worse outcomes than at present.
- 4.134 However, we consider that under differential regulation the balance of incentives points to a reciprocal high outcome being more likely to prevail, with the party who is a net recipient of traffic preferring high termination rates to low ones.¹⁵⁰ In addition, in cases where reciprocal low termination rates may be possible (e.g. if UK providers were net recipients of traffic but were required by our regulation to match a low rate set by the other party as under Option 3), there are potential obstacles to such an outcome.¹⁵¹ As set out in paragraph 4.117 the experience of differential regulation in other EEA countries suggests that the prospect of reciprocal low rates is uncertain.
- 4.135 Whether there is nonetheless likely to be some benefit to consumers in the event of reciprocal high rates is a consideration here. For example, picking up on points made in Vodafone's supplementary response, whether they enable UK MCT providers to pass the benefits to consumers, rather than having large net outflows which they re-coup from them. In other words, whether there would be a waterbed effect benefitting consumers, compared to the status quo. Whether consumers benefit, or lose out, as a result of a reciprocal high outcome depends on the extent of any reduction in calls to UK consumers from outside the EEA, offset by any potential waterbed effect in the UK mobile sector.
- 4.136 We think it likely that differential regulation would lead to an increase in UK MTRs in most cases, and that there would likely be a reduction in calls to UK consumers from outside the EEA. Therefore, in order for UK consumers to benefit overall from a reciprocal high outcome, the waterbed effect would need to be large enough to compensate for the consumer loss from the reduction in call volumes. The size of the waterbed effect is uncertain, but we note that an empirical study¹⁵² found it no longer statistically significant in relation to MTRs in a sample of 27 countries (including in the UK) and in the present case the sums involved are not significant in relation to the retail revenues in question.¹⁵³
- 4.137 On balance, therefore, based on the economic incentives and on current market evidence, we do not consider that consumers would be best served by differential regulation of MCT for non-EEA originated traffic.
- 4.138 Additionally, as set out in our June 2017 Consultation (paragraphs A11.56 and A11.57), if differential regulation led to higher MTRs for non-EEA originated calls, it could also create an incentive for overseas providers to mask the origin of calls by manipulating or removing

¹⁵⁰ As we explain in Annex 6, paragraphs A6.15 to A6.26.

¹⁵¹ As set out in Annex 6, paragraphs A6.27 to A6.30.

¹⁵² Genakos, C. and T. Valletti, 2015, 'Evaluating a decade of mobile termination rate regulation', Economic Journal.

¹⁵³ See Annex 6, paragraph A6.58.

Caller Line Identification (CLI).¹⁵⁴ This would give rise to other concerns, including in relation to nuisance calls.

- 4.139 Further important considerations are the practical challenges and the administrative burden for providers and Ofcom that a differential regulation regime would involve. We have noted earlier in this statement the objective we set out in our Digital Communications Review that, while protection against high termination charges would continue to be necessary, we would seek opportunities to simplify their regulation. A key aim in this review has therefore been to ensure that the outcome protects consumers' interests while imposing no more regulatory burden than necessary.
- 4.140 We have already referred in paragraph 4.134 above to the potential obstacles which may prevent providers realising reciprocal low outcomes in scenarios where they might otherwise be possible.¹⁵⁵ On top of those, the increased monitoring required of us to oversee and ensure compliance with a differential regime, and resolve any complaints raised, would also run counter to our aims.
- 4.141 The extent of the complexity and burden would depend in part on how we implemented the pricing freedom. For example, an approach similar to that adopted by the German NRA, where MCT providers have to apply to the regulator for an exemption to the charge control, is likely to be the most complex and burdensome given that we would have to assess each application and supporting evidence provided. We also note that the UK has far more MCT providers than Germany (67 compared to 3) meaning it is likely that we would have to deal with far more exemption applications than has been the case in Germany.
- 4.142 The administrative burden would be less if we adopted a more reactive approach to monitoring and compliance. However, this may be associated with a higher risk of the pricing freedom leading to wider MTR increases and other adverse consequences.
- 4.143 None of these outcomes – increased complexity, administrative burdens, and other adverse consequences – would serve consumers' interests.
- 4.144 Taking careful account of all these points, we do not consider that there is a sufficiently good basis to conclude that differential regulation for non-EEA originated calls would further consumers' interests. Rather, our judgment is that non-differential regulation is more consistent with our statutory duties.

Legal tests for setting an SMP condition

- 4.145 We have also considered whether applying the charge control to calls originated outside the EEA is consistent with the statutory tests in sections 47 and 88 (in particular) of the Act (which is the judgment we make in respect of the charge control generally, as set out in paragraphs 4.88 to 4.94 above). As we set out there, section 88 says we are not to set a SMP condition imposing a charge control other than where it appears to us that there is a

¹⁵⁴ A number of NRAs who have allowed differential regulation have cited this as a concern (see Annex 7, paragraph A7.15).

¹⁵⁵ Again, as set out in Annex 6, paragraphs A6.27 to A6.30.

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

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

4.146 Again, we are also required to take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply. The requirement to promote investment is subject to ensuring competition and non-discrimination are preserved.¹⁵⁶

4.147 Those tests, too, are to be applied in light of our duties in Sections 3 and 4 of the Act and the principles in Article 8 of the Framework Directive. We consider each of them in turn below in the context of non-EEA originated calls. For the reasons we set out, our assessment is that a SMP Condition providing for a non-differential charge control meets those tests as well as furthering consumers' interests. We make the same assessment in relation to the tests in section 47 of the Act.¹⁵⁷

Price distortion

4.148 As we have explained in Section 3 and in paragraphs 4.14 to 4.16 above, MCT providers' SMP, derived from their monopoly on termination of calls to their mobile number ranges, means they have the ability, as well as the incentive, to charge excessively high MTRs. That also applies to the termination of calls originating outside the EEA. Charging such MTRs would be an adverse effect harmful to consumers' interests as there is a risk they could lead to lower inbound call volumes and/or, in certain cases, higher outbound prices.¹⁵⁸

Promoting efficiency

4.149 Economic efficiency is best promoted by cost-based MTRs. High MTRs, even if excessive profits were fully competed away, lead to a structure of prices in retail and wholesale markets that are likely to be inefficient, distorting consumer choice and harming consumers' interests. For example, they can lead to an inefficiently low level of calls from non-EEA consumers to the UK.

¹⁵⁶ Article 8(5)(d) of the Framework Directive.

¹⁵⁷ We have set out in paragraph 4.95 above how we consider that the charge control condition meets the tests in section 47. That assessment takes into account the application of the condition to non-EEA calls. In particular, including non-EEA calls in the condition is objectively justifiable - that is an aspect of a condition aimed at addressing identified risks to consumers' interests in relation to MCT. It is a proportionate measure in that it imposes regulation which, in our regulatory judgment, is necessary to address those risks to those interests. It applies in the same way to all those providing MCT services in the UK for non-EEA calls and so is not unduly discriminatory, and it is transparent in that its form and operation are clear and simple, as well as fully explained in this document.

¹⁵⁸ As discussed in detail in Annex 6.

Promoting sustainable competition

- 4.150 Without regulation, providers with SMP have an incentive and ability to charge MTRs above cost, including for non-EEA calls. A charge control comprising a cost-based cap stops them doing that.
- 4.151 If differential regulation was to lead to a reciprocal low outcome, this could facilitate call price competition for UK originated calls to non-EEA countries. However, as we have noted above (paragraph 4.134), we consider that under differential regulation the balance of incentives points to a reciprocal high outcome being more likely to prevail.
- 4.152 We have also taken account of the possibility that UK MCT providers could pass net revenues from MTRs on calls originating outside the EEA through to their customers, for example through lower retail call prices. This competing away of excess profits - the 'waterbed effect' – is, however, uncertain and unlikely to register significantly on the prices paid by UK consumers.¹⁵⁹
- 4.153 On these bases, our judgment is that, on balance, the promotion of sustainable competition is unlikely to be advanced by differential regulation in which MTRs are allowed to be considerably above cost for non-EEA originated calls. A cost-based cap applying to all calls is consistent with the promotion of sustainable competition.

Conferring the greatest possible benefits on the end-users of public electronic communications services.

- 4.154 Taking account of our assessment in the Consumer Outcomes section above, and the likely administrative complexity and burden of a system of differential regulation, our overall judgment is that end users' (i.e. consumers') interests are likely to be best served by the same controlled rate applying to all mobile calls terminated in the UK.
- 4.155 If differential regulation leads to a reciprocal high outcome (i.e. an increase in UK MTRs), this is likely to harm UK consumers due to a reduction in calls to the UK from outside the EEA. Whilst a waterbed effect on MTR profits from non-EEA calls could work to the benefit of consumers, we noted above that the size of the waterbed effect is uncertain and, on balance, offers limited scope to improve consumer welfare.

The extent of the investment in the matters to which the condition relates of the person to whom it is to apply.

- 4.156 We do not consider that UK MTRs set at LRIC for calls originating outside the EEA undermine investment by UK MCT providers. MTRs set at LRIC allow for cost-recovery by efficient MCT providers, including the cost of capital. If, as we expect, the provision of MCT is not loss making and allows recovery of the cost of capital, UK MCT providers will continue to have incentives to invest.

¹⁵⁹ See Annex 6, paragraph A6.66

- 4.157 Also, on the evidence we have gathered, UK MCT providers' retail revenue on calls to non-EEA countries comfortably exceed the out-payments on this traffic.¹⁶⁰

Effect on UK MCT providers

- 4.158 While our primary focus in considering differential regulation for calls originated outside the EEA is the impact on consumer outcomes and interests, in reaching our decision we have also had regard to the potential gains to UK MCT providers as a result of such regulation.
- 4.159 As set out in our June 2017 Consultation, we estimate that UK MCT providers have total net termination and transit outflows of approximately £36m per year. Pricing freedom on MTRs for non-EEA originated traffic is likely to be in the interests of UK MCT providers. The weaker the extent of any pass-through to retail prices (if any non-EEA MTRs were reduced by negotiation) and/or the weaker the waterbed effect (if UK MTRs settled at a high rate), the more UK MCT providers stand to gain from differential regulation of MCT for non-EEA originated traffic. However, if pass-through were full and the waterbed effect was full, UK MCT providers would have no incentive to engage in the costly effort of negotiating down non-EEA MTRs.

Conclusion on the regulation of MCT for non-EEA calls

- 4.160 We have carefully considered all the above points. We make the regulatory judgment that it is not appropriate to make an exception from cost-based MTRs for the regulation of non-EEA originated calls because:
- a) there are not sufficiently good grounds for doing so; and
 - b) given our assessment of the positive effects of cost-based regulated MTRs generally, consumers' interests would be best served by adopting a LRIC cap for all calls, wherever originated.
- 4.161 We have therefore decided that the same SMP Condition – applying a LRIC-based cap – should apply in respect of the MTRs for all calls wherever originated.
- 4.162 We recognise that there are arguments both for and against pricing flexibility in the context of termination for calls from non-EEA countries. However, we consider that, consistent with our statutory duties including section 3 of the Act, consumers' interests are unlikely to be furthered by higher termination rates, and differential regulation raises implementation challenges – both in terms of the prospect for rates being successfully negotiated down and from a compliance and monitoring perspective.¹⁶¹ Therefore, we consider that it is appropriate to maintain our approach of applying the same charge controlled rate to all calls terminated in the UK (regardless of country of origin).

¹⁶⁰ See Annex 6 paragraph A6.42 and Annex 7 Table A7.4.

¹⁶¹ Differential regulation could lead to a not insignificant administrative burden on industry and Ofcom, increasing complexity in markets where we are seeking to simplify regulation. This would be contrary to our strategic aim set out in the DCR 2016 Initial Conclusions (see Section 8, paragraph 8.5 of DCR 2016).

- 4.163 In making this judgment, we note that we have included in the SMP Condition a reservation to Ofcom of a direction-making power. While there may be limited circumstances in which we exercise that power to apply a different level of regulation to certain calls, we do not rule out the possibility. That is, if different circumstances in future justify a different approach (and the administrative complexity and burden involved). For example, in cases involving a very large revenue outflow either on a particular route or a block of routes, if we were clear that unintended consequences could be controlled and, unlike in the present circumstances, we could be confident that the approach would be in consumers' interests.

Overall conclusion on the charge control

- 4.164 On the basis of the evidence and reasoning presented above, we conclude that setting a single charge control for all MCT providers with SMP, and an associated annual notification requirement, is an appropriate remedy.¹⁶²

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

- 4.165 In the June 2017 Consultation, we set out our provisional view that a no undue discrimination obligation is no longer necessary.

Stakeholder responses to the consultation

- 4.166 We received support for the removal of the obligation from BT/EE who noted that developments in the UK communications industry have lessened the need for such an obligation over time and argued that removing the condition would benefit all providers by supporting greater flexibility in pricing. [36]
- 4.167 Telecom2 agreed with our assessment that any discrimination is unlikely. However, it raised concerns about the costs and timescales involved in resolving any issues that may arise. Verizon strongly disagreed with our proposal to remove the obligation. It raised concerns that the removal of this condition would allow mobile operators to differentiate rates based on traffic volume or number of interconnects and could potentially force telecoms providers to move away from direct interconnects. Manx Telecom also raised concerns that some of the larger mobile providers could enter into bilateral Bill and Keep (B&K) agreements which could be discriminatory.

¹⁶² We also conclude 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 view is that a similar assessment under sections 47 and 87 of the Act applies in this respect as in respect of the network access obligation generally. Likewise, that, in so far as the requirement places a control on network access pricing, a similar assessment applies as in relation to the charge control condition.

Ofcom's assessment and conclusions

- 4.168 We judge that the likelihood of price discrimination and non-price discrimination is now small and the risk of adverse consequences from such discrimination is limited. In response to [3<] concerns, in appropriate circumstances we would have the power to intervene.
- 4.169 There are three main reasons that we consider that any material discrimination is unlikely to arise:
- a) First, we have decided to maintain MTRs at LRIC, but with further reductions in the cap compared to previous review periods. As such, MTRs will be at historically low rates. In addition, retail competition and network costs are increasingly driven by data rather than voice traffic. As a result, a provider's exclusionary incentive to enter into unduly discriminatory pricing arrangements in relation to MCT, and the downstream consequences of any such arrangement, appear to us to be limited. Similarly, the consequences for a provider of being excluded from a B&K arrangement would be more limited than when MTRs were higher.
 - b) Second, it is unlikely any MCT provider will in practice be able to coerce another to enter into a distortive B&K arrangement under threat of refusal to interconnect. Regulation will prohibit this since all providers will be 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 into interconnect negotiation, BT will always provide an outside option for the smaller or new entrant provider to complete calls. (This follows from BT's presence as a transit provider, coupled with BT's end-to-end connectivity obligation.)
 - c) Finally, as far as non-price discrimination is concerned, we note in response to Verizon's concerns, 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 for MCT 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 will limit the scope for any non-price discrimination to distort competition and to have a detrimental impact on consumers.
- 4.170 Therefore, having considered stakeholder responses, we consider that imposing a no undue discrimination obligation would not be proportionate. Further, not imposing an obligation is consistent with the approach to deregulation outlined in our Strategic Review of Digital Communications where 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.'*

Absence of a need for a separate price transparency obligation

4.171 In the June 2017 Consultation, we set out our provisional view that the price transparency obligation on all MCT providers was no longer necessary and imposing it would be disproportionate. We considered that there would continue to be a high level of transparency of MTRs without the obligation and also noted that the current obligation has not been particularly effective in helping secure compliance with the regulation of MTRs at LRIC.

Stakeholder responses to the consultation

- 4.172 Stakeholders were largely supportive of our proposal to remove the price transparency obligations.¹⁶³ BT/EE noted that 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, Ofcom should be able to take enforcement action.
- 4.173 Verizon, however, submitted that there are strong reasons for implementing a reasonable advance notice period that would benefit customers. If there was a price decrease, advance notice would mean that Verizon could pass the saving on to customers as soon as possible. If there were to be a price increase, advance notification would allow Verizon again to adjust the charges to better reflect costs.

Ofcom's assessment and conclusion

- 4.174 Having carefully considered stakeholders' responses to the June 2017 Consultation, our decision is that the price transparency obligation is no longer necessary. We do not agree with Verizon's assessment that an additional requirement to provide advance notice of MTRs is necessary, as we consider that there is likely to be a high level of transparency of MTRs without any such requirement. We consider that providers will have sufficient clarity in relation to MTRs for the following reasons:
- We will continue to publish the MTR cap annually.¹⁶⁴ 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 will publish the MTR cap for each control period two months in advance of the cap becoming effective (i.e. as published in this statement and thereafter by 1 February for the second and third years). This will give all providers clear information on the maximum MTR they can expect to pay for MCT.
 - Evidence gathered during this review has shown that most of the smaller MCT providers and all of the large providers are charging the regulated cap. So, in most cases the published MTR will reflect the rate that providers will pay for termination, which means that providers will, on the whole, have advance notice of the MTR they will pay.

¹⁶³ Support from BT/EE, [3<], Core Telecom, Telecom 2, Manx Telecom

¹⁶⁴ <https://www.ofcom.org.uk/about-ofcom/latest/media/analysts/regulated-prices>

- An unexpected reduction in rates, although unlikely, is likely to be less harmful to purchasers of MCT than an unexpected increase in rates. In any case, the published MTR cap reflects the maximum rate a provider can be charged.
- Although BT's CPL, which provided the termination rates for all MCT providers who interconnect with BT, is no longer readily available online, providers that interconnect with BT can still access this information through BT's pricing email.

4.175 With regard to aiding compliance, in the June 2017 Consultation we noted that the current price transparency obligation has not been as effective as anticipated. We noted that some MCT providers have not complied with the price transparency obligation in the previous review period, many have not published their MTRs on their website and that in monitoring compliance we used our formal information gathering powers rather than the price transparency obligation.

4.176 To monitor compliance with the charge control by more effective means, we have decided 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.

5. Calculating the efficient cost of MCT

Introduction

- 5.1 In Section 4 we 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 is LRIC. This section summarises how we have calculated the efficient cost of MCT.
- 5.2 In order to calculate the efficient level of cost for MCT for the purposes of this statement, we have used a cost model ('the 2018 MCT model') which is published alongside this statement. The 2018 MCT model is closely based on the 2015 MCT model that was published as part of the 2015 MCT Statement, with minimal updates.
- 5.3 In concluding on our calculation of the efficient cost of MCT we have carefully considered responses to the June 2017 Consultation and address them in this section. In particular, we have also considered whether further data collection and testing were necessary or appropriate. We have found that they are not, concluding that our reasoning is valid and the 2018 MCT Model is therefore unchanged from our modelling for the June 2017 Consultation.
- 5.4 More detailed explanation of our calculations and the testing performed for the June 2017 Consultation is provided in Annex 9, discussion of the cost of capital is in Annex 10, the results and sensitivity analysis are presented in Annex 11, and an explanation of how we will implement the charge control can be found in Section 6.

General 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.¹⁶⁵ 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 charge control period.
- 5.6 Like any model, the 2015 MCT model sought to approximate reality through simplifying assumptions and it also involved inherent uncertainty because it was 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.
- 5.7 In the June 2017 Consultation we considered whether the 2015 MCT model would continue to be appropriate for estimating the unit costs of MCT for the next market review period of 2018/19 through to 2020/21. In particular, we identified a number of key inputs to the 2015 MCT model, considered whether it would be appropriate to update them and,

¹⁶⁵ By 'national mobile provider' we mean a mobile provider with a national radio access network, which has independent control of spectrum.

if so, investigated the likely impacts of doing so on the model results using data gathered from the main MCT providers.

- 5.8 We found that while updating some parameters in isolation would have some impact on the results, when the updates were considered in the round they did not have a material impact on the projected unit costs of MCT. Our assessment was that the likely impact of updating the 2015 MCT model would only be in the order of a decrease in the LRIC of MCT of less than 0.2%.
- 5.9 As a result, we proposed to make no changes to the key inputs to the model compared to those in the 2015 MCT model. This means that we did not update the technologies modelled, traffic volumes, real equipment unit costs or the cost of capital. We made the minimum set of changes necessary to ensure that a new price cap could be applied to MTRs from today, so we updated the model only for inflation and to focus on presenting results for the period 2018/19 to 2020/21.¹⁶⁶

Responses to the June 2017 Consultation

- 5.10 All stakeholders who responded on our general approach to modelling agreed with our proposals, although some qualified their support in relation to more detailed issues, as explained further below.
- 5.11 BT/EE supported our 'light-touch approach' to modelling, agreeing with our broad approach of running sensitives around the key input parameters of the 2015 MCT model and to simply update the model for inflation. It agreed that this represents a proportionate approach which minimises the regulatory burden of the market review process.¹⁶⁷
- 5.12 Vodafone considered our approach to calculating the efficient cost of MCT to be 'proportionate and appropriate', saying that the minimally updated 2015 MCT model provides an accurate reflection of reality for the period from April 2018 to March 2021. It also cautioned against updating certain assumptions without conducting a comprehensive review of the model.¹⁶⁸
- 5.13 Of the other large mobile providers, Three and Telefónica did not respond on modelling issues. Telefónica stated that the charge control was set too low but did not explain further.¹⁶⁹ [3<],¹⁷⁰ Telecom2¹⁷¹ and Core¹⁷² agreed with our overall modelling approach.

Ofcom's analysis of responses and conclusions

- 5.14 Stakeholder responses were supportive of the approach we proposed in the June 2017 Consultation, and we have decided to adopt the same approach in producing the 2018

¹⁶⁶ These updates formed the 2017 base case scenario, which was 'Scenario 2' of the 2017 MCT model.

¹⁶⁷ BT/EE response, page 2 and answer to Q5.1.

¹⁶⁸ Vodafone response, page 6.

¹⁶⁹ Telefónica response, page 1.

¹⁷⁰ [3<], page 6

¹⁷¹ Telecom2 Ltd response, page 5

¹⁷² Core Telecom Ltd response, page 5

MCT model. We have, however, considered whether it is necessary and appropriate to update the checks we performed in the June 2017 Consultation using more recent data that would now be available, as summarised in the following sub-sections. We have concluded that it is not, for the reasons set out.

Choice of technology

- 5.15 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 view is that there have not been, and will not be during the review period, the sort of significant technological or spectrum deployment changes that we needed to take into account in the 2015 MCT Review.

Proposals in the June 2017 Consultation

- 5.16 In the June 2017 Consultation we tested our choice of technology using information gathered from the four large MCT providers under our statutory powers. They confirmed that:
- they had 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.
- 5.17 We considered the impact of the possible introduction of VoWiFi technology in particular in the June 2017 Consultation. 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 explained 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.¹⁷³
- 5.18 To assess the possible impact, and accordingly the need for this further work, we tested the model using certain assumptions. For these purposes, we assumed that the incremental cost of a Wi-Fi terminated minute is zero because 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).

¹⁷³ 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.

- 5.19 We also required an assumption for the extent of VoWiFi traffic in 2020/21. As noted above, the information gathered from MCT providers under our statutory powers suggested that the extent of VoWiFi is currently low, but varies between operators. The extent to which it might grow is unclear and we tested a range of assumptions for this and considered a forecast of 3% of termination traffic being on VoWiFi in 2020/21 to be 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.

Responses to the June 2017 Consultation

- 5.20 The only stakeholder to comment on technology choice was Vodafone, which considered that the data we collected and the test that we performed supported the assumptions originally used in the 2015 MCT model. It noted that if we were to change this position detailed analysis and research would be needed.¹⁷⁴

Ofcom's analysis of responses and conclusions

- 5.21 We have considered whether further data collection, analysis and testing are necessary or appropriate in relation to technology choice. The only response to the June 2017 Consultation on this matter agreed with our proposed approach, and nothing in the evidence we have suggests that further analysis would lead to a different answer. Therefore, we have decided not to test this further or make any changes to the technologies in the 2018 MCT model.

Traffic volumes

- 5.22 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.¹⁷⁵
- 5.23 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.

Proposals in the June 2017 Consultation

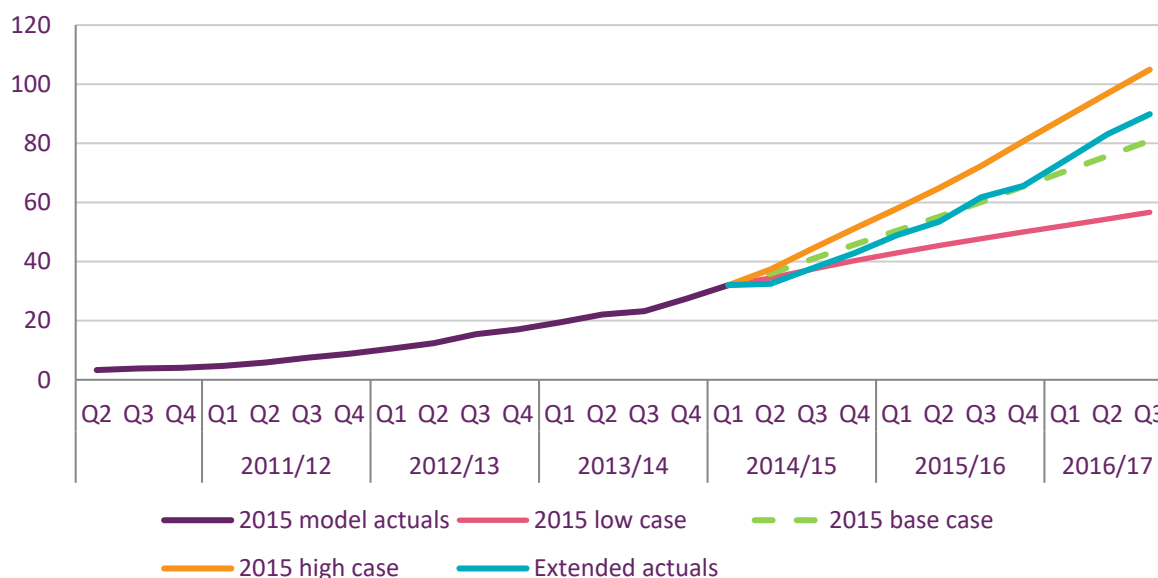
- 5.24 In the June 2017 Consultation we tested the accuracy of the forecasts we made in 2015 against actual traffic volumes obtained under our statutory powers. Although there were

¹⁷⁴ Vodafone response, pages 6 and 7.

¹⁷⁵ 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.

some issues with the compatibility of the data over time, our view was that (at a high level) our traffic forecasts were reasonable. As an example, Figure 3 below shows forecast and actual data traffic, which was a particular source of uncertainty and comment from stakeholders as part of the 2015 MCT Review.

Figure 3 Total data volumes (Peta Bytes per quarter)



Source: 2018 MCT Model.

- 5.25 As explained further in Annex 9, in the June 2017 Consultation we updated voice and data traffic volumes and the blend of subscribers between 2G, 3G and 4G technologies to reflect the outturn figures. The cumulative impact of these changes was an increase in the LRIC of MCT of a little under 3%, compared to our updated base case. If we were to have updated our forecasts of 4G data traffic volumes alone, it appeared to us that this would have led to a reduction in the updated LRIC of MCT of approximately 0.5% compared to our updated base case.

Responses to the June 2017 Consultation

- 5.26 The only stakeholder to comment on traffic volumes was Vodafone, which considered that the 2015 base case volume assumptions still provide an accurate modelling input, and noted that where there were some anomalies in the time series data these most likely reflected issues with the data rather than developments in the industry.¹⁷⁶
- 5.27 Vodafone also recognised the difficulties in obtaining traffic volumes by termination technology, and noted that if the traffic volumes were to be updated then a full review of the way the model triggers additional 3G and 4G cell sites would be necessary.

¹⁷⁶ Vodafone response, page 7.

Ofcom's analysis of responses and conclusions

- 5.28 We have considered whether further data collection, analysis and testing are necessary or appropriate in relation to traffic volumes. The only response to the June 2017 Consultation on this matter agreed with our proposed approach and nothing in the evidence we have suggests that further analysis would lead to a different answer. Therefore, we have also decided not to test this further or make any changes to the traffic volumes modelled in the 2018 MCT model.

Equipment unit costs

- 5.29 The 2015 MCT model included around 120 assets, each with a specific cost and a cost trend over time.

Proposals in the June 2017 Consultation

- 5.30 To assess the validity of the equipment cost assumptions used in the 2015 MCT model we drew on comparisons for key assets with the then recently published French MCT model for consultation. Like our 2015 model, that model was developed with Analysys Mason.
- 5.31 Noting that comparisons were not entirely straightforward we found that, in general, the French MCT model showed 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 were almost identical. We noted that where there are differences in cost trends they appeared to be driven by standard assumptions in the French model which applied to large numbers of assets in all years. In addition, the French trends did not show variation in recent years, and equipment capacities (which would drive additional changes in cost trends) did not appear to have changed significantly. Therefore, we proposed that the equipment costs in our 2015 MCT model continued to be reasonable.

Responses to the June 2017 Consultation

- 5.32 The only stakeholder to comment on equipment costs was Vodafone, which considered that the 2015 equipment cost assumptions provide an adequate base for projecting equipment costs in the 2018 MCT model. Vodafone expressed no opinion about the appropriateness or robustness of Ofcom's comparison to the French MCT model.¹⁷⁷

Ofcom's analysis of responses and conclusions

- 5.33 We have considered whether further data collection, analysis and testing are necessary or appropriate in relation to equipment costs. The only response to the June 2017 Consultation on this matter agreed with our proposed approach and, again, nothing in the evidence we have suggests that further analysis would lead to a different answer.

¹⁷⁷ Vodafone response, page 7.

Therefore, this is another point which we have decided not to test further, and we do not make any changes to the equipment costs in the 2018 MCT model.

Cost of capital

- 5.34 The 2015 MCT model used a pre-tax real weighted average cost of capital ('WACC') of 7.0% for an average efficient mobile provider.

Proposals in the June 2017 Consultation

- 5.35 In the June 2017 Consultation we considered whether a pre-tax real WACC of 7.0% remained reasonable in light of the market parameters consulted on in the March 2017 WLA Consultation and after updating estimates of the asset beta, gearing and debt premium for an average efficient mobile operator. On this basis of this analysis, we proposed that a pre-tax real WACC of 7.0% remained reasonable.

Responses to June 2017 Consultation

- 5.36 Vodafone and BT/EE responded in relation to the WACC. Vodafone did not consider that it would be appropriate to update the WACC in isolation without reviewing all other model input parameters. Although Vodafone said that the 7.0% value from the 2015 MCT model fell within the updated range, it did not consider that the analysis in the June 2017 Consultation was robust enough to justify updating or changing the WACC.¹⁷⁸ It also asked us to justify the difference between the pre-tax nominal WACC applied to mobile operators and the 'Other UK telecoms' WACC used in the WLA market review.¹⁷⁹
- 5.37 BT/EE submitted that our analysis of an updated WACC used the 17% corporate tax rate expected from 1 April 2020, and did not take account of the fact that the corporate tax rate is currently 19%. Given that we are not proposing a glidepath, it said that the tax rate that the average efficient mobile provider faces throughout the next charge control period of 2018/19 to 2020/21 is relevant, and that for two of the three years this is expected to remain at 19%. Consequently BT/EE's view was that we should either retain the current corporate tax rate of 19% or at least use a blended average tax rate of 18.3% in our WACC calculation.¹⁸⁰

Ofcom's analysis of responses and conclusions

- 5.38 Annex 10 sets out our assessment on the WACC for an average efficient mobile provider. As in the June 2017 Consultation, we have updated the analysis such that the market wide parameters used in the calculation are consistent with those in the WLA review and we have reviewed the assets betas, gearing and debt premiums specific to mobile operators.

¹⁷⁸ Vodafone response, page 8.

¹⁷⁹ Vodafone response, page 8.

¹⁸⁰ BT/EE response, page 15.

- 5.39 Our analysis leads to a pre-tax real WACC range of 6.1% to 7.7% assuming the current corporate tax rate of 19% and a range of 5.9% to 7.6% assuming the corporate tax rate of 17% expected to apply from 1 April 2020. Given the long run horizon of the 2018 MCT model, we consider that the corporate tax rate of 17% is relevant since it is expected to apply for most of the modelled period, but we recognise that the corporate tax rate of 19% will apply for a significant proportion of the next charge control period of 2018/19 to 2020/21. However, we do not consider that the corporate tax assumption affects our proposal to use a pre-tax real WACC of 7.0%. This is because the value of 7.0% is comfortably within the low and high case range, regardless of the precise tax rate assumed. On this basis, we have decided that a pre-tax real WACC of 7.0% used in the 2015 MCT model remains reasonable.
- 5.40 A pre-tax real WACC of 7.0%, equates to a pre-tax nominal WACC of around 9.1% (assuming CPI of 2.0% and using the Fisher equation¹⁸¹). Vodafone asked how this compares to the Other UK telecoms WACC used in the WLA market review. The Other UK telecoms WACC includes BT's EE mobile activities so might be expected to be similar to the WACC assumed for an average efficient mobile provider.¹⁸² As shown in the February 2018 WLA Statement Annex 20, we estimate the WACC for BT's Other UK telecoms activities to be around 9.0%, on a pre-tax nominal basis.¹⁸³ This is very close to the 9.1% WACC adopted for the MCT cost modelling in this (and the previous) MCT statement.¹⁸⁴

Summary of modelling updates

- 5.41 In modelling the costs of MCT for the next review period we have decided that the 2015 MCT model provides an appropriate starting point. In considering whether and how to update the model, in the June 2017 Consultation we 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 updated voice and data traffic volumes, the blend of subscribers between 2G, 3G and 4G technologies and estimated the impact of the introduction of VoWiFi, the net effect on the 2020/21 LRIC of MCT was a decrease of 0.2%, as shown in Figure 4 below.

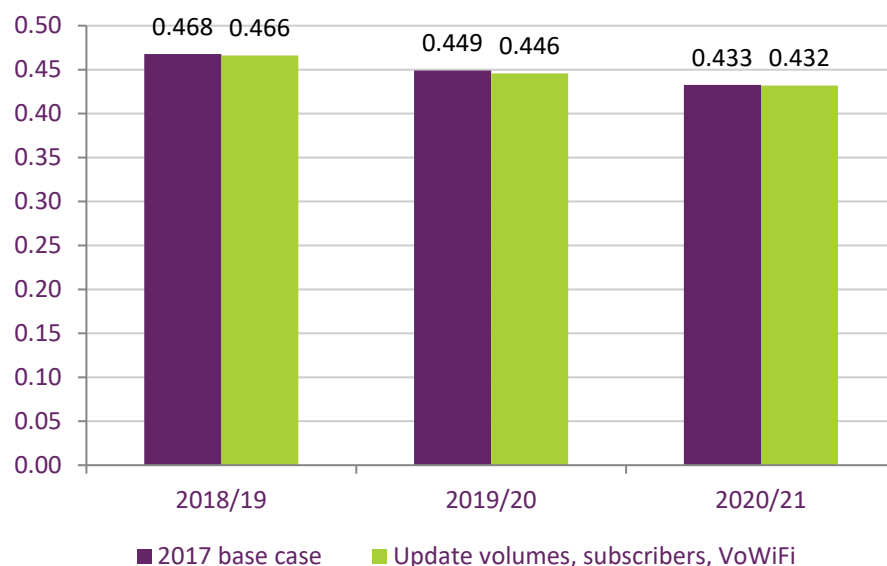
¹⁸¹ Fisher equation states that the nominal RFR = $((1 + \text{RPI}) \times (1 + \text{real RFR})) - 1$.

¹⁸² NERA report page 17, Annex 16

¹⁸³ The Other UK telecoms WACC up to 2018/19 is estimated as 9.0% and then 8.9% for 2020/21 (on a pre-tax nominal basis). See Annex 20 of the 2018 WLA Statement.

¹⁸⁴ However, we would not expect the value for the Other UK telecoms WACC used in the WLA cost modelling to be identical in all respects to that for the MCT cost modelling. For example, the WLA cost model is based on accounting depreciation, not economic depreciation, and so the WACC used in the MCT cost model requires a longer forward look. This affects, for example, the RPI inflation rate assumed in each case. The Other UK telecoms WACC also refers to many other lines of business than purely mobile services and is obtained as part of a wider disaggregation of the BT Group beta, rather than reliance only on a range of comparator companies.

Figure 4 LRIC of MCT (pence per minute, 2015/16 prices)



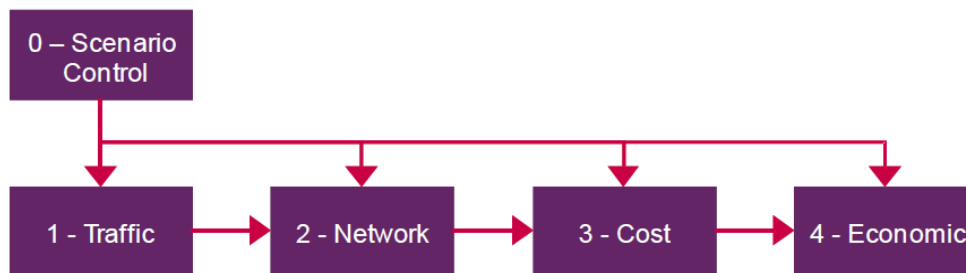
Source: 2018 MCT Model.

- 5.42 However, we found that the update for VoWiFi might overstate the extent to which costs were reduced, as explained briefly above (and further in Annex 9). That said, were we to update our forecasts of 4G data traffic volumes, this would have led 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 had a modest downward impact on the updated result, although there are further uncertainties in equipment cost trends such as the future replacement cost (especially if sourced overseas and given the depreciation of sterling since the last review).
- 5.43 On the basis of the analysis above, we conclude 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 are unlikely to 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.
- 5.44 Since the consultation we have considered whether it is necessary or appropriate to conduct further data collection, analysis and testing on the model inputs. Bearing in mind the general agreement with our consultation proposals and the limited comments on the detail of our analysis, and noting that nothing in the evidence we have suggests that further analysis would lead to a different answer, we have decided not to test this further or make any changes to the underlying input costs modelled in the 2018 MCT model.
- 5.45 As a result, rather than construct a new model, we have decided to use a 2018 MCT model that is updated from the 2015 MCT model only to the extent necessary to account for general price inflation. This means updating for actual CPI since the base year of the 2015 MCT model.

Model design

5.46 Reflecting the above, the structure of the 2018 MCT model design is the same as that explained in the June 2017 Consultation and the 2015 MCT Statement. The 2018 MCT model comprises five modules, each of which represents an Excel workbook, as shown in Figure 5 below.

Figure 5 Structure of the 2018 MCT model



Source: Ofcom.

5.47 The functions of these modules are described further in Annex 9, but the basic steps are as follows:

- a) Step 1: Calculate the network traffic (both voice and data) that is carried by the modelled mobile provider;
- b) Step 2: Use cost drivers to dimension a network capable of carrying this traffic;
- c) Step 3: Calculate the cost of the assets in the dimensioned network;
- d) Step 4: Spread the costs of the network over time using an economic depreciation algorithm; and
- e) Step 5: Recover the costs of the network across services based on the routing factors used to dimension the network.

Calculating LRIC

5.48 We have not changed our approach to calculating the LRIC of MCT from that proposed in the 2015 MCT model. Consistent with the 2009 EC Recommendation, our approach will involve considering MCT as a ‘final increment’ with no common costs (such as the common costs of a ‘coverage network’) being allocated to MCT.

5.49 The incremental costs associated with incoming voice traffic will 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 will 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

5.50 Consistent with our maintenance of other inputs to the 2018 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 view is that the spectrum holdings in Table 5 below reflect the holdings that an average efficient mobile provider could be assumed to hold, although these do not reflect the specific holdings of any individual mobile provider today.

Table 5: Spectrum holdings of average efficient MCT mobile provider in the 2018 MCT model

Band	Holding (paired MHz)	Technology
800MHz	10	4G
900MHz	0	n/a
1800MHz	20	2G
	10	4G
2.1GHz	10, increasing to 15 in 2012/13 ¹⁸⁵	3G
2.6GHz	10	4G

Source: 2018 MCT model.

Non-network costs

5.51 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 set MTRs on the basis of a LRIC cost standard, as explained in Section 4, we have not updated the non-network costs from those in the 2015 MCT model.

Calibration

5.52 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.¹⁸⁶ Since we have not made any

¹⁸⁵ Following assumed reassignment (known as 'refarming') in 2012/13.

¹⁸⁶ See Annex 7 of the 2015 MCT Statement.

significant changes in developing the 2018 MCT model, we have not undertaken an updated calibration exercise.

Summary of model results

5.53 In Table 6 below we present the current nominal MTR and the base case LRIC forecasts calculated using the 2018 MCT model (the latter being expressed in 2015/16 prices). These figures are the same as those in the June 2017 Consultation, reflecting the explanation above that we have not made any changes since then.

Table 6: Current MTR and forecast LRIC of MCT (pence per minute)

	From 1 April 2017	From 1 April 2018	From 1 April 2019	From 1 April 2020
Current MTR (nominal)	0.495			
LRIC (2015/16 prices)	0.489	0.468	0.449	0.433

Source: 2018 MCT model.

6. Implementation of the charge control

- 6.1 In the June 2017 Consultation we set out our proposed approach to implementing the MCT charge control. We proposed to:
- Index the 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.
- 6.2 The approach we proposed in our June 2017 Consultation mirrored that in the 2015 MCT Statement, with the exception that we proposed to align the cap to the forecast LRIC in each year of the charge control, rather than using a glide path.
- 6.3 For the reasons set out below, we have decided to adopt our proposed approach. We make one minor adjustment. We have decided to allow a short transition period at the start of the charge control period. Until 31 May 2018 the cap will therefore remain at the level prevailing in the current control year of 0.495 ppm and the new lower rate of 0.489 ppm will apply from 1 June 2018.

Stakeholder responses to the consultation

- 6.4 In response to the June 2017 Consultation, we received no comments in relation to the first four points of our proposed approach, but Telefónica advocated the use of a three-year glide path. We address Telefónica's response and set out our conclusions on each of the points noted above in the following sub-sections.

Ofcom's assessments and conclusions

Inflation indexed charge control

- 6.5 As we proposed in the June 2017 Consultation, we have decided 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) for the average annual percentage by which MTRs are expected to change in real terms.
- 6.6 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 period, and protects the regulated firm and customers from inflation forecast error.

- 6.7 In implementing this we have decided to continue to use CPI as our preferred measure of inflation.¹⁸⁷ We also calculate the term X in the CPI-X formula using a conversion factor to ensure that the real unit cost target is hit.¹⁸⁸ This requires a forecast of inflation in the calculation of X, and we have decided to use the latest forecast produced by the Office for Budget Responsibility (OBR).¹⁸⁹ 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

- 6.8 The 2018 MCT charge control will begin on 1 April 2018, with a three-year charge control period that will run from 1 April 2018 to 31 March 2021.¹⁹⁰ This means the new charge control will commence immediately after the expiry of the current charge control (but with a transition period as set out below).

Scope of charge control

- 6.9 The charge controls for the regulated MCT providers cover all the MTRs charged for call types that fall within the market definition set out in Section 3.
- 6.10 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:
- i) Separate charge controls for each call termination technology (e.g. 2G, 3G or 4G); or
 - ii) Technology and operator neutrality: i.e. the same single charge control for MCT provided by each MCT provider.
- 6.11 In our judgment, separate charge controls for each call termination technology would have the following drawbacks:

¹⁸⁷ 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.

¹⁸⁸ 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 $P_1 = P_0 \times (1 + CPI + X)$, the value of X in the formula is given by $X = Y/(1+CPI)$, where Y is the real reduction in prices required to achieve the unit cost target at the end of the control.

¹⁸⁹ We used the OBR's forecast of CPI for the years 2018-2021 for the purposes of this statement (source: Office for Budget Responsibility, *Economic and Fiscal Outlook*, November 2017, Table 1.1). The values of CPI for each of these calendar years are 2.4%, 1.9%, 2.0% and 2.0% respectively.

¹⁹⁰ 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.

- Separate charge controls would fail to achieve technological neutrality, which is an important policy objective.¹⁹¹
 - 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).
- 6.12 Furthermore, we also assess that a technology and operator neutral cap on all MCT would produce other benefits:
- By modelling the efficient technology mix, MCT providers with higher costs¹⁹² would be unable to pass these higher costs through to calling parties – particularly when callers would gain no benefit.
 - 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 consistency is likely to benefit consumers.
- 6.13 Therefore, we have decided upon a single charge control cap on all calls, i.e. technology and operator neutrality. This is consistent with the 2009 EC Recommendation.¹⁹³
- 6.14 This does not mean 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 2018 MCT model are discussed in more detail in Section 5 and Annex 9.

An absolute maximum rate cap

- 6.15 Giving MCT providers the ability to set different MTRs by the time of day could in principle be used for efficient traffic management. However, we regard the abuse of the flexibility allowed within the pre-2011 charge controls (via the practice of “flip-flopping”¹⁹⁴) as likely to operate counter to this efficiency objective on the basis it is harmful to originating providers and ultimately to consumers.
- 6.16 In addition, mobile retail pricing is not set on a time of day basis and, given that the costs of call termination have fallen (and the costs of mobile networks are driven more by data

¹⁹¹ Technological neutrality is recognised as having value as a regulatory principle in the European Framework and UK law (s.4(6) of the Act).

¹⁹² If an MCT provider is less efficient in network deployment than the average efficient MCT provider, it can purchase access from a wholesale provider.

¹⁹³ See paragraph 16 of the 2009 EC Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU.

¹⁹⁴ “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.

demands), our view is that the potential efficiency benefits of MTR variation are modest at best. Accordingly, we have decided to set an absolute maximum cap on MTRs.

Profile of MTRs over the charge control period

- 6.17 When considering the profile of MTRs over the charge control period in the June 2017 Consultation, our starting position was 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.¹⁹⁵
- 6.18 In forming our (provisional) view on this matter, we took account of the fact that, in the context of termination markets, we are less concerned about the effect on incentives to invest in cost reducing activities than when regulating some other markets. This is because MCT is one-side of a two-sided market; and since there is competition on the retail-side between individual mobile providers, and because termination assets are also used to provide other services (such as call origination), we would expect that MCT providers already have incentives to make cost efficient investments.¹⁹⁶
- 6.19 We also took into account our estimate that the industry-wide net reduction in MTR revenues represented a small proportion of revenues and profits, as we show again below.
- 6.20 We acknowledged that many post-pay mobile subscribers would be committed to existing contracts at the start of the first year of the charge control. Even so, given the negligible revenue impact of an immediate adjustment to LRIC, our assessment was that MCT providers would have sufficient opportunity to recover efficiently incurred costs by making adjustments to other prices if necessary.

Responses to June 2017 Consultation

- 6.21 In response to the June 2017 Consultation, Telefónica advocated the use of a three-year glidepath, as opposed to a one-off adjustment. Noting our view that other prices could be adjusted if necessary, it observed that we had not specified which prices, nor provided insight as to the speed with which providers and customers can adjust to new levels of wholesale charges. Telefónica concluded that our proposal would undermine regulatory certainty and be to the detriment of mobile providers' incentives to invest. No other stakeholders responded on this point.

Our assessment and conclusions

- 6.22 We considered this issue at length in the June 2017 Consultation and, having carefully considered its response, disagree with Telefónica. When considering the profile of MTRs over the charge control period, we place significant weight on the point 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). In our judgment, the use of a glide path is only likely to be appropriate

¹⁹⁵ The benefits of MTRs set at LRIC are outlined in Section 4.

¹⁹⁶ This contrasts with one-way access settings, where incentivising cost reducing investment is a critical part of the regulatory trade-off.

if making this change immediately would have a material adverse impact on the industry and ultimately consumers.

- 6.23 Telefónica said that our proposals would have a disruptive effect on mobile providers. We note that Telefónica does not disagree with the idea that other prices could be adjusted, and since mobile retail prices have never been regulated any changes to them would be at the commercial discretion of MCT providers (each of whom will have their MTRs regulated in a symmetric way). We therefore continue to consider that the impact of moving quickly to the new LRIC level of MTRs is very small, and considerably less marked than in the 2015 MCT Review, and that a glidepath would not provide any significant incentives for MCT providers to be more efficient. We also note that the real terms reduction in rates in the first year of the charge control is around 1.2%, so is less than the value of X in the final year in the 2015 charge control, which was 3.1%.
- 6.24 Further, we take account that the impact of moving to the proposed MTRs (when compared to the current rate) would be around £3 million in 2018/19 (in 2017/18 prices).¹⁹⁷ This would represent a negligible proportion of mobile provider revenues (of around £15.3bn in 2016) and profits (for example, EBITDA of around £4bn per annum and EBIT of around £1bn).¹⁹⁸ This would be less than 10% of the estimated revenue impact of a one-off adjustment found in the previous charge control period.¹⁹⁹
- 6.25 We also do not agree that using a one-off adjustment undermines regulatory certainty, bearing in mind that we did not use a glidepath in the 2015 MCT Statement, nor in our regulation of fixed termination rates in the recent 2017 NMR Statement.
- 6.26 Accordingly, we have decided to set MTRs by reference to LRIC (as determined by our MCT cost model) in each and every year of the charge control.

Transition Period

- 6.27 We have considered whether it would be appropriate in the particular circumstances of this review to adopt a transition period for the introduction of the new price caps. We take account of the scale and impact of the changes MCT providers will need to make and have decided to adopt such a period at the start of the charge control.
- 6.28 This decision is consistent with our treatment of fixed and mobile termination rates in previous reviews.²⁰⁰ Given the publication date of our final statement, and the changes required in this case, we consider that a transition period until 1 June 2018 is appropriate. It will allow a period of time for the relevant changes to be made and notified to other telecoms providers that is not problematic or material in the context of this review.

¹⁹⁷ Based on a 2017/18 MTR of 0.495ppm and 2018/19 LRIC of 0.468ppm, which is 0.476ppm in 2017/18 prices, giving a difference of 0.019ppm, and total MCT provider non-mobile-to-mobile off-net call volumes assumed at 17.19bn minutes.

¹⁹⁸ Revenue data from Ofcom, *Communications Market Report 2017*, Figure 4.1. Profit data based on Ofcom analysis of financial statements.

¹⁹⁹ We estimated a reduction in net termination revenues of around £54m in 2015/16 (in 2012/13 prices) as a result of a one-off adjustment to LRIC MTRs compared to the then current MTRs, see paragraph 8.85 of the 2015 MCT Statement.

²⁰⁰ See paragraphs 8.102 to 8.106 of the 2015 MCT Statement and paragraph 16.11 to 16.16 of the 2017 NMR Statement.

- 6.29 During the transition period, we require MCT providers to charge no more than the currently prevailing cap (i.e. that set for the period 1 April 2017 to 31 March 2018 which is 0.495ppm). From 1 June 2018, the reduced MTR cap (to 0.489ppm) will take effect for all MCT Providers designated as having SMP.

Summary of charge control

- 6.30 Table 7 below summarises the charge control applicable to providers designated as having SMP in the provision of MCT. The rate to be applied from 1 April 2018 is 0.495 pence per minute and the nominal rate to be applied from 1 June 2018 is 0.489 pence per minute. We forecast a nominal rate of 0.480 ppm to apply from 1 April 2019 and 0.471 ppm to apply from 1 April 2020 but, as explained in Section 4, we will publish the nominal rates to be applied from 1 April 2019 and 1 April 2020 at the appropriate times.

Table 7: Final MTR caps and costs (pence per minute), and X values

	From 1 April 2017	From 1 April 2018	From 1 June 2018	From 1 April 2019	From 1 April 2020
MTR (nominal) ²⁰¹	0.495	0.495	0.489	0.480	0.471
LRIC (2015/16 prices)	n/a	n/a	0.468	0.449	0.433
Value of X in CPI-X formula	n/a	n/a	n/a	CPI-4.1%	CPI-3.7%

Source: 2018 MCT Model.

²⁰¹ Note that the nominal rates to apply from 1 April 2019 and 1 April 2020 are forecasts.