

# Annual Licence Fees for UK Broadband's 3.4 GHz and 3.6 GHz spectrum

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**CONSULTATION:**

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## About this document

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This document consults on the level of annual licence fees (ALF) we should set for UK Broadband's 3.4 and 3.6 GHz spectrum, and on draft regulations to give effect to the proposed fees.

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# 1. Executive summary

- 1.1 This document consults on the level of annual licence fees (ALF) for the 40 MHz of spectrum in the 3.4 GHz band and 80 MHz of spectrum in the 3.6 GHz band that are licensed to UK Broadband ("UKB"). UKB is owned by Hutchison 3G UK Limited ("H3G").
- 1.2 We propose to set the annual licence fees for all 120 MHz of this spectrum by reference to the results for 3.4 GHz in the public sector spectrum release (PSSR) auction of the 2.3 and 3.4 GHz bands completed in April 2018. Both spectrum bands have similar characteristics and the long term use case for each is similar.
- 1.3 This is in line with the policy approach to setting spectrum licence fees which we set out in the Strategic Review of Spectrum Pricing (SRSP). We explained in that document that the purpose of AIP was to set fees for spectrum holdings to provide long term signals reflecting the value of the spectrum (based on its opportunity cost) to meet our statutory duties and in particular to secure the optimal use of spectrum.
- 1.4 Our starting point when calculating the appropriate fee for a spectrum band is to first determine the value of the spectrum concerned. In the SRSP we focussed on the forward-looking marginal opportunity cost of the spectrum, and we have interchangeably used market clearing price and marginal forward-looking opportunity cost as indicators of market value in a well-functioning market.
- 1.5 We have considered how most appropriately to determine the market value of the relevant spectrum in this case. When setting ALFs for use of mobile spectrum we recognise there are arguments in favour of focusing on the marginal opportunity cost *to other users* of the spectrum. Taking the recent auction outcomes for the 3.4GHz spectrum, we are able to identify both the market clearing price of 3.4 GHz spectrum in the auction (£37.8m per 5 MHz) and the marginal opportunity cost to other users (£31.1m per 5 MHz).
- 1.6 On balance, and for the reasons set out in this document, we propose to use the lower value as the lump sum value for UKB's 3.4 GHz spectrum, which we translate into annual fees for 3.4 GHz and 3.6 GHz spectrum using the same approach to annualisation as we used for setting ALF for 900 MHz and 1800 MHz spectrum.
- 1.7 We have considered whether, in light of our statutory duties, fees should be set not at the market value we identify but at some other level. Our provisional conclusion is that setting fees based on our estimate of the market value of the relevant spectrum will best meet our statutory duties.
- 1.8 We propose to apply the resulting ALF for UKB's 3.4 GHz as soon as possible, and to phase in the ALF for UKB's 3.6 GHz, reflecting both that we propose to vary the licence fees for 3.6 GHz sooner than we had previously planned, and that there are short term constraints on the use of 3.6 GHz spectrum.
- 1.9 Once the proposed ALF for 3.6 GHz has been phased in, the ALF for both 3.4 GHz and 3.6 GHz spectrum would be £0.358m per MHz, expressed in April 2018 prices (i.e. before

adjustment for CPI inflation). Given that UKB has 120 MHz of 3.4 GHz and 3.6 GHz spectrum, this would amount to ALF of around £43m a year in total.

1.10 We are also consulting on draft regulations to give effect to these proposed fees.

## 2. Introduction and legal framework

- 2.1 UKB, which was acquired by H3G in 2017, holds a licence which authorises it to use 40 MHz of spectrum in the 3.4 GHz band in two separate 20 MHz blocks at 3480-3500 MHz and at 3580-3600 MHz. In this document we refer to this as UKB's **3.4 GHz spectrum**.
- 2.2 UKB also holds a licence which authorises it to use 164 MHz of spectrum in two separate blocks at 3600-3680 MHz and at 3925-4009 MHz. In this document we refer to the 80 MHz of spectrum at 3600-3680 MHz as UKB's **3.6 GHz spectrum**.
- 2.3 This consultation considers, and makes proposals on, the level of annual licence fees (ALFs) that should apply to UKB's 3.4 GHz and 3.6 GHz spectrum<sup>1</sup>.

### UK Broadband's 3.4 GHz licence fees

- 2.4 UKB does not currently pay annual licence fees in relation to its 3.4 GHz spectrum. In our October 2014 statement on UK Broadband's 3.4 GHz licence variation, we said that this licence would be subject to an annual fee following the expiry of the initial term of the licence in July 2018<sup>2</sup>. We inserted a clause in UK Broadband's licence to reflect this intention. We also said that bids and prices from the 3.4 GHz award were expected to provide a good indication of the opportunity cost of spectrum at the time of the auction<sup>3</sup>.
- 2.5 The award of the 3.4-3.6 GHz band completed in April this year and we are now in a position to consult on how we propose to take account of the outcome of this award in setting annual licence fees for UKB's 3.4 GHz spectrum. We discuss our approach to doing this in section 3.

### UK Broadband's 3.6 GHz licence fees

- 2.6 Annual licence fees are already payable in respect of UK Broadband's 3.6 GHz spectrum. The current fee rates for this spectrum are set out in the Wireless Telegraphy (Licence Charges) Regulations 2011.<sup>4</sup>
- 2.7 We have previously said that we would consider reflecting the opportunity cost of mobile use in the licence fee that UK Broadband pays for its 3.6 GHz spectrum and that, in

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<sup>1</sup> In this document we are not proposing to set new licence fees for the upper frequency block at 3925-4009 MHz.

<sup>2</sup> October 2014 statement: [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0018/74610/uk\\_broadband\\_statement.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0018/74610/uk_broadband_statement.pdf), paragraph 15.9.

<sup>3</sup> Paragraph 15.10

<sup>4</sup> To date, UKB has been paying Annual Licence Fees of £821,088 per annum for its licence covering spectrum at 3605-3689 MHz and 3925-4009 MHz. We have very recently varied that licence so that it now covers spectrum at 3600-3680 MHz and 3925-4009 MHz. The changes we are proposing in this consultation affect only the lower block of those frequencies, namely 3600-3680MHz.

reviewing this fee, we would expect to take into account the bids and prices in the award of 3.6-3.8 GHz spectrum (provided the award is not materially delayed), along with any other relevant evidence<sup>5</sup>.

- 2.8 However, in our 2010 Strategic Review of Spectrum Pricing ("SRSP"), we set out four pricing review principles to guide us in addressing how and when we will review AIP and cost-based fees. The first principle set out that we would "conduct a fee review only where the evidence suggests that a review would be justified, including evidence of a likely and sufficiently material misalignment between the current rates and the opportunity cost of the spectrum for fees based on AIP".
- 2.9 We consider that there is a material misalignment between the fees that UK Broadband currently pays for its 3.6 GHz spectrum and the value of this spectrum and that we now have sufficient evidence on which to re-set the fees. In summary, this is because:
- a) having started the process to clear the 3.6-3.8 GHz spectrum<sup>6</sup>, we consider that the long-term value of the 3.6-3.8 GHz band will be the same as the 3.4 GHz band;
  - b) the bids and prices in the 3.4 GHz spectrum award therefore provide evidence with regard to the long term value of the 3.4 GHz and 3.6 GHz spectrum; and
  - c) this value is materially higher than the annual fees that currently apply to UKB's 3.6 GHz spectrum.

## Value of the 3.4 and 3.6 GHz spectrum

- 2.10 UKB's 3.4 and 3.6 GHz spectrum falls within the 3.4-3.8 GHz band, which is the primary band for 5G services in Europe.
- 2.11 We auctioned 150 MHz of spectrum in the 3.4-3.6 GHz band earlier this year. In October 2017, we published our decision to remove fixed links and satellite earth station authorisations in the 3.6-3.8 GHz band. We expect to publish our proposals for the award of the 3.6-3.8 GHz band shortly. We therefore consider that the long-term value of the 3.6-3.8 GHz band will be the same as the 3.4-3.6 GHz band.
- 2.12 There are some short-term constraints on UKB's use of 3.6 GHz spectrum. In our statement on the UKB licence variation<sup>7</sup>, we noted that UKB currently shares the band on a first-

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<sup>5</sup> Paragraph 5.4, *Variation of UK Broadband's Spectrum Access Licence for 3.6 GHz spectrum*, Ofcom, 27 June 2018, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0017/115343/Variation-UK-Broadband-Licence-3.6-GHz-spectrum.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0017/115343/Variation-UK-Broadband-Licence-3.6-GHz-spectrum.pdf)

<sup>6</sup> *Improving consumer access to mobile services at 3.6GHz to 3.8GHz*, Ofcom, 26 October 2017, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0019/107371/Consumer-access-3.6-3.8-GHz.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0019/107371/Consumer-access-3.6-3.8-GHz.pdf)

<sup>7</sup> *Variation of UK Broadband's spectrum access licence for 3.6 GHz spectrum*, Ofcom, 14 December 2018, <https://www.ofcom.org.uk/resources/documents/consultations/category-3/115119-variation-of-uk-broadbands-spectrum-access-licence-for-3.6-ghz-spectrum/associated-documents/Statement-UK-Broadbands-spectrum-access-licence-3.6-GHz.pdf>

come-first-served basis with existing fixed links and fixed satellite services (to receive space-to-Earth transmissions), coordinated through Ofcom, and this will continue until fixed links and satellite earth stations have vacated the band or until satellite earth stations are no longer taken into account for frequency management purposes.

- 2.13 The main constraint on the use of UKB's 3.6 GHz spectrum is related to satellite earth stations as these are co-channel with the UKB spectrum, whereas there are no co-channel fixed links. Authorisations of satellite earth stations in the band will end by June 2020 (and in one case September 2020). As such, we expect the majority of the constraints on the use of UKB's 3.6 GHz spectrum to have been removed by June 2020<sup>8</sup>.
- 2.14 We also note that, following our recent decision to grant UKB's 3.6 GHz licence variation request, the technical licence conditions for both UKB's 3.4 GHz and 3.6 GHz licence have been aligned. This means that, in practice, there is no difference between the technology that H3G is able to deploy in its 3.4 GHz and 3.6 GHz spectrum.
- 2.15 As set out in the SRSP, the purpose of AIP is to provide users with a sustained long-term signal of the value of the spectrum as indicated by its opportunity cost in the next highest use and, as a result, to give them incentives to use it in a way that maximises benefits for society over time.
- 2.16 In the long-term we consider that the 3.4 GHz and 3.6 GHz spectrum will have the same value.
- 2.17 We therefore consider that the bids and prices indicated in the 3.4 GHz award also provide a good indication of the value of UKB's 3.6 GHz spectrum in the long term.
- 2.18 In view of the short-term constraints on use of the 3.6 GHz spectrum however, we expect there will be some difference in value between 3.4 and 3.6 GHz spectrum in the short term. We discuss how we propose to take account of this difference, along with other considerations, when we consider the phasing in of the new licence fees in section 5.

## Structure of this consultation

- 2.19 In the remainder of this section we discuss the legal framework for setting ALFs. The rest of this consultation is structured as follows:
- Section 3 discusses our approach to determining ALFs
  - Section 4 sets out our further consideration of ALFs based on market value, in light of our statutory duties
  - Section 5 summarises our provisional conclusions and discusses implementation, including the phasing in of the new licence fees.

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<sup>8</sup> See the update we published in February 2018 on the timing of availability of the 3.6-3.8 GHz band, [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0018/110718/3.6GHz-3.8GHz-update-timing-spectrum-availability.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0018/110718/3.6GHz-3.8GHz-update-timing-spectrum-availability.pdf).



## The legal framework

### Ofcom's power to set fees

- 2.20 Under section 12 of the Wireless Telegraphy Act 2006 (the “**Wireless Telegraphy Act**”), Ofcom has power to require licensees to pay fees to Ofcom on the grant of a licence and subsequently. The requirement to pay fees at times after the grant of a licence must be imposed by way of regulations made by Ofcom. The timing of the fee payment must be set out in the regulations, and the amount of the fee can be prescribed in the regulations, or alternatively the regulations may provide for the amount to be determined by Ofcom in accordance with the regulations.
- 2.21 Section 13 of the Wireless Telegraphy Act provides for Ofcom to set fees at an amount that is higher than the cost to us of carrying out our radio spectrum functions. This power may be exercised if we think fit in the light (in particular) of the matters to which we must have regard under section 3 of the Wireless Telegraphy Act.
- 2.22 Section 122 of the Wireless Telegraphy Act is a general provision about matters relating to Ofcom's powers to make statutory instruments (including fees regulations under section 12 of that Act). It includes a requirement that where we are proposing to make regulations we must publish a notice setting out the general effect of the regulations and give a period of at least one month within which representations on the proposed regulations may be made to us.
- 2.23 The legal framework for the setting of fees derives from our duties under both European and domestic legislation, specifically from:
- the Common Regulatory Framework<sup>9</sup> for electronic communications networks and services, in particular the Framework Directive and the Authorisation Directive; and
  - the Communications Act 2003 (the “Communications Act”) and the Wireless Telegraphy Act which transpose the provisions of those directives into national law.
- 2.24 We set out below our statutory duties under the Common Regulatory Framework, the Communications Act and the Wireless Telegraphy Act.

### Common regulatory framework

- 2.25 Article 8 of the Framework Directive sets out the objectives which national regulatory authorities must take all reasonable steps to achieve. These include:

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<sup>9</sup> The Common Regulatory Framework comprises the Framework Directive (Directive 2002/21/EC), the Authorisation Directive (Directive 2002/20/EC), the Access Directive (Directive 2002/19/EC), the Universal Service Directive (Directive 2002/22/EC) and the Directive on privacy and electronic communications (Directive 2002/58/EC), as amended by the Better Regulation Directive (Directive 2009/140/EC).

- the promotion of competition in the provision of electronic communications networks and services by, amongst other things, ensuring there is no distortion or restriction of competition in the electronic communications sector and encouraging efficient use of radio frequencies; and
  - contributing to the development of the internal market by, amongst other things, removing obstacles to the provision of electronic communications networks and services at a European level, and encouraging the interoperability of pan-European services.
- 2.26 In pursuit of these policy objectives, Article 8 requires national regulatory authorities to apply objective, transparent, non-discriminatory and proportionate regulatory principles by (amongst other things):
- ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services; and
  - promoting efficient investment and innovation in new and enhanced infrastructures.
- 2.27 Article 8 also requires Member States to ensure that in carrying out their regulatory tasks, national regulatory authorities take the utmost account of the desirability of making regulations technologically neutral.
- 2.28 Article 9 requires Member States to ensure the effective management of radio frequencies for electronic communications services in accordance with Article 8, and to ensure that spectrum allocation used for electronic communication services and issuing general authorisations or individual rights of use of such radio frequencies are based on objective, transparent, non-discriminatory and proportionate criteria. Article 9 also requires Member States to promote the harmonisation of use of radio frequencies across the Community, consistent with the need to ensure effective and efficient use of frequencies. It requires Member States to ensure technology and service neutrality.
- 2.29 Article 13 of the Authorisation Directive states that Member States may impose fees for the rights of use of radio frequencies which reflect the need to ensure the optimal use of that resource. Fees must be objectively justified, transparent, non-discriminatory and proportionate in relation to their intended purpose and must take into account the objectives in Article 8 of the Framework Directive.
- 2.30 Recital 32 to the Authorisation Directive states that in addition to administrative charges, usage fees may be levied for the use of radio frequencies as an instrument to ensure the optimal use of such resources and provides that such fees should not hinder the development of innovative services and competition in the market.
- 2.31 Recital 33 to the Authorisation Directives states that Member States may need to amend charges and fees relating to rights of use of radio frequencies where this is objectively justified and provides that such changes should be duly notified to all interested parties in good time, giving them adequate opportunity to express their views on any such amendments.

## The duties imposed by the Communications Act

- 2.32 Section 3 of the Communications Act sets out Ofcom's general duties including its principal duty:
- to further the interests of citizens in relation to communications matters; and
  - to further the interests of consumers in relevant markets, where appropriate by promoting competition.
- 2.33 In carrying out its functions, section 3(2) provides that Ofcom is required, amongst other things, to secure the optimal use for wireless telegraphy of the electro-magnetic spectrum, the availability throughout the UK of a wide range of electronic communication services and the availability throughout the UK of a wide range of television and radio services.
- 2.34 Section 3(3) of the Communications Act provides that in performing its duties, Ofcom must in all cases have regard to the principles of transparency, accountability, proportionality and consistency, as well as ensuring that its actions are targeted only at cases in which action is needed.
- 2.35 Section 3(4) of the Communications Act requires Ofcom, in performing its duties, to have regard to a number of factors as appropriate, including the desirability of promoting competition, encouraging investment and innovation in relevant markets, encouraging the availability and use of high speed data transfer services throughout the UK, the different interests of persons living in rural and in urban areas and the different needs and interests of everyone who may wish to use the spectrum for wireless telegraphy.
- 2.36 In performing our duty under section 3 of furthering the interests of consumers, we must have regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.
- 2.37 Section 4 of the Communications Act requires Ofcom to act in accordance with the six Community requirements, which give effect to the requirements of Article 8 of the Framework Directive, when carrying out certain specified functions, including our functions under the Wireless Telegraphy Act 2006.

## The duties imposed by the Wireless Telegraphy Act

- 2.38 Section 3 of the Wireless Telegraphy Act imposes a number of further duties relating to spectrum management. Amongst other things, in carrying out its spectrum functions Ofcom is required to have regard to the extent to which spectrum is available for use, and the demand (both current and future) for the use of spectrum.
- 2.39 Section 3 of the Wireless Telegraphy Act also requires Ofcom to have regard to the desirability of promoting the development of innovative services and competition in the provision of electronic communications services.

## 3. Approach to determining ALFs

### Background

- 3.1 As set out in Section 2, we have a power to impose fees for the use of spectrum. That power includes a power to set fees greater than those necessary to recover the administrative costs that Ofcom incurs in connection with its radio spectrum functions, having regard in particular to Ofcom's general duty to further the interests of citizens and consumers by securing the optimal use of the spectrum and its specific duties when carrying out its spectrum functions.
- 3.2 In order to meet these duties, we set out our general policy position for setting spectrum fees in our Strategic Review of Spectrum Pricing (the "SRSP") in 2010<sup>10</sup>, which we said would be used in future as a guide to setting fees above administrative cost (which we referred to in the SRSP as administered incentive pricing or "AIP"). We explained that the purpose of AIP was to set fees for spectrum holdings to provide long term signals reflecting the value of the spectrum (based on its opportunity cost) in order to promote the optimal use of spectrum. We set out a high-level framework for setting AIP fees, and noted that we would need to take account of the particular circumstances of a case when setting specific fees. In this consultation, we use the terms AIP and ALF interchangeably.
- 3.3 We also considered the question of the potential interplay between setting spectrum fees and spectrum trading, and concluded that many secondary markets are unlikely to be sufficiently effective to promote the optimal use of the spectrum without the additional signal from AIP fees, and that fees based on AIP principles are likely to continue to be needed to play a role complementary to spectrum trading for most licence sectors.
- 3.4 In most markets, firms pay the market value for inputs to the goods and services they produce, and in the absence of market failures we would expect this to provide firms with appropriate incentives in making commercial decisions, such as about which assets to hold, output, pricing, investment, and input mix.
- 3.5 This also applies to spectrum licences – for example, mobile operators typically pay the market value of spectrum which they acquire in auctions, such as the 4G auction in 2013 of the 800 MHz and 2.6 GHz bands and the auction earlier this year of the 2.3 GHz and 3.4 GHz bands. Indeed, one of the reasons we use spectrum auctions to assign spectrum is their role in allocating spectrum efficiently and providing efficient signals to holders of that spectrum. Each UK MNO has a portfolio of spectrum licences which includes some spectrum acquired at auction and some in bands which are already subject to annual licence fees.

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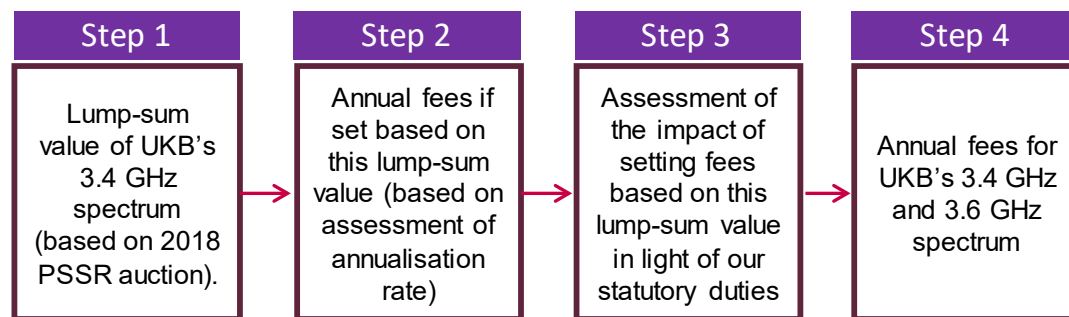
<sup>10</sup> Ofcom, *Strategic Review of Spectrum Pricing: The revised Framework for Spectrum Pricing*, December 2010, [https://www.ofcom.org.uk/\\_data/assets/pdf\\_file/0024/42909/srsp-statement.pdf](https://www.ofcom.org.uk/_data/assets/pdf_file/0024/42909/srsp-statement.pdf)

- 3.6 Efficient use of radio spectrum is an important means of meeting the large and growing demand for mobile data, and the efficient use of spectrum by mobile operators has implications for the mobile sector, other spectrum users, and the UK economy. It is important to ensure that each mobile operator has appropriate incentives to retain spectrum rights only if it is the highest-value user of the underlying spectrum. While spectrum licence fees are a direct cost on mobile operators, as noted above, this is also true of other inputs they use to provide mobile services.
- 3.7 We consider that there remain good reasons to set fees based on the opportunity cost for spectrum, in accordance with the policy position in the SRSP, even where spectrum trading is possible, in order to meet our statutory duty of securing optimal use of the radio spectrum.

## Structure of our assessment

- 3.8 Following the framework we set out in the SRSP (which was itself designed in order to meet our statutory duties), our starting point when calculating the appropriate fee for a spectrum band is to first determine the value of the spectrum concerned, taking account of observed market valuations from auctions and trading alongside other evidence where available. We convert this lump-sum value into an equivalent annual rate by applying an annualisation rate and consider, in light of our statutory duties, what the likely impact of setting fees at that level would be, and whether in light of that assessment there is any reason for us to set fees at a different level. Taking all the above into account, we then reach a view on the appropriate level of fee in the specific case.
- 3.9 Consistent with this, for the 3.4 GHz spectrum we will use the evidence from the 3.4 GHz auction to estimate the market value of the spectrum (lump sum value) and we will then convert this into annualised fees, before considering whether fees set at that level are appropriate in light of our statutory duties.
- 3.10 As discussed in the previous section, we consider that the long-term value of the 3.6 GHz spectrum will be the same as 3.4 GHz. We therefore consider that the annual fees for UKB's 3.6 GHz spectrum should be the same as for UKB's 3.4 GHz spectrum in the long term. However, we recognise that in the short term there are some differences (as discussed in paragraphs 2.12-2.13 above). In section 5, we explain that we think it would be appropriate to phase-in fees for the 3.6 GHz licence. This would mean that the full fees for the 3.6 GHz spectrum will only start to be payable from 30 June 2020, which aligns with the timing of the falling away of constraints on the use of this spectrum.
- 3.11 The framework we propose for deriving an appropriate level of fees for UKB's 3.4 GHz and 3.6 GHz spectrum is therefore as illustrated in Figure 3.1 below.

Figure 3.1: Framework of steps



3.12 The remainder of this section sets out our provisional assessment of the lump-sum value of UKB’s 3.4 GHz spectrum and the ALFs for 3.4 GHz and 3.6 GHz spectrum if set at that value (Steps 1 and 2). Section 4 sets out our assessment of that level of ALFs in light of our statutory duties and provisionally concludes they are appropriate (Steps 3 and 4). Section 5 sets out our proposals, including how we propose to implement the fees for UKB’s 3.4 and 3.6 GHz licences, including phasing.

**Question 1:** Do you agree with our proposal to set ALFs in respect of UKB’s 3.6 GHz spectrum at the same rates as for UKB’s 3.4 GHz spectrum?

## Assessment of lump-sum value of 3.4 GHz spectrum

### Introduction

3.13 Ascertaining the lump-sum value for spectrum is not an exact science. As explained below, Ofcom would ordinarily expect to take account of observed market valuations from auctions and trading alongside other evidence (where available) when setting ALFs. However, such market valuations will be interpreted with care and not applied mechanically.<sup>11</sup>

3.14 In this case, and as indicated in the 2014 licence variation, we have the outcome of the public sector spectrum release (PSSR) auction of the 2.3 and 3.4 GHz bands completed in April 2018. We consider this particularly relevant given it is a recent auction in the UK of spectrum in one of the same bands as the spectrum for which we are seeking to set ALFs, and in which all four of the national mobile operators in the UK won spectrum. We note that there have been recent auctions of 3.4-3.8 GHz spectrum in other EU and non-EU

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<sup>11</sup> Paragraph 4.310, AIP principle 8, SRSP statement, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0024/42909/srsp-statement.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0024/42909/srsp-statement.pdf)

countries.<sup>12</sup> However, we consider that these auctions are less informative of the market value of H3G’s UKB 3.4 and 3.6 GHz spectrum than the recent UK auction and therefore base our estimate of the appropriate lump-sum value only on the UK auction.<sup>13</sup>

- 3.15 Further, as set out in the SRSP, there are a number of ways in which the term “value” can be interpreted. In the SRSP, when setting out our general high-level framework, we focussed on the forward-looking marginal opportunity cost of the spectrum rather than private value (for example, the value that the current licensee places on the spectrum it holds). However, the term “opportunity cost” can itself be interpreted in a number of ways. We have tended to use the terms marginal opportunity cost, market value and market clearing price interchangeably in the past. This reflects the fact that we have typically considered that the forward-looking marginal opportunity cost and market clearing price in a well-functioning spectrum market would be the same. Both are intended to capture the market value of the spectrum, rather than its private value. However, as we discuss in detail below, a distinction can arise when considering H3G’s UKB 3.4 GHz spectrum. In particular, whilst the terms market clearing price and marginal opportunity cost can be used interchangeably in this case, the marginal opportunity cost *to other users* is different. This reflects the specific results of the recent auction of 3.4 GHz spectrum.

### Market clearing price for 3.4 GHz spectrum in the PSSR auction

- 3.16 The outcome of the principal stage of the 3.4 GHz PSSR auction is set out in Table 3.1 below.<sup>14</sup>

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<sup>12</sup> These include Italy (2018), Ireland (2017), Spain (2016), Hungary (2016), Slovakia (2016) and Romania (2015). We recognise that, with the exception of Italy, the prices in the UK auction for 3.4 GHz were higher than in these other auctions. For example, when put on a per capita basis, and adjusting for the 20-year initial term in the UK compared to 15-year licences in Ireland, the price in the UK was around two and a half times the price in Ireland. On the other hand, the recent auction of 3.5 GHz spectrum in South Korea and 3.7 GHz spectrum in Italy both sold for more than double the price in the UK. Information on the prices in other auctions can be found in the reports from DotEcon commissioned by ComReg in advance of the Irish auction, which can be found here: <https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/3-6ghz-band-spectrum-award/>. For information on the prices in the South Korean auction, see <https://www.telegeography.com/products/commsupdate/articles/2018/06/19/msit-announces-results-of-5g-spectrum-auction/>. See <https://blog.telegeography.com/italian-5g-auction-causes-concern> for information on the prices in the Italian auction. Comparisons with UK price are based on adjusting for licence duration and population.

<sup>13</sup> In using international comparisons in the derivation of ALFs for 900 MHz and 1800 MHz we focused on relative value benchmarks as evidence for the market value for 900 MHz and 1800 MHz spectrum, and used absolute value benchmarks as a cross-check on our findings. We recognised that a number of country-specific factors have the potential to affect auction prices in comparator countries relative to the UK. Licence holders have previously argued that, for this reason, absolute auction prices may not provide reliable indicators of the value of spectrum in the UK. In general, we expect that relative values are less likely to be affected by country-specific factors than absolute values (see paragraphs 4.20-4.24 of the 2018 900 MHz and 1800 MHz ALF Statement).

<sup>14</sup> For more details on the PSSR auction, see <https://www.ofcom.org.uk/spectrum/spectrum-management/spectrum-awards/awards-in-progress/2-3-and-3-4-ghz-auction>

Table 3.1: PSSR auction – 3.4 GHz principal stage outcome<sup>15</sup>

	Spectrum obtained	Price paid	Price per 5 MHz lot
EE	40 MHz	£302.592m	£37.824m
H3G	20 MHz	£151.296m	£37.824m
Telefónica	40 MHz	£317.720m	£39.715m
Vodafone	50 MHz	£378.240m	£37.824m

- 3.17 The different price per lot Telefónica paid was due to the mechanics of the auction and Telefónica's bidding decisions. Given there was excess demand for 3.4 GHz at the price of £37.8m, Telefónica was the bidder randomly selected in round 66 to face a higher price of £39.7m per MHz. It continued to bid on 40 MHz at this higher price. Next, in round 67, H3G was randomly selected to face the higher price. H3G did not want to pay £39.7m per MHz for 30 MHz, so instead it was awarded 20 MHz for £37.8m. With the reduction in H3G's demand to 20 MHz, overall demand for 3.4 GHz was brought equal to supply. We do not know whether EE and Vodafone would have been prepared to pay the higher price of £39.7m for the same amount of spectrum they purchased at £37.8m.
- 3.18 In light of the above, the market clearing price in the auction must be at least £37.8m per 5MHz, and must be less than or equal to £39.7m. In the SRSP, we set out the principle that when deciding at what level within a range of estimates we should set an AIP fee, we should consider the risks of setting the AIP too high or too low in light of the specific circumstances and in light of our statutory duties.<sup>16</sup>
- 3.19 In this case, consistent with our approach on ALFs for 900 MHz and 1800 MHz, on balance we consider that the risk of inefficiency from spectrum lying fallow if the ALF for the 3.4 GHz UKB spectrum were above the market value is greater than the risk that efficiency-improving changes would not occur if the ALF was too low.<sup>17</sup> In light of our statutory duty to secure the optimal use of spectrum, we therefore propose to take a conservative approach to interpreting the evidence on the market clearing price and so propose to consider **£37.8m per 5 MHz** as the market clearing price.
- 3.20 As explained briefly above, we have generally not distinguished between the market clearing price and marginal opportunity cost of spectrum. Consistent with this, we consider that the market clearing price of £37.8m per 5 MHz is also the marginal opportunity cost of the spectrum in the auction. H3G was prepared to pay £37.8m per 5 MHz for more 3.4 GHz

<sup>15</sup> See [https://www.ofcom.org.uk/data/assets/pdf\\_file/0018/112932/Regulation-111-Final-outcome-of-award.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0018/112932/Regulation-111-Final-outcome-of-award.pdf)

<sup>16</sup> Paragraph 4.344, AIP Principle 9, SRSP statement.

<sup>17</sup> See Annex 5 of our August 2014 consultation on ALF for 900 and 1800 MHz spectrum, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0030/76926/annexes\\_1-7.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0030/76926/annexes_1-7.pdf).



than it ultimately obtained, meaning this is the marginal value that H3G has foregone in not obtaining additional 3.4 GHz spectrum, which we consider represents a reasonable figure for the marginal opportunity cost for H3G of its holdings of 3.4 GHz spectrum.

### **Marginal opportunity cost to other users of H3G holding UKB's 3.4 GHz spectrum**

- 3.21 As in our analysis on setting spectrum fees for 900 MHz and 1800 MHz, we recognise there are arguments as to why operators may be incentivised to make the most efficient use possible of spectrum they currently hold, absent a fee for using the spectrum. For example, some MNOs have argued that they have an incentive to do this because they have a fixed amount of spectrum, and acquiring additional spectrum in auctions is expensive.<sup>18</sup>
- 3.22 If MNOs are incentivised to make efficient use of the spectrum they hold, there may however still be scope for efficiency improvements from transferring spectrum to another operator who would be a more efficient user of the spectrum. In this case, it may be more relevant to consider the marginal opportunity cost *to other users* (i.e. non-holders of the UKB spectrum).
- 3.23 The marginal opportunity cost *to other users* of H3G holding UKB's 3.4 GHz should reflect the next highest value of that spectrum to an organisation other than H3G. To identify this marginal opportunity cost from the results of our 3.4 GHz auction, we can look at the last time a bidder other than H3G lowered its demand in that auction for 3.4 GHz spectrum.
- 3.24 The last round in which a bidder other than H3G bid for more spectrum than it ultimately won was in round 48 when Telefónica bid £31.1m per 5 MHz lot for 55 MHz, before dropping to 40 MHz when faced with the next price increment of £32.7m per 5 MHz lot.<sup>19</sup> After this point, EE, Vodafone and Telefónica only bid for the amounts they ended up winning. In other words, none of EE, Vodafone and Telefónica appeared to value having more 3.4 GHz spectrum than they ultimately won by more than £32.7m per 5 MHz. The price only went higher than this because H3G was bidding for more spectrum than it ultimately won. That Telefónica showed it was willing to pay £39.7m per MHz for the 40 MHz it won does not impact the fact that it was not willing to pay £32.7m for more than 40 MHz of 3.4 GHz spectrum.
- 3.25 The evidence from the PSSR auction therefore suggests that the marginal opportunity cost to other users of H3G holding UKB's 3.4 GHz spectrum is between £31.1m (at which price Telefónica bid for more spectrum than it ultimately won) and £32.7m (when none of EE,

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<sup>18</sup> See paragraph 5.35 of the *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, December 2018, <https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-900-1800-mhz>

<sup>19</sup> This can be seen in the principal stage bid data, which can be found here:

<https://www.ofcom.org.uk/spectrum/spectrum-management/spectrum-awards/awards-archive/2-3-and-3-4-ghz-auction>

Vodafone and Telefónica bid to obtain more 3.4 GHz spectrum than they ultimately won). A conservative estimate of the marginal opportunity cost to other users of H3G holding UKB's 3.4 GHz spectrum (which, as discussed at paragraph 3.19 above, we consider is more likely to achieve our statutory duties) would therefore be **£31.1m per 5 MHz**.

### Provisional views on the lump-sum value for 3.4 GHz spectrum

- 3.26 In the SRSP,<sup>20</sup> we set out how we interpret our duty to further the interests of citizens and consumers by securing the optimal use of spectrum.<sup>21</sup> We considered that the optimal use of spectrum is more likely to be secured for society if spectrum is used efficiently, that is to produce the maximum benefits for society.<sup>22</sup> We considered that efficient use of spectrum means that:
- spectrum is allocated and assigned to those uses and users that will provide the greatest benefits to society as a whole;
  - individual spectrum users economise on their use of spectrum so there is no 'wasteful' use or underutilisation of spectrum; and
  - spectrum becomes available over time for new and innovative services, where these are of sufficient value to society, and more generally to accommodate changes in technologies and consumer demand for services that rely on spectrum.
- 3.27 In light of the above, we are seeking to derive an annual fee for H3G's UKB 3.4 GHz spectrum that provides H3G with a sustained long-term signal of its value. However, as explained above, the derivation of a lump-sum value for the purposes of setting such a fee is not an exact science.
- 3.28 Ofcom's SRSP focuses on the marginal opportunity cost of the spectrum.<sup>23</sup> This would suggest that the relevant economic price signal for spectrum efficiency should be based on the market clearing price or marginal opportunity cost in the auction of £37.8m per 5 MHz.
- 3.29 However, for the reasons set out above, when setting ALFs for use of mobile spectrum we recognise there are arguments in favour of focusing on the marginal opportunity cost to *other users* of the spectrum, which in this case is represented by the lower value of £31.1m per 5 MHz lot.
- 3.30 We consider that, in principle, both the market clearing price (£37.8m) and the marginal opportunity cost to other users (£31.1m) could provide a measure of the market value of H3G's UKB 3.4 GHz spectrum. We have therefore considered below which of these

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<sup>20</sup> SRSP statement, paragraphs 3.13-3.20.

<sup>21</sup> Ofcom's SRSP is intended to provide a non-binding framework to be used by Ofcom as a guide to setting ALF. Whilst we would ordinarily expect to follow the principles set out in the SRSP, we must take account of the particular circumstances of the frequency bands and licence types under review. Further, the SRSP recognises that, in some circumstances, we may need to diverge, for specific reasons, from the principles and methodologies set out therein.

<sup>22</sup> See also section 4 of our spectrum management strategy, published on 30 April 2014.

<sup>23</sup> SRSP statement, paragraphs 3.33-3.34.

measures of value would best achieve our statutory duty of securing the optimal use of spectrum (and, as a result, our primary duty to further the interests of citizens and consumers).

### Which measure of lump-sum value would best secure the optimal use of spectrum?

- 3.31 Our provisional view is that, in principle, both the market clearing price and the marginal opportunity cost to other users are consistent with and therefore capable of securing the optimal use of spectrum. Both would provide H3G with a long-term signal of the value of its 3.4 GHz spectrum, based on the results of the recent PSSR auction, and would be consistent with the general principles set out in the SRSP.
- a) In the case of the market clearing price, the price signal would encapsulate both the concepts of efficient use (i.e. including that H3G uses the spectrum efficiently) and efficient user (i.e. that the most efficient user has the spectrum).
  - b) In the case of the marginal opportunity cost to other users, the price signal would seek to ensure that the efficient user has the spectrum, recognising that there may be arguments (as discussed above) as to why operators might be incentivised to make efficient use of spectrum they currently hold, absent a fee for using the spectrum.
- 3.32 On this basis, we have gone on to consider whether there are reasons to favour one of these lump-sum values over the other. We first consider matters which we consider are relevant to our objective of securing the optimal use of spectrum.
- 3.33 **Market clearing price:** We recognise that using the market clearing price would lead to higher ALFs than using the marginal opportunity cost to other users. Ofcom's SRSP recognised the risk that ALFs set too high could threaten the optimal use of spectrum. In particular, it noted that ALFs set too high could incentivise companies to over-economise on spectrum,<sup>24</sup> leading companies to either use more complex and therefore expensive equipment as an alternative to spectrum, or to reduced services for consumers. We also consider that, on balance, there is a greater risk to optimal use of spectrum from *inadvertently* setting fees above market value than below.<sup>25</sup> A further effect of higher ALFs is that H3G might seek to recover any higher costs from consumers through higher retail prices.
- 3.34 In this case, we have information from a recent auction of spectrum in the same band in the UK as that for which we are seeking to set ALFs. In interpreting the evidence on the market clearing price from that auction, we have proposed to adopt a conservative approach (see paragraph 3.19 above). Therefore, using the market clearing price rather than the marginal opportunity cost to other users would in our view pose little risk of inadvertently setting ALF at such a high level that it would lead to inefficiencies. All of the

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<sup>24</sup> See SRSP statement, paragraph 3.36

<sup>25</sup> See Annex 5 of our August 2014 consultation on ALF for 900 and 1800 MHz spectrum, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0030/76926/annexes\\_1-7.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0030/76926/annexes_1-7.pdf). This was part of our assessment of the issues where we considered at that time that we had no discretion under the Government's Direction.

MNOs, including H3G, were willing to purchase spectrum at the market clearing price in the 3.4 GHz auction. It therefore seems unlikely that ALFs at the market clearing price would result in H3G returning UKB's 3.4 GHz spectrum to Ofcom, when it was the highest value user.

- 3.35 As regards the possible effect of H3G setting higher retail prices, ALFs at the market clearing price would only represent an input cost for the UKB 3.4 GHz spectrum at the same level as the input cost for the 3.4 GHz spectrum that both H3G and other MNOs won in the PSSR auction. In section 4, we consider the different question of whether we should *intentionally* set ALFs at a lower level than the market value.
- 3.36 **Marginal opportunity cost to other users:** We have considered whether some potential consequences of using the marginal opportunity cost to other users might undermine our objective of securing the optimal use of spectrum (and which we consider would be less likely to be present if UKB's ALF were based on the market clearing price).
- 3.37 One logical consequence of using the marginal opportunity cost to other users for the purposes of valuing UKB's 3.4 GHz spectrum is that ALFs in respect of essentially the same spectrum could become different for different operators.<sup>26</sup> This could conceivably have adverse consequences for future trading in that spectrum. For example, in the event that UKB were to seek to trade its 3.4 GHz spectrum subject to ALFs, it might be argued that the level of that ALF should be changed following the trade to reflect the marginal opportunity cost to the counterparty to the trade. It is possible that this could lead to uncertainty for potential trading partners, with the consequent risk that trading may be less likely to occur.
- 3.38 However, there might be no clear reason to change ALF following the trade. The argument for a change in ALF, e.g. from £31.1m to £37.8m per 5 MHz, might be that another operator holding the spectrum should be exposed through ALF to the higher marginal opportunity cost of that spectrum to H3G/UKB which no longer holds that spectrum. However, the transaction leading to the change in licensee would have been a spectrum trade from H3G/UKB to the other operator, which might question the assumption that H3G/UKB had a higher value for that spectrum than the other operator. Moreover, as we explain in paragraph 4.30, when discussing future reviews of ALF, we will interpret information from any trade with care and not apply it mechanically to setting future ALFs.

### Are there any other relevant considerations?

- 3.39 We have also considered whether there are any other relevant factors associated with setting fees at one of these levels over the other.
- 3.40 One argument in favour of setting fees at the marginal opportunity cost to other users of the spectrum (£31.1m) is that this is the measure we generally focus on when considering fees for mobile spectrum. Also, if we were instead to set fees at the market clearing price,

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<sup>26</sup> There would be two potential fee levels, reflecting the evidence of opportunity cost to the highest and second highest value users.

it might be argued they were higher than necessary (noting that, in this particular case, we have bid data which allows us to identify the marginal opportunity cost to other users of the spectrum, as explained above). As noted above, we recognise that H3G might seek to recover any higher costs from consumers through higher retail prices.

3.41 On the other hand, we have identified some risks associated with setting fees at the marginal opportunity cost to other users in this case. These would not arise if we used the market clearing price. In particular:

- a) *Risk of an unfair outcome*: the market clearing price is the price which all holders of other spectrum in the 3.4 GHz band (including H3G, UKB's parent company) paid for that spectrum in the auction. To set ALFs for UKB's spectrum in this band at a lower level would introduce a differential between UKB and the other MNOs, in respect of spectrum which is otherwise equivalent. This could be said to be unfair: different operators would be paying different amounts for equivalent spectrum (and indeed UKB would be paying a different amount to that paid by H3G, its parent, in respect of spectrum in the same band). We also note that the reason that the market clearing price in the 3.4 GHz auction ended up being higher than the marginal opportunity cost to other users, is because H3G continued to bid (as it was entitled to do) and so set the market clearing price which ultimately applied to all operators through its bidding.
- b) *Risk of distorting competition*: Given that other MNOs acquired 3.4 GHz spectrum in the PSSR auction, setting the ALF on UKB's 3.4 GHz spectrum below the market clearing price would have differential financial effects on operators. There may therefore be some risk that setting ALFs below the market clearing price could have an adverse impact on competition, as H3G could be considered to be effectively receiving a discount or "subsidy" relative to the other MNOs who acquire their 3.4 GHz or 3.6 GHz spectrum at auction. However, the scale of the difference in fees compared to the market clearing price suggests that any risk to competition is likely to be fairly limited.<sup>27</sup>
- c) *Increased administrative burden*: As explained above, one logical consequence of using the marginal opportunity cost to other users for the purposes of valuing UKB's 3.4 GHz spectrum is that ALFs in respect of essentially the same spectrum could become different for different operators. This would be likely to make the management of this spectrum more administratively burdensome (for both Ofcom and MNOs) if using the marginal opportunity cost to other users led to increased frequency of ALF changes compared to if the market clearing price were used. However, as discussed above, we do not envisage frequent changes to ALF as discussed further from paragraph 4.29 below.

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<sup>27</sup> In the long term, the annual difference would amount to £385,000 per 5 MHz, or around £9m a year for all 120 MHz. This is because setting ALF based on a lump sum value of £31.1m per 5 MHz would result in total annual payments by H3G of around £43m (for both the 40 MHz of 3.4 GHz and 80 MHz of 3.6 GHz spectrum), compared to £52m if a lump sum value of £37.8m per 5 MHz were used.

- 3.42 In light of the above, we consider that there are arguments both for and against calculating the lump-sum value by reference to either the marginal opportunity cost to other users (£31.1m per 5 MHz) or the market clearing price (£37.8m per 5 MHz).
- 3.43 Our provisional view is that, on balance, and in light of our duty to secure the optimal use of the spectrum in the interests of citizens and consumers, the arguments in favour of using the marginal opportunity cost to other users to calculate the lump sum value (in particular that the market clearing price may be higher than necessary to promote optimal use of the spectrum) outweigh those in favour of using the higher market clearing price in this case. We are therefore provisionally minded to use the marginal opportunity cost to other users (**£31.1m per 5 MHz**) for the purpose of setting the ALF on UKB's 3.4 and 3.6 GHz spectrum.<sup>28</sup>

**Question 2:** Do you have any views on our provisional conclusion to use the marginal opportunity cost to other users to calculate the lump sum value for the purposes of setting ALFs for these bands? Please provide any evidence you have to support your position.

## Annualisation

### Proposed approach

- 3.44 In this section we set out the approach we propose to adopt to annualise our estimates of the lump-sum value of the spectrum.
- 3.45 We propose to adopt the same approach to annualisation as we have used for 900 MHz and 1800 MHz ALFs. This means our approach to annualising H3G's ALFs for its 1800 MHz spectrum is the same as our approach to annualising the ALFs for H3G's UKB 3.4 GHz spectrum.
- 3.46 The annualisation rate that we are consulting on is the same as the rate used in the 2018 900 MHz and 1800 MHz ALF Statement.
- 3.47 In the remainder of this section we briefly summarise this approach before setting out the annual licence fees this would imply under the two options we are consulting on.

### The annualisation rate

- 3.48 In our 2018 900 MHz and 1800 MHz ALF Statement<sup>29</sup>, we converted the lump-sum values into an equivalent annual rate by spreading the lump-sum value of spectrum over 20 years,

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<sup>28</sup> While we refer to the value as £31.1m per 5 MHz for convenience, in our calculation we use the precise figure of £31.118m per 5 MHz.

<sup>29</sup> See paragraphs 4.73 to 4.83, and Annex 5 of Annual Licence Fees for 900 MHz and 1800 MHz frequency bands Statement, December 2018, <https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-900-1800-mhz>.

using an ALF profile that is flat in real terms (i.e. adjusted for inflation). We applied a post-tax discount rate and a tax adjustment factor (to reflect the more favourable tax treatment of annual fees compared to a lump-sum payment). In order to allow for inflation, we used the consumer prices index (CPI) to adjust the base year ALF level each year when the licence fee comes due for payment.

3.49 We propose to use the same approach here. This means the value of ALF in year t is derived from the lump sum value (LSV) in 2018, annualisation rate and inflation as follows:

$$ALF_t = LSV * TAF * \underbrace{\left[ \frac{r}{1 - (1 + r)^{-t^*}} \right] * \left[ \frac{1}{(1 + r)} \right]}_{\text{Annualisation rate}} * \left[ \frac{CPI_t}{CPI_{t0}} \right]$$

3.50 Where:

- ALF<sub>t</sub> is the value of ALF in year t;
- LSV is the lump-sum value of spectrum;
- TAF is an adjustment factor that reflects the tax advantages of ALF over lump-sum payments;
- r is the real post-tax discount rate;
- t\* is the length of period over which we spread the LSV for the purposes of calculating ALF, which is equal to the initial term of the 3.4 GHz spectrum licences obtained in the PSSR auction, i.e. 20 years;<sup>30</sup> and
- CPI<sub>t0</sub> is the level of the CPI (all items) index in April 2018 and CPI<sub>t</sub> is the latest available figure for the same index published in the Consumer Price Inflation Reference Tables by the Statistics Board.

3.51 We refer to the expression on the right hand side of the formula which is multiplied by the LSV to derive the base level of ALF (i.e. before updating for inflation) as the “annualisation rate”.

### Discount rate for annualisation

3.52 The annualisation rate used to convert the lump sum value is itself a function of the post-tax real discount rate and the adjustment for the tax advantages stemming from paying ALFs (as opposed to amortising a lump sum). In spreading the lump sum over a 20-year period, we use a discount rate at which the present value of the resulting payment stream equals the lump-sum value if it had been paid today.

3.53 The discount rate depends on, among other things, the uncertainty associated with this future ALF payment stream. One significant uncertainty relates to changes in the market

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<sup>30</sup> For 900 MHz and 1800 MHz ALFs, the length of period over which we spread the LSV for the purposes of calculating ALF is equal to the initial term of the licences obtained in the 4G auction. This is also 20 years so t\* is the same in both cases.

value of the spectrum over time. The discount rate which will leave MNOs indifferent between paying ALFs and paying a lump-sum amount depends on the extent to which they (rather than the Government) are exposed to the effect of such changes in market value over time on the level of ALF and, therefore, it is an important consideration in determining an appropriate discount rate.

- 3.54 As in our 2018 900 MHz and 1800 MHz ALF Statement<sup>31</sup>, we consider that the appropriate discount rate would sit somewhere between a lower polar case of the cost of debt (as an approximation of the case where the licensee would bear the risk associated with the variation in the market value of the spectrum) and, as an upper polar case, the weighted average cost of capital (WACC, which is an approximation of the case where the government would bear the full risk of variation in market value of the spectrum).<sup>32</sup> We use a risk-sharing adjustment to determine where between these two polar cases the appropriate discount rate would lie.
- 3.55 Consistent with our approach in our 2018 900 MHz and 1800 MHz ALF Statement, we propose to adopt the following approach to calculating the discount rate.

*Lower polar case*

- 3.56 We use observed market debt rates on 10-year bonds as the starting point for estimating the discount rate in the lower polar case. We focus on a BBB bond index of 10-year maturity and on bonds issued by the parent companies of UK MNOs with a remaining maturity of around 10 years.
- 3.57 Consistent with our decision in the 2018 900 MHz and 1800 MHz Statement, we consider that a pre-tax nominal range of 2.5% to 3.0% looks reasonable and we propose to use a pre-tax nominal cost of debt point estimate of 2.8%.<sup>33</sup>
- 3.58 We propose to reduce the pre-tax nominal cost of debt by 10 basis points i.e. 0.1% to remove the estimated inflation risk premium<sup>34</sup>, and a further reduction of 40 bps to remove the estimated liquidity risk premium.<sup>35</sup> This gives a pre-tax nominal rate of 2.3%.

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<sup>31</sup> See paragraph 4.79 of *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, December 2018, <https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-900-1800-mhz>.

<sup>32</sup> The WACC reflects the cost of capital weighted between the cost of debt and the cost of equity, where the weights are a function of, respectively, the proportion of debt to enterprise value and equity to enterprise value.

<sup>33</sup> See *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, Annex 5, paragraph A5.28.

<sup>34</sup> This reflects that due to the indexation of the ALFs the Government would not bear any inflation risk. See *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, Annex 5, paragraph A5.30.

<sup>35</sup> Liquidity risk refers to the difficulties that a creditor may encounter when trying to sell an asset on the secondary market. This can restrict the creditor's ability to manage risk exposure, and so creditors may require a premium for bearing liquidity risk. See *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, Annex 5, paragraphs A5.53 to A5.54.



3.59 We derive a post-tax nominal discount rate by allowing for our estimate of the average corporate tax rate which will prevail over the 20-year period.<sup>36</sup> This gives a post-tax nominal rate of 1.9%. The equivalent post-tax real rate is -0.1% (using our CPI inflation forecast of 2%).

#### *Upper polar case*

3.60 We propose to base our estimate of the upper polar case on the forward-looking WACC which reflects the riskiness of a UK MNO. For the reasons set out in our 2018 900 MHz and 1800 MHz Statement we use a post-tax real WACC of 4.2% based on our latest view of the cost of capital reflective of the operating risk of a UK MNO.<sup>37</sup>

#### *Risk-sharing adjustment*

3.61 We make an adjustment for the degree of risk sharing between licence holders and the government – which arises due to the possibility of future fee reviews that could increase or decrease the ALF payments (subject to the completion of any such review). To reflect this risk, and in line with our decision in the 2018 900 MHz and 1800 MHz Statement, we propose to allow for a 25% risk sharing adjustment between the lower polar case and upper polar case to estimate the final discount rate.<sup>38</sup>

#### *Discount rate for annualisation*

3.62 Combining our discount rates in the lower and upper polar cases together with the 25% risk-sharing adjustment produces an overall post-tax real discount rate of 1.0% (rounding to one decimal place).<sup>39</sup>

### **Tax adjustment**

3.63 In our 2018 900 MHz and 1800 MHz Statement we calculated a tax adjustment from the difference in tax benefits from ALF payments compared to the tax deductions available from amortisation of a lump-sum payment, compared to present values using the post-tax discount rate. The tax adjustment factor (TAF) is calculated as:

$$TAF = 1 + \left[ \frac{(PV \text{ of tax benefits of ALF} - PV \text{ of tax benefits of the amortisation of LSV})}{LSV} \right]$$

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<sup>36</sup> See *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, Annex 5, paragraph A5.55 to A5.56, <https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-900-1800-mhz>.

<sup>37</sup> See *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, Annex 5, paragraph A5.88 and Table A5.3.

<sup>38</sup> For a discussion of the appropriate risk sharing adjustment, see *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* Statement, Annex 5, paragraphs A5.92 to A5.129

<sup>39</sup> This is calculated by taking the lower polar case and adding 25% of the difference between the upper and lower polar cases. In this case, that is  $-0.1\% + 25\% \times (4.2\% - (-0.1\%))$ .

3.64 We estimate a tax adjustment factor of 1.049, which equates to an average tax rate of 17.1% over the 20 year period.<sup>40</sup>

### Annualisation rate

3.65 As summarised in Table 3.2 below, the resulting annualisation rate is 5.75%.<sup>41</sup>

**Table 3.2: Summary of input values into formula for calculating base level of ALF**

	Proposed values
Length of period over which we spread the LSV for the purposes of calculating ALF (t*)	20 years
Real post-tax discount rate (r)	1.0%
Adjustment factor that reflects tax advantages over lump-sum payments (TAF)	1.049
Annualisation rate	5.75%

Source: Ofcom

**Question 3:** Do you agree with our proposed approach to annualisation?

### ALFs if set at market value

3.66 As set out above, we propose to use an annualisation rate of 5.75%. Using the formula set out in paragraph 3.49 above, multiplying the annualisation rate by the lump-sum value gives us the base levels of ALF for UKB’s 3.4 GHz spectrum if set to reflect our estimate of market value (expressed in April 2018 prices). This is **£0.358m per MHz**, based on our provisional conclusion at paragraph 3.43 that we should use the marginal opportunity cost to other users.<sup>42</sup> As discussed in paragraph 3.10 above, we consider that the same ALF should apply to UKB’s 3.6 GHz in the long term (and we discuss phasing in section 5 below).

3.67 Consistent with our approach to ALFs for 900 MHz and 1800 MHz, we derive the base level of ALF rounded to three decimal places in £m per MHz. We consider that, given the nature of the annualisation calculation, rounding to three decimal places is a reasonable approach without introducing an undue risk of spurious precision.

<sup>40</sup> See TAF calculation model published here: <https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-900-1800-mhz>

<sup>41</sup> The annualisation rate is calculated using the following formula, where r is the real post-tax discount rate and t\* is the length of period over which we spread the lump sum value for the purposes of calculating ALF (i.e.20 years), and TAF is the tax adjustment factor. See paragraphs 3.49 and 3.50.

$$TAF * \left[ \frac{r}{1 - (1+r)^{-t^*}} \right] * \left[ \frac{1}{(1+r)} \right]$$

<sup>42</sup>The ALF would be **£0.435m per MHz** based on the market clearing price.

3.68 In the following section, we consider whether ALFs which reflect the market value set out in paragraph 3.66 above are appropriate in light of our statutory duties.

## 4. Further consideration of ALFs, in light of our statutory duties

### Introduction

- 4.1 When we exercise our powers in relation to spectrum, and as explained in Section 2 above, a number of statutory duties are relevant. In particular:
- a) section 3(1) of the Communications Act sets out Ofcom's principal duty to further the interests of citizens and consumers in relevant markets;
  - b) by virtue of Ofcom's principal duty, Ofcom is required by section 3(2) of the Communications Act to secure the optimal use for wireless telegraphy of the electromagnetic spectrum. Section 3(4)(f) also requires Ofcom, in performing its duties, to have regard to the different needs and interests, so far as the use of the electromagnetic spectrum for wireless telegraphy is concerned, of all persons who may wish to make use of it; and
  - c) section 4(2) of the Communications Act provides that Ofcom must have regard to the six Community requirements, which give effect amongst other things to Article 8 of the Framework Directive. We consider the following (summarised) to be particularly relevant to our proposals for ALFs, namely the requirements:
    - i) to promote competition;
    - ii) to promote the interests of all persons who are citizens of the EU; and
    - iii) to take account of the desirability of our carrying out our functions in a way which so far as practicable does not favour one form of electronic communications or one means of making them available.
- 4.2 As described in paragraph 3.43 above, and taking account of these statutory duties, our provisional view is that the appropriate lump-sum value of UKB's 3.4 GHz spectrum is £31.1m per 5 MHz (or £6.2m per MHz) and that, in the long-term, this is also the appropriate lump-sum value for UKB's 3.6 GHz spectrum. This is based on using the marginal opportunity cost to other users as the measure of market value. It would be £37.8m per 5 MHz if we instead used the market clearing price. A lump sum value of £31.1m per 5 MHz would correspond to an ALF of £0.358m per MHz per annum.<sup>43</sup>
- 4.3 ALFs which are based on the market value of the spectrum (whether £31.1m or £37.8m per 5 MHz) are consistent with the policy approach to setting spectrum licence fees which we set out in the SRSP, which was itself designed to meet Ofcom's statutory duties when setting such fees. Further, as explained at paragraph 3.19 above, we adopted a

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<sup>43</sup> In April 2018 prices.

conservative approach when interpreting the evidence on market value in light of our statutory duties.

- 4.4 In this section, we consider in more detail whether setting the ALF for UKB's 3.4 GHz and 3.6 GHz spectrum based on our estimate of the market value of that spectrum is appropriate in light of our statutory duties.
- 4.5 This assessment is consistent with the approach set out in the statement for setting ALF for 900 MHz and 1800 MHz spectrum.

## Structure of assessment

- 4.6 We explain in further detail below our general policy (as set out in the SRSP) on why spectrum fees should be set by reference to market value. We then consider the specific effects of ALFs being set at market value on:
- a) securing the optimal use of spectrum;
  - b) consumers;
  - c) investment; and
  - d) competition.

## Our policy on setting spectrum fees by reference to market value

- 4.7 As explained in Section 3, we published the SRSP in December 2010 in order to give best effect to our statutory duties when setting spectrum licence fees.<sup>44</sup> This sets out our policy of setting licence fees by reference to the value of the spectrum (known as administered incentive pricing (AIP) fees), for spectrum that is expected to be in excess demand, and charging cost-based fees where AIP is not appropriate. The SRSP provides the policy framework for how we develop AIP fee proposals, as well as how and when we undertake pricing reviews.

- 4.8 In the SRSP we explained that:

*"AIP acts as a proxy for market prices for scarce spectrum that has been assigned administratively...rather than auctioned. It promotes optimal use by ensuring that users face a signal of opportunity cost...imposed on society by their use and therefore take it into account in their business and investment decisions, just as they do for other resources that they employ, and so have incentives to use it efficiently in the provision of downstream services."*<sup>45</sup>

*"The rationale for AIP may be simply stated. If the price charged for any limited resource, whether it is energy, raw materials, land or spectrum, does not reflect its*

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<sup>44</sup> 2010 statement on our Strategic Review of Spectrum Pricing, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0024/42909/srsp-statement.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0024/42909/srsp-statement.pdf)

<sup>45</sup> SRSP consultation, paragraph 1.12. [https://www.ofcom.org.uk/data/assets/pdf\\_file/0021/36804/srsp\\_condoc.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0021/36804/srsp_condoc.pdf)

*opportunity cost, there will be less incentive to use it efficiently, it will not be available for alternative uses or other users that could produce additional value and society will be worse off. For example, faced with a choice between investing in more advanced equipment and using more spectrum businesses will naturally tend to choose the option with lower costs. If the cost of spectrum reflects its true opportunity cost, and the cost of equipment also reflects its true value (as would be expected in a well-functioning market for equipment) then business will make the trade-off between investment in spectrum and equipment in a way that maximises benefits generated from their use.”<sup>46</sup>*

4.9 In assessing the AIP principle on spectrum trading,<sup>47</sup> we further commented that:

*“We also note that some commercial and public spectrum users may be less responsive to trading than to AIP... More generally, when strong pressures are put on managers to reduce or contain their operating budgets, but less importance is placed on realising untapped revenue sources such as might arise from selling spectrum, AIP can provide a more powerful incentive for licensees to use spectrum efficiently than the possibility of selling unwanted spectrum.”<sup>48</sup>*

4.10 In assessing the AIP principle in relation to wider policy objectives,<sup>49</sup> we commented that:<sup>50</sup>

*“...subsidising one input such as spectrum creates the risk that investment choices will be distorted, such that the users provided with a subsidy will tend, over time, to retain more spectrum than they need, increasing the opportunity cost resulting from excluding other uses and users;*

*an input subsidy on its own does not guarantee that the input will be used, nor that the desired outputs will be delivered using it. Direct subsidies and/or regulations can be targeted at the desired outputs and so are normally more likely to be effective, and proportionate.”*

4.11 As set out in the SRSP,<sup>51</sup> the purpose of AIP is to provide users with a sustained long-term signal of the value of the spectrum as indicated by its opportunity cost in the next highest use and, as a result, to give them incentives to use it in a way that maximises benefits for

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<sup>46</sup> SRSP statement, paragraph 3.34. [https://www.ofcom.org.uk/data/assets/pdf\\_file/0024/42909/srsp-statement.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0024/42909/srsp-statement.pdf)

<sup>47</sup> This principle was labelled as AIP principle 4 in the Executive Summary, but discussed as AIP principle 5 in the text, for consistency with the SRSP consultation, as explained in paragraph 1.10 of the SRSP statement.

<sup>48</sup> SRSP statement, paragraph 4.203. We also noted that Arqiva, BT and H3G agreed with this principle, with BT agreeing at least where market mechanisms are not well established and where competition considerations might provide a significant disincentive to trade. O2 and Vodafone disagreed, with O2 arguing that AIP and trading shared the same objective of efficient use of spectrum. SRSP statement, paragraphs 4.192 – 4.197.

<sup>49</sup> AIP principle 5 in the Executive Summary, but discussed as AIP principle 6 in the text.

<sup>50</sup> SRSP statement, paragraph 4.214.

<sup>51</sup> SRSP statement, paragraphs 3.33-3.34.

society over time. If the price charged for any limited resource does not reflect its opportunity cost, there will be less incentive to use it efficiently.

4.12 We considered that in general terms, benefits to society will be maximised over time if spectrum is priced to reflect opportunity cost, and that AIP fees set in this way have an effect similar to the prices that would emerge in a well-functioning spectrum market.<sup>52</sup>

4.13 The SRSP also set out our view<sup>53</sup> that

*“In general, we do not believe that AIP is the appropriate regulatory tool to deal with competition concerns in downstream markets. Similarly, we think it is unlikely that AIP could introduce distortions to competition in downstream markets when it reflects the opportunity cost of spectrum.”*

4.14 In considering this general policy in relation to setting ALFs for UKB's 3.4 GHz and 3.6 GHz spectrum in particular, we take the view that ALFs below market value effectively give H3G as the licence holder a subsidy. This has the potential to distort economic incentives in terms of (among other things) pricing and investment decisions, for instance by causing prices to deviate from the true cost of supply, or by distorting the efficient choice between spectrum-related investment and other investments (e.g. alternative network equipment). It also has the potential to distort competition. These distortionary outcomes would be harmful for consumers.

## Securing the optimal use of spectrum

### Efficiency of existing spectrum use and users

4.15 As set out above, the purpose of setting spectrum fees based on market value is to provide users with a sustained long-term signal of spectrum value, and, as a result, to give them incentives to use it in a way that maximises benefits for society over time.

4.16 As explained at paragraph 3.21 above, we recognise that operators may be incentivised to make the *most efficient use* possible of spectrum they currently hold, in the absence of fees set at market value. However, this does not necessarily rule out the possibility that they may not be the highest-value users of this spectrum (i.e. even if they are incentivised to maximise the value of their use of that spectrum, they are not necessarily the *most efficient user*).

4.17 We also recognise that mobile operators can trade or acquire spectrum licences, and that in principle this creates incentives for operators to only hold licences for which they are the highest-value users. However, as discussed in paragraphs 4.22 to 4.26 below, we consider there is a risk that MNOs may be less responsive to the opportunity cost of holding spectrum (through forgoing the revenue from trading it) than to ALFs based on market

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<sup>52</sup> SRSP statement, paragraph 3.41.

<sup>53</sup> SRSP statement, paragraph 4.68.

value. This implies that trading may not in itself be sufficient to ensure that spectrum is allocated most efficiently.

4.18 Both the SRSP and our 2007 review of spectrum fees for broadcasting identified several market conditions that we considered necessary for spectrum trading to secure optimal spectrum use, including the presence of a liquid and transparent market with good information about prices.<sup>54</sup> Barriers to this (e.g. high transaction costs or lack of price information) may prevent spectrum trading from being sufficiently effective to promote the optimal use of spectrum.

4.19 These considerations underpinned our principle on AIP and tradable licences in the SRSP:

*AIP principle 5: Many secondary markets are unlikely to be sufficiently effective to promote the optimal use of the spectrum without the additional signal from AIP. Therefore, AIP will likely continue to be needed to play a role complementary to spectrum trading for most licence sectors.<sup>55</sup>*

4.20 We said in the SRSP that we would assess the role of spectrum fees on a case-by-case basis. Given the risks to efficiency outlined above, then to depart from setting the ALF for UKB's 3.4 GHz and 3.6 GHz spectrum based on market value in this case, we consider we would have to be sufficiently confident that:

- a) these risks to spectrum efficiency are not material for this spectrum holding i.e. we can rely on the possibility of trading alone to ensure the allocation of spectrum is efficient; and / or
- b) setting ALFs based on our estimate of market value will either not help to address the risks to efficiency or will introduce other barriers to efficiency-improving outcomes.

4.21 We recognise that in this case H3G may be the highest value user of UKB's 3.4 GHz and 3.6 GHz spectrum, given that it was the marginal bidder for additional 3.4 GHz spectrum in the recent PSSR auction. However, as set out in the SRSP, setting ALFs at market value is intended to provide operators with long-term price signals. Although H3G as the licence-holder may be a particularly high-value user of the UKB 3.4 GHz and 3.6 GHz spectrum, and new spectrum awards may play some role in addressing the demand of other operators, efficient use of this spectrum may also come from other users being able to access the UKB 3.4 GHz and 3.6 GHz spectrum in the future. This increases the possibility that H3G may not necessarily be the highest-value user of the entirety of its 3.4 GHz and 3.6 GHz holdings in the long term.

### Whether operators are less responsive to the opportunity cost of spectrum

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<sup>54</sup> Paragraph 3.23, Future Pricing of Spectrum Used for Terrestrial Broadcasting. Paragraph 4.31, Ofcom, *SRSP: The revised Framework for Spectrum Pricing*, December 2010, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0024/42909/srsp-statement.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0024/42909/srsp-statement.pdf)

<sup>55</sup> SRSP, paragraph 4.212.



- 4.22 We consider that there is a risk that MNOs may be less responsive to the opportunity cost of holding tradeable spectrum than to ALFs based on market value.
- 4.23 As set out in paragraph 3.4 above, firms normally pay a market price for the inputs they use. This provides a clear signal as to the opportunity cost of these inputs. While H3G does not currently pay ALF for its UKB 3.4 GHz spectrum, given the recent 3.4 GHz auction it is likely that it has a clear signal as to the opportunity cost of its UKB 3.4 GHz spectrum. The current ALF for UKB's 3.6 GHz spectrum is well below the opportunity cost of that spectrum.
- 4.24 Even if the MNOs' decision-makers have a good awareness of the opportunity cost of their spectrum licences, they might not be so responsive to these opportunity costs in practice, for instance:
- a) decision-makers may not themselves have incentives to fully consider opportunity costs e.g. if strong pressures are put on managers to reduce or contain their operating budgets, but less importance is placed on realising untapped revenue sources such as might arise from selling spectrum (as noted in the SRSP).<sup>56</sup> This is an example of a "principal-agent" situation, in which managers (the agents acting on behalf of the principals, i.e. shareholders) may have different objectives to shareholders.
  - b) decision-makers may not give equal weight to opportunity costs because of the way in which they are "framed". Studies have shown that decisions can be affected by whether outcomes are framed in terms of losses or gains, with losses carrying greater weight than equivalent gains. This implies that managers may be more responsive to the direct cost of a licence fee than the foregone revenues from trading spectrum.
- 4.25 As previously noted in the context of ALFs for 900 MHz and 1800 MHz<sup>57</sup>, we have received MNO submissions that we consider are consistent with our view on opportunity costs. These submissions detailed pressures that mobile managers would face to increase prices or delay investment in response to higher ALFs, which would not arise if the opportunity cost of foregone receipts was already fully reflected by decision-makers.
- 4.26 As such, we consider there is a risk that H3G may not fully account for the opportunity cost of its UKB 3.4 GHz and 3.6 GHz spectrum. We recognise this risk may be smaller in this case than in situations where there has not been a recent auction of spectrum in the same band. On balance, however, we consider that setting an ALF at market value is likely to secure optimal spectrum use by creating appropriate incentives to hold or release spectrum.

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<sup>56</sup> SRSP, paragraph 4.203.

<sup>57</sup> See paragraph 5.46 of *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* statement, December 2018, and paragraph 5.48 of *Annual Licence Fees for 900 MHz and 1800 MHz frequency bands* consultation, June 2018, <https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-900-1800-mhz>.

## Spectrum trades

- 4.27 We recognise that there have been instances of spectrum trades, such as Qualcomm's 1.4 GHz licence or trades of 28 GHz licences. There have also been spectrum reallocations via acquisitions (such as H3G's acquisition of UKB, which held the 3.4 GHz and 3.6 GHz spectrum to which this consultation relates). However, we note that:
- a) In respect of the trade of 40 MHz of 1.4 GHz spectrum, our understanding is that Qualcomm initially purchased this spectrum for a different technology (mobile television) that did not transpire as commercially successful.<sup>58</sup> This created a strong incentive for Qualcomm to relinquish this spectrum, which is less likely to apply in the case of MNOs with profitable mobile businesses. Furthermore, Qualcomm subsequently intended to promote the use of Supplemental Downlink (SDL) technology internationally, giving it an extra incentive to trade this spectrum to a mobile user (as this could help to drive demand for a device ecosystem which supports this use in the 1.4 GHz band).
  - b) H3G indirectly purchased the 40MHz of 3.4 GHz spectrum and 80 MHz of 3.6 GHz spectrum to which this consultation relates as part of its acquisition of UK Broadband along with all UK Broadband's assets, including other spectrum holdings in higher frequency bands. Acquiring an entire operator and all its holdings in a given band would be a costly way of reallocating spectrum to another user with a higher value for that spectrum. We therefore do not consider that this example indicates that efficient trades would necessarily be realised – which are likely to be for increments of spectrum, not the existing licensee's entire holding of 3.4 GHz and 3.6 GHz spectrum.
  - c) 28 GHz licences are regional licences that were auctioned for Broadband Fixed Wireless Access (rather than spectrum which was directly assigned for use in mobile access networks).<sup>59</sup> Some of the initial licence holders (e.g. Energis) ceased operations shortly after trading the licences, indicating that they held a particularly low value for the licence at that time, while other licences have changed hands due to company acquisitions (e.g. the licences bought by Vodafone from Cable and Wireless, who bought them from Thus PLC). We do not consider that these instances are particularly relevant to the likelihood of efficient trades occurring for 3.4 GHz and 3.6 GHz spectrum.
- 4.28 In any case, these relatively limited examples do not suggest the presence of a liquid spectrum market. Our view is not that operators necessarily or entirely ignore the opportunity cost of their spectrum holdings, but that they may be less responsive to

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<sup>58</sup> See: <https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2008/ofcom-awards-spectrum-licence-to-qualcomm-uk-spectrum-ltd>. Qualcomm's press release said it intended to use this spectrum to explore emerging business models and advanced mobile technologies. See: <https://www.qualcomm.com/news/releases/2008/05/16/qualcomm-wins-40-mhz-l-band-spectrum-uk-auction>.

<sup>59</sup> See paragraph 3.10, Ofcom, *Variation of 28 GHz Broadband Fixed Wireless Access Licences*, Consultation, December 2012, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0022/63922/28\\_ghz\\_consultation.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0022/63922/28_ghz_consultation.pdf)

foregone revenue from trading spectrum than to ALFs based on market value. This view is not contradicted by the existence of limited trades at other frequencies.

#### Impact on trading of ALFs based on market value

- 4.29 We have considered whether setting ALFs at market value could *deter* efficient spectrum trades, for instance by reducing the scope to overcome transaction costs.
- 4.30 We previously considered this risk in the context of the SRSP. We recognised that a spectrum trade could reveal new information about the opportunity cost of spectrum, which, if fully reflected in future ALFs, could in theory deter the trade from occurring or create a risk of circularity.<sup>60</sup> We reflected this risk in our SRSP principles, in particular by making clear that we will interpret such market valuations with care and not apply them mechanically to set reference rates and AIP fees (see AIP Principle 7).<sup>61</sup> We consider that there is benefit to licensees in having some certainty over what fees will be over the longer-term and revisions up or down to ALFs in response to individual market events would not be conducive to providing such predictability to licensees.
- 4.31 Consistent with this, we envisage such a period of stability in the real level of ALFs for 3.4 GHz and 3.6 GHz spectrum going forward. We would therefore be unlikely to review ALFs for UKB's 3.4 GHz and 3.6 GHz spectrum within the five years after implementing them save in very exceptional circumstances, and we would also propose to retain them beyond that date unless there were grounds to believe that a material misalignment had arisen between the level of these fees and the value of the spectrum, in keeping with our general policy on fee reviews. Moreover, to date, we have only reviewed and adjusted AIP-based fees in other spectrum bands in limited circumstances.<sup>62</sup>
- 4.32 In any case, in the present context, we are not using any information from secondary market trades to inform ALFs for UKB's 3.4 GHz and 3.6 GHz spectrum. As set out in Section 3, our assessment of market value is based on amounts bid for 3.4 GHz spectrum in the recent PSSR auction.
- 4.33 For these reasons, we do not consider that there is a risk to future efficient trades from setting ALFs for UKB's 3.4 GHz and 3.6 GHz spectrum based on our estimate of market value.
- 4.34 Finally, we do not consider that the disincentive to trade spectrum would be stronger if the only benefit to the licence holder is savings in annual fees, as opposed to a cash windfall that can be reinvested in the network. First, a saving in ALF payments could be used to

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<sup>60</sup> See paragraph 4.264 of the SRSP.

<sup>61</sup> "AIP Principle 7 (use of market valuations): We will take account of observed market valuations from auctions and trading alongside other evidence where available when setting reference rates and AIP fee levels. However, such market valuations will be interpreted with care and not applied mechanically to set reference rates and AIP fees." See page 4 of the SRSP statement.

<sup>62</sup> For instance, in 2016 we suspended a review of spectrum fees for fixed links and satellite services until we had more certainty on the future of these bands. See: <https://www.ofcom.org.uk/consultations-and-statements/category-1/review-spectrum-fees-fixed-links-satellite>.

reinvest in the network and if ALFs are set at market value, the avoided payments would be expected to be the same (or similar) to the likely proceeds from a sale of the same amount of spectrum. Second, as we have explained above, direct costs such as licence fees are likely to place stronger pressures upon managers than the foregone receipts that could be obtained by trading spectrum.

#### **Risk that ALFs are set above market value**

4.35 We recognise that setting ALFs above market value would not secure the optimal use of spectrum, and that there is a greater risk to optimal use of spectrum from setting fees too high than too low. However, given the recent auction of 3.4 GHz spectrum in the UK and our conservative interpretation of the evidence from that auction (as discussed in detail in Section 3), we consider that we have adequately addressed this risk.

#### **Overall view**

4.36 Our provisional view is that setting ALFs based on our estimate of market value will secure optimal spectrum use and therefore give effect to our statutory duty at section 3(2) of the Communications Act. Although H3G as the licence-holder may be a particularly high-value user of the UKB 3.4 GHz spectrum, and new spectrum awards may play some role in addressing the demand of other operators, efficient use of this spectrum may also come from other users being able to access the UKB 3.4 GHz and 3.6 GHz spectrum in the future. Furthermore, while we also recognise that mobile operators can trade spectrum licences, we consider there is a risk that MNOs may be less responsive to the opportunity cost of holding spectrum (through forgoing the revenue from trading it) than to ALFs based on market value. This implies that trading may not in itself be sufficient to ensure that spectrum is allocated most efficiently.

#### **Impact on consumers**

4.37 In general, and consistent with our wider policy on spectrum fees, we consider that retail prices should reflect the input cost of spectrum, and this does not reflect a market failure, or markets failing to work in the interests of consumers. As such, it would not be appropriate to maintain the price of ALF spectrum below its market value in order to artificially suppress consumer prices through a mobile spectrum subsidy.

4.38 As such, we consider that setting ALFs in accordance with market value will provide efficient price signals for the use of scarce spectrum by operators. This will benefit consumers by ensuring that spectrum is used in the most efficient way for the provision of downstream services for which there is greatest value. If setting ALFs at these levels led to an increase in prices for mobile services (which is not certain), we would expect consumers to adjust their purchasing decisions towards other substitute goods and services which can be supplied at lower cost (with inputs appropriately reflecting the cost of supply), or for which they derive greater value. We would expect this to improve overall consumer outcomes.

- 4.39 Alternatively, if setting ALFs at market value encourages spectrum release which facilitates expansion by rival operators or even entry by another operator, it could also result in greater competition and lower retail prices for mobile services for consumers.
- 4.40 In contrast, if the price of UKB's 3.4 GHz and 3.6 GHz spectrum is below opportunity cost, there is a risk that it will continue to be held by H3G even if it is not the highest value user of that asset. This is harmful to consumers and society more widely, particularly in recognition of the scarcity of this spectrum, its asymmetric allocation between MNOs and the scope for demand and technology to change through time. We consider this harm to the prospects for long-term efficiency and consumer welfare to be enough to set ALFs based on our estimate of market value even if consumer prices for today's mobile services might be lower with subsidised use of UKB's 3.4 GHz and 3.6 GHz spectrum.
- 4.41 We have also considered the impact of our proposals on vulnerable consumers, including those with protected characteristics under the Equality Act 2010. As noted above (and explained below), retail prices might fall for all consumers if there is a pro-competitive impact in markets for wireless and mobile services. However, even if ALFs at market value do lead to higher consumer prices (which is not certain):
- a) Firstly, as explained above, we do not consider that this would represent markets failing to work in the interests of consumers, including vulnerable consumers.
  - b) Secondly, in terms of the magnitude of any impact, this would represent an increase in average mobile subscriptions of around 36p per month (approximately 2%).<sup>63</sup> We do not consider this would likely create or worsen affordability issues for vulnerable customers currently using mobile services.<sup>64</sup> We also have no reason to believe the impact would be concentrated on one form of tariff or another (i.e. it would not disproportionately fall on tariffs taken by vulnerable consumers).
  - c) Thirdly, if otherwise efficient markets are not serving vulnerable consumers effectively, we prefer to intervene with targeted measures to address such concerns.
- 4.42 We have sought to apply a policy based on efficient price signals which, in general, should lead to better welfare outcomes. In doing so we have considered where there are potential adverse implications on consumer welfare that would cause us to depart from our policy based on efficient pricing of spectrum. As explained in this section and in accordance with our primary duty to further the interests of citizens and consumers, we have not identified

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<sup>63</sup> The proposed ALFs would increase H3G's ALF payments by around £43m per year. That is the equivalent to around £4.30 per active customer per year (36p per active customer per month). An increase in retail revenue of this amount would be equivalent to around a 2% increase in its gross ARPU (which in 2017 was £18.07 per month). This assumes that ALFs would be passed through in full, which would likely overstate the true impact. Gross ARPU and active customer figures from 3UK's FY17 results. See <http://www.threemediacentre.co.uk/~media/Files/T/Three-Media-Centre/documents/fy-17-financial-kpis-final.pdf>

<sup>64</sup> We note that our latest affordability tracker research shows mobile services are generally affordable; around 3% of people had difficulties paying for a mobile service (including smartphone) in the last year. This research was published on 1 October on our website. See: <https://www.ofcom.org.uk/research-and-data/data/statistics/stats18#october>.

or seen any reasons which we consider would justify departing from setting ALFs at market value.

- 4.43 We recognise that setting ALFs above market value could lead to worse outcomes for consumers than setting ALFs below market value. As discussed above in paragraph 4.35, we consider that we have adequately addressed this risk to our statutory duties in our interpretation of the evidence on market value.

## Impact on investment

- 4.44 Our view is that investment decisions should reflect the true costs of inputs. This is achieved by setting ALFs based on market value, as this requires operators to pay the opportunity cost of their spectrum holdings.
- 4.45 We have already recognised that setting ALFs above market value could lead to inefficient investment outcomes, but given the recent auction of 3.4 GHz spectrum in the UK and our conservative interpretation of the evidence from that auction, we consider that we have addressed this risk.
- 4.46 We consider that it is important to distinguish between efficient and inefficient investment and that the appropriate way to consider investment impacts is the impact on efficient investment. In this respect, we consider that capital markets impose an important discipline on investment decisions by firms, and where investments are made in the absence of this discipline there is a risk that managers will make inefficient investments as a result, for example, of optimism bias, escalation of commitment, or moral hazard.<sup>65</sup>
- 4.47 We recognise that setting ALFs at market value may in some cases disincentivise existing licence-holders (in this case, H3G) from making investments which they would otherwise have made. However, we consider that outcome is likely to be efficient because the licence-holder will either pursue alternative, more efficient solutions (taking account of the true cost of all inputs) or will choose not to invest (thereby avoiding over-investment in spectrum-based solutions). This position is explained in the SRSP<sup>66</sup> and summarised in paragraph 4.10 above.
- 4.48 We do not consider that ALFs based on our estimate of market value will necessarily lead to lower investment levels. Furthermore, even if stakeholders identified evidence of specific investments which would be made with internal funds in the event of lower ALFs, but which would not be made if ALFs were set at market value, our provisional view remains that this would not be a sufficient reason to set ALFs below market value. This is because:

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<sup>65</sup> Optimism bias is the tendency for managers to be overly optimistic in their assessment of an investment; escalation of commitment is the tendency to continue with a particular investment rather than change course even when faced with negative outcomes; and moral hazard is the risk that managers make risky investment decisions because it will be shareholders rather than the manager that bears the risk.

<sup>66</sup> Paragraph 4.213-4.214 and 4.239, SRSP statement

- a) As explained in paragraph 4.46, to the extent that this is due to managers viewing internal funding as a cheaper source of finance, it could reflect a risk of firms making (inefficient) investment decisions which lack full capital market discipline.
- b) Even if it reflected the presence of a possible information failure on the part of capital markets (i.e. where external providers of finance have less information on the quality and riskiness of the company's investments), this does not necessarily mean that we should intervene by subsidising the use of spectrum. Such an intervention (i.e. setting ALFs below market value) would effectively be an unconditional subsidy for MNOs, which would not be targeted at the potential market failure in question.

## Impact on competition

- 4.49 Our view on spectrum fees and competition, as set out in the SRSP, is that fees are unlikely to introduce distortions to competition in downstream markets when they reflect the opportunity cost of spectrum.<sup>67</sup> However we said in the SRSP that we would consider the potential effect of spectrum fees on competition on a case-by-case basis.
- 4.50 We consider that setting ALFs at market value places MNOs with different mixes of (auctioned and non-auctioned) spectrum on a more level footing. In other words, there is a risk that setting the ALF of UKB's 3.4GHz and 3.6 GHz spectrum below market value could have an adverse competition impact by effectively giving H3G a discount or "subsidy" relative to the other MNOs who acquire their entire 3.4 GHz or 3.6 GHz spectrum at auction.
- 4.51 We have also considered the risk that setting the ALF for UKB's 3.4 GHz and 3.6 GHz spectrum based on market value could affect competition by leading H3G as the licence-holder to relinquish spectrum which it needs to be credible. For the reasons set out below, we do not consider this is a likely response to the ALF for UKB's 3.4 GHz and 3.6 GHz spectrum being set at market value.
- 4.52 This is because of the divisibility of a given holder's spectrum and our expectation of diminishing marginal value for additional blocks at a given frequency. Even if ALFs were set above the marginal private value to H3G of some of its 3.4 GHz or 3.6 GHz spectrum, it is unlikely that the ALF will be above the private value of the spectrum blocks which it requires to be credible (as any operator who needs a particular block of spectrum in order to be credible is likely to place a high valuation on it).
- 4.53 Finally, we have not identified any reasons why it might be appropriate to selectively discount UKB's 3.4 GHz and 3.6 GHz spectrum below market value to promote downstream competition. We have recently assessed competition in the UK mobile services sector as

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<sup>67</sup> SRSP statement, paragraph 4.68.



part of our Statement on the award of 2.3 GHz and 3.4 GHz spectrum, and we consider that the current provision of mobile services is generally working well, with the four MNOs competing strongly and prices remaining relatively low compared to other countries.<sup>68</sup> Even if this were not the case, changing one competitor's relative input costs via a reduction in ALFs is unlikely to be the most effective approach to promote such competition.

4.54 Overall, therefore, our provisional view is that setting ALFs for UKB's 3.4 GHz and 3.6 GHz spectrum based on our estimate of market value is consistent with promoting competition.

## Provisional view on setting ALFs based on market value

4.55 For the reasons set out in this section, we provisionally consider that setting ALFs based on our conservative estimate of market value (i.e. £31.1m per 5 MHz):

- a) will secure the optimal use of spectrum which we consider to be in the interests of UK citizens and consumers;
- b) benefit consumers in the long run by ensuring that spectrum is used in the most efficient way for the provision of downstream services for which there is greatest value. We recognise that it could lead to higher consumer prices than if ALFs were set at a discount to market value. However, we consider that retail prices should reflect the resource costs of spectrum, and this does not represent a market failure, or markets failing to work in the interests of consumers;
- c) can be expected to promote efficient investment; and
- d) are consistent with promoting competition.

4.56 Therefore, our provisional view is that setting ALFs for UKB's 3.4 GHz and 3.6 GHz spectrum at the levels identified in section 3 will best meet our statutory duties in setting spectrum licence fees.

**Question 4:** Do you agree with our provisional conclusion that fees set based on our estimate of market value will best meet our statutory duties?

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<sup>68</sup> See paragraph 1.14, Ofcom, Award of the 2.3 GHz and 3.4 GHz spectrum bands, Competition issues and Auction Regulations, Statement, July 2017, [https://www.ofcom.org.uk/data/assets/pdf\\_file/0022/103819/Statement-Award-of-the-2.3-and-3.4-GHz-spectrum-bands-Competition-issues-and-auction-regulations.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0022/103819/Statement-Award-of-the-2.3-and-3.4-GHz-spectrum-bands-Competition-issues-and-auction-regulations.pdf). We will update this assessment as part of our preparation for the design of the award of 700 MHz and 3.6-3.8 GHz spectrum.



## 5. Provisional conclusions and implementation

### Levels of ALFs for 3.4 GHz and 3.6 GHz spectrum

- 5.1 As discussed in Section 4, our view is that setting ALFs at a conservative estimate of the market value of the spectrum will best meet our statutory duties.
- 5.2 As summarised in Section 3, paragraph 3.66, our estimate of the base level of annual licence fees for 3.4 GHz and 3.6 GHz spectrum based on market value, expressed in April 2018 prices (i.e. before adjustment for CPI inflation), is £0.358m per MHz.

### Implementation

- 5.3 This section sets out how we propose to implement the revised fees proposed in this consultation, including:
- a) Phasing in;
  - b) Implementation of inflation indexation; and
  - c) Application of revised fees.

#### Phasing in

- 5.4 We have considered whether it is appropriate to phase in the new fee rates over time for UKB's 3.4 GHz and 3.6 GHz licences.

#### 3.4 GHz

- 5.5 As discussed in section 2, we said in our October 2014 statement on UK Broadband's 3.4 GHz licence variation that this licence would be subject to an annual AIP fee following the expiry of the initial term of the licence in July 2018. We also said that bids and prices from the 3.4 GHz award are expected to provide a good indication of the opportunity cost of spectrum at the time of the auction.
- 5.6 There has therefore been a long notice period that fees would be increased to reflect the opportunity cost of this spectrum.
- 5.7 In view of this, we consider that there should not be a phase-in period for the 3.4 GHz licence fees. We propose that the full new fees will be due on the last day of the month following the month in which we publish our final statement and, subsequently, on each anniversary of that date. We note that, in order for this date to become the annual payment date for UKB's 3.4 GHz spectrum, we also anticipate varying the payment date in UKB's 3.4 GHz licence pursuant to paragraph 6 of Schedule 1 of the Wireless Telegraphy Act. This is because, although Ofcom has not to date levied fees on UKB's 3.4 GHz spectrum, UKB's licence refers to a payment date of 17 July (annually). This consultation

therefore also constitutes notice, under paragraph 7 of Schedule 1 of the Wireless Telegraphy Act, of our proposal to vary the terms of UKB's 3.4 GHz licence. Whilst we cannot specify the precise payment date at this stage, we are proposing (as explained above) that it will be the last day of the month following the month in which we publish our final statement.

### 3.6 GHz

- 5.8 For UKB's 3.6 GHz licence, we are proposing to introduce new fees for this licence at an earlier date than we had previously indicated. We also note that, as discussed in sections 2 and 3, the 3.6 GHz spectrum is subject to some short-term constraints which will mean that H3G will not be able to roll-out mobile services in all parts of the UK until these constraints have been removed. The majority of these constraints will be removed by June 2020<sup>69</sup>.
- 5.9 We therefore propose a phase-in period for fees for this licence. Specifically, we are proposing that - in addition to the fees that it is already due to pay on 31 December 2018 and 31 December 2019 under the 2011 Regulations in respect of the 3.6 GHz spectrum - H3G will be required to pay 50% of the difference between the current level of fees (under the 2011 Regulations) and the proposed higher level of fees until the end of June 2020. These additional amounts would be collected by way of a 'top-up' mechanism that is set out in the draft Regulations on which we are now also consulting<sup>70</sup>. This phase-in period would commence on the last day of the month following the month in which we publish our final statement and would end on 29 June 2020.
- 5.10 We are proposing that fees at the full rate of £0.358m per MHz (adjusted for inflation) would be payable from 30 June 2020 onwards. In order to bring the new fees into alignment with the annual payment date for the 3.6 GHz spectrum (which is 31 December), we are proposing to levy fees at the full rate between 30 June 2020 and 30 December 2020 on a pro-rated basis.<sup>71</sup> From 31 December 2020, we are proposing to levy fees at the full rate on the usual (i.e. annual) basis.<sup>72</sup> At this point, the 2011 Regulations will no longer prescribe the fees payable in respect of UKB's 3.6 GHz spectrum (although they will continue to prescribe the fees payable by UKB in respect of its 3.9 GHz spectrum at 3925-4009 MHz).

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<sup>69</sup> See paragraph 2.13 for more details.

<sup>70</sup> In particular, please see Regulations 5 and 6 of the draft Regulations at Annex 6 of this consultation.

<sup>71</sup> See, in particular, Regulation 7 of the draft Regulations.

<sup>72</sup> See, in particular, Regulation 8 of the draft Regulations.

**Question 5:** Do you agree with our proposal to introduce ALFs for UKB's 3.4 GHz spectrum immediately, and to phase in the revised ALFs for UKB's 3.6GHz spectrum in two steps as described?

## Implementation of inflation indexation

5.11 We have converted the lump sum value of ALF to an annual figure that is specified in real terms. We therefore consider it appropriate to increase the ALF to reflect inflation.

5.12 Specifically, we propose a formula for calculating each year's ALF ( $ALF_t$ ) that would incorporate an annual increase in ALF in line with inflation, as measured by the CPI index. In particular, we propose that the nominal value of ALF would be inflated by the ratio:

$$\left[ \frac{CPI_t}{CPI_0} \right]$$

where:

- $CPI_0$  is the level of the CPI (all items) index in April 2018 (which is 105.4);<sup>73</sup> and
- $CPI_t$  is the latest available figure for the same index published by the Statistics Board.

5.13 The draft fees regulations published at Annex 6 set out the formula that we propose to use to derive inflation-adjusted ALF rates. The accompanying notice set out at Annex 6 explains how this formula would work in further detail.

## Application of the revised fees

5.14 The fees in the draft fees regulations would remain applicable until we amend or revoke them. This means that, in effect, ALFs are set for an indefinite period and are not time limited. We consider that there is benefit in a period of certainty for licensees. We would therefore be unlikely to review ALFs in the five years after implementation save in very exceptional circumstances, and would also propose to retain them beyond that date unless there were grounds to believe that a material misalignment had arisen between the level of these fees and the value of the spectrum, in keeping with our general policy on fee reviews. This proposed approach means that we do not intend to review the level of ALFs for UKB's 3.4 GHz and 3.6 spectrum after the forthcoming auction for 700 MHz and 3.6-3.8 GHz spectrum.

## This consultation

5.15 We invite comments on our proposals and the basis for them, and on the drafting of our proposed fee regulations.

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<sup>73</sup> We use April 2018 because the auction for 3.4 GHz ended in that month and we consider it reasonable to assume the lump sum value relates to that month.

**Question 6:** Do you have any other comments that you wish to make in respect of the proposals that we make in this consultation?

# A1. Responding to this consultation

## How to respond

- A1.1 Ofcom would like to receive views and comments on the issues raised in this document, by 5pm on 11 February 2019.
- A1.2 You can download a response form from <https://www.ofcom.org.uk/consultations-and-statements/consultation-response-coversheet>. You can return this by email or post to the address provided in the response form.
- A1.3 If your response is a large file, or has supporting charts, tables or other data, please email it to [reuben.braddock@ofcom.org.uk](mailto:reuben.braddock@ofcom.org.uk), as an attachment in Microsoft Word format, together with the cover sheet (<https://www.ofcom.org.uk/consultations-and-statements/consultation-response-coversheet>).
- A1.4 Responses may alternatively be posted to the address below, marked with the title of the consultation:
- Reuben Braddock  
Ofcom  
Riverside House  
2A Southwark Bridge Road  
London SE1 9HA
- A1.5 We welcome responses in formats other than print, for example an audio recording or a British Sign Language video. To respond in BSL:
- Send us a recording of you signing your response. This should be no longer than 5 minutes. Suitable file formats are DVDs, wmv or QuickTime files. Or
  - Upload a video of you signing your response directly to YouTube (or another hosting site) and send us the link.
- A1.6 We will publish a transcript of any audio or video responses we receive (unless your response is confidential)
- A1.7 We do not need a paper copy of your response as well as an electronic version. We will acknowledge receipt if your response is submitted via the online web form, but not otherwise.
- A1.8 You do not have to comment on all the issues raised in the consultation if you do not have a view; a short response on just one point is fine. We also welcome joint responses.
- A1.9 It would be helpful if your response could include direct answers to the questions asked in the consultation document. The questions are listed at Annex 4.
- A1.10 It would also help if you could explain why you hold your views, and what you think the effect of Ofcom's proposals would be.

- A1.11 If you want to discuss the issues and questions raised in this consultation, please contact Reuben Braddock on 020 7981 3108, or by email to [reuben.braddock@ofcom.org.uk](mailto:reuben.braddock@ofcom.org.uk).

## Confidentiality

- A1.12 Consultations are more effective if we publish the responses before the consultation period closes. In particular, this can help people and organisations with limited resources or familiarity with the issues to respond in a more informed way. So, in the interests of transparency and good regulatory practice, and because we believe it is important that everyone who is interested in an issue can see other respondents' views, we usually publish all responses on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk), as soon as we receive them.
- A1.13 If you think your response should be kept confidential, please specify which part(s) this applies to, and explain why. Please send any confidential sections as a separate annex. If you want your name, address, other contact details or job title to remain confidential, please provide them only in the cover sheet, so that we don't have to edit your response.
- A1.14 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and try to respect it. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.15 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's intellectual property rights are explained further at <https://www.ofcom.org.uk/about-ofcom/website/terms-of-use>.

## Next steps

- A1.16 Following this consultation period, Ofcom plans to publish a statement in the first half of 2019.
- A1.17 If you wish, you can register to receive mail updates alerting you to new Ofcom publications; for more details please see <https://www.ofcom.org.uk/about-ofcom/latest/email-updates>

## Ofcom's consultation processes

- A1.18 Ofcom aims to make responding to a consultation as easy as possible. For more information, please see our consultation principles in Annex 2.
- A1.19 If you have any comments or suggestions on how we manage our consultations, please email us at [consult@ofcom.org.uk](mailto:consult@ofcom.org.uk). We particularly welcome ideas on how Ofcom could more effectively seek the views of groups or individuals, such as small businesses and residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.20 If you would like to discuss these issues, or Ofcom's consultation processes more generally, please contact Jacqui Gregory, Ofcom's consultation champion:

**Annual Licence Fees for UK Broadband's 3.4 GHz and 3.6 GHz spectrum**

Jacqui Gregory  
Ofcom  
Riverside House  
2a Southwark Bridge Road  
London SE1 9HA  
Email: [corporationsecretary@ofcom.org.uk](mailto:corporationsecretary@ofcom.org.uk)

## A2. Ofcom's consultation principles

### **Ofcom has seven principles that it follows for every public written consultation:**

#### **Before the consultation**

- A2.1 Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. If we do not have enough time to do this, we will hold an open meeting to explain our proposals, shortly after announcing the consultation.

#### **During the consultation**

- A2.2 We will be clear about whom we are consulting, why, on what questions and for how long.
- A2.3 We will make the consultation document as short and simple as possible, with a summary of no more than two pages. We will try to make it as easy as possible for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.
- A2.4 We will consult for up to ten weeks, depending on the potential impact of our proposals.
- A2.5 A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.
- A2.6 If we are not able to follow any of these seven principles, we will explain why.

#### **After the consultation**

- A2.7 We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.



## A3. Consultation coversheet

### BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

### CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing

Name/contact details/job title

Whole response

Organisation

Part of the response

If there is no separate annex, which parts? \_\_\_\_\_

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If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

### DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

## A4. Consultation questions

**Question 1:** Do you agree with our proposal to set ALFs in respect of UKB's 3.6 GHz spectrum at the same rates as for UKB's 3.4 GHz spectrum?

**Question 2:** Do you have any views on our provisional conclusion to use the marginal opportunity cost to other users to calculate the lump sum value for the purposes of setting ALFs for these bands? Please provide any evidence you have to support your position.

**Question 3:** Do you agree with our proposed approach to annualisation?

**Question 4:** Do you agree with our proposal to introduce ALFs for UKB's 3.4 GHz spectrum immediately, and to phase in the revised ALFs for UKB's 3.6GHz spectrum in two steps as described?

**Question 5:** Do you agree with our provisional conclusion that fees set based on our estimate of market value will best meet our statutory duties?

**Question 6:** Do you have any other comments that you wish to make in respect of the proposals that we make in this consultation?

## A5. Notice of proposed regulations

### Notice of proposals

- A5.1 This notice is given in accordance with section 122(4) and (5) of the Wireless Telegraphy Act and covers a proposal to make a statutory instrument.
- A5.2 This proposed statutory instrument sets out how we would give effect to Ofcom's proposals to set the fees for spectrum in the 3480 – 3500 MHz and 3580 – 3600 MHz frequency bands (the "**3.4 GHz Spectrum**") and in the 3600 – 3680 MHz frequency band (the "**3.6 GHz Spectrum**") set out in this consultation document, if our final decisions following the overall consultation process were in line with our current proposals. We refer to the 3.4 GHz Spectrum and the 3.6 GHz Spectrum together as the "**Relevant Spectrum**" in this notice.

### Proposed regulations

- A5.3 Ofcom has the power under sections 12 and 122(7) of the Wireless Telegraphy Act to make regulations to prescribe sums payable in respect of wireless telegraphy licences.
- A5.4 Ofcom proposes to make regulations to prescribe the sums payable for the use of the Relevant Spectrum by a particular "Spectrum Access" licence class.
- A5.5 A draft of the regulations is set out at Annex 6 and their general effect is set out in this Annex.
- A5.6 Hard copies of this notice and the proposed regulations can be obtained from:
- Reuben Braddock  
Ofcom  
Riverside House  
2A Southwark Bridge Road  
London  
SE1 9HA
- Email: [reuben.braddock@ofcom.org.uk](mailto:reuben.braddock@ofcom.org.uk)
- Tel: 020 7981 3108
- A5.7 Comments or representations with respect to the proposed regulations are invited by 5pm on **Monday 11 February 2019**. Comments should be sent to the contact named at the above address.
- A5.8 Following completion of the overall consultation process, Ofcom intends to make the final regulations as soon as practicable.

## General effect of the proposed Wireless Telegraphy (Licence Charges for the 3.4 GHz frequency band and the 3.6 GHz frequency band) Regulations 2019

### The legislative framework

- A5.9 Under section 12 of the Wireless Telegraphy Act, Ofcom may make regulations to prescribe sums payable in respect of wireless telegraphy licences. When doing so, section 122(7) of the Wireless Telegraphy Act enables Ofcom to make different provisions for different cases and to make incidental provisions.
- A5.10 Ofcom is now giving notice of its proposal to make the Wireless Telegraphy (Licence Charges for the 3.4 GHz frequency band and the 3.6 GHz frequency band) Regulations 2019 (the "**Proposed Regulations**"), which would give effect to Ofcom's proposals, as set out in this consultation.

### The general effect of the Proposed Regulations

- A5.11 The Proposed Regulations will prescribe the sums which are payable for the use of the Relevant Spectrum by the holder(s) of a particular licence class. These sums would be payable from the last day of the month following the month in which we publish our final statement, although we are proposing that the fees payable in respect of the 3.6 GHz Spectrum will be phased-in and, specifically, that fees at the full rate will not be payable until 30 June 2020. This is discussed in further detail below.

### Entry into force of the Proposed Regulations

- A5.12 The final regulations will be made after Ofcom has concluded its consultation process on the fees and made final decisions as to the level of fees payable.
- A5.13 Regulation 1(2) provides that all but one of the provisions in the Proposed Regulations will come into force as soon as practical after making. As explained above, we expect these provisions to come into force in the month following that in which we publish our final statement.
- A5.14 The one provision whose entry into force will be delayed is Regulation 3. The purpose of this provision is to amend Schedule 2 of the Wireless Telegraphy (Licence Charges) Regulations 2011 (the "**2011 Regulations**") so as to ensure that the 2011 Regulations no longer prescribe fees for the use of the 3.6 GHz Spectrum by the holder of a licence belonging to the "Spectrum Access 3.6 GHz" licence class. This is discussed in further detail below. Regulation 1(2) provides that Regulation 3 will come into force on 30 December 2020.

## Extent of application of the Proposed Regulations

A5.15 The Proposed Regulations will apply in the United Kingdom, but would not extend to the Channel Islands or to the Isle of Man. For the avoidance of doubt, the Proposed Regulations will not modify the sums prescribed for the licences belonging to the following licence classes: "Fixed Wireless Access (3.5, 3.6, 10GHz— Guernsey)", "Fixed Wireless Access (3.5, 3.6, 10GHz— Jersey)" and Fixed Wireless Access (3.5, 3.6, 10GHz— Isle of Man)".

## Definitions

A5.16 Regulation 2 defines the meaning of a number of terms which are relevant to understand the other provisions in the Proposed Regulations.

A5.17 In particular, the definitions of "licence", "3.4 GHz frequency band" and "3.6 GHz frequency band" are relevant to define the scope of the Proposed Regulations, which will prescribe the fees payable by the holders of a licence belonging to the "Spectrum Access 3.5 GHz" and "Spectrum Access 3.6 GHz" licence classes for the use of the radio frequencies within the Relevant Spectrum bands (namely, the 3480 – 3500 MHz, 3580 – 3600 MHz and 3600 – 3680 MHz frequency bands).

A5.18 For the avoidance of doubt, other users of the spectrum included within such bands would not be required to pay the fees prescribed in the Proposed Regulations. Further, the Proposed Regulations are only intended to prescribe fees for use of the Relevant Spectrum bands; they are not intended to prescribe fees for the use of any other frequency bands (for example, the 3935 – 4009 MHz frequency band).

## The fees payable for the 3.4 GHz Spectrum

A5.19 Regulation 4 prescribes the fee payable on the first payment date and on each anniversary of that date by the holder(s) of a "Spectrum Access 3.5 GHz" licence for the 3.4 GHz Spectrum.

A5.20 The first payment date in respect of the 3.4 GHz Spectrum will be specified expressly in the final regulations and we expect this to be the last day of the month following the month in which we publish our final statement. For the purposes of this notice, we refer to this as the "**First Payment Date**". Subsequent payments will be due on the anniversary of the First Payment Date.

A5.21 The fee payable on the First Payment Date and on each subsequent payment date would be calculated on a per MHz basis. As explained in this consultation, we propose that these fees will be derived by means of the formula set out in regulation 4(2), which adjusts the "base level" of ALF by inflation. The "base level" of ALF reflects Ofcom's estimate of the market value of the 3.4 GHz Spectrum at the "base date" of April 2018, and our provisional view is that the base value should be £358,000 per MHz.

A5.22 According to the formula specified in regulation 4(2), the fee payable on the First Payment Date and on each anniversary of that date will be derived by multiplying the base level of

ALF by the ratio between the latest available inflation index at the date falling one month before the date when the fee is due and the corresponding inflation index related to April 2018.

- A5.23 The formula uses the CPI as the relevant indicator of inflation, which is the index that is currently proposed by Ofcom. The relevant figures for CPI will be published by the Statistics Board.
- A5.24 The CPI published by the Statistics Board for April 2018 is 105.4. The other relevant CPI figure which goes into the formula to determine the amount of the fee payable each year is the latest available CPI at the date falling one month before the date when the fee is due. Inflation data related to each month is usually published between the 15th and the 20th of the following month. Therefore, the latest available CPI should normally relate to the second to last month before the date when the fee is due (i.e. 2 months before the date when the fee is due). This mechanism for the inflation adjustment should give sufficient time to allow Ofcom to notify licensees of the sum due approximately one month before the payment date.

### **The fees payable for the 3.6 GHz Spectrum**

- A5.25 Unlike the 3.4 GHz Spectrum, the holder of a "Spectrum Access 3.6 GHz" licence is already required to pay fees for use of the 3.6 GHz Spectrum. These fees are currently prescribed by the 2011 Regulations and, as explained in this consultation, are significantly lower than those on which we are now consulting. The annual payment date for these fees is 31 December.
- A5.26 We anticipate that, at the time we make our final regulations, some (if not all) of the fees due on 31 December 2018 under the 2011 Regulations in respect of the 3.6 GHz Spectrum will have been paid to Ofcom. We have also explained in this consultation our provisional view that the increased fees for the 3.6 GHz Spectrum on which we are now consulting should be phased in, with 50% of the difference between the current level of fees (under the 2011 Regulations) and the proposed higher level of fees payable until 29 June 2020. For the purposes of this notice, we refer to this difference as the "**Fee Difference**".
- A5.27 As a result of the above, there are a number of provisions within the Proposed Regulations regarding the fees payable in respect of the 3.6 GHz Spectrum. In particular:
- a) Regulations 5 and 6 prescribe the fees payable during the phasing-in period. We propose that this period will start on the First Payment Date (i.e. the last day of the month following the month in which we publish our final statement) and end on 29 June 2020. During this period, we are proposing that – in addition to paying the fees prescribed by the 2011 Regulations – additional fees should be payable which amount to 50% of the Fee Difference; and
  - b) Regulations 7 and 8 prescribe the fees payable after the phasing-in period, and provide for fees at the full rate of £358,000 per MHz (adjusted for inflation).

A5.28 We discuss each of these Proposed Regulations in turn, starting with the fees payable *during* the phasing-in period and then turning to the fees payable *after* the phasing-in period.

Fees payable during the phasing-in period

- A5.29 As explained above, we are proposing that this period will start on the First Payment Date and end on 29 June 2020. Given that the annual payment date for the Spectrum Access 3.6 GHz licence class is 31 December, this phasing-in period will straddle two separate charging years and the Proposed Regulations therefore contain two separate provisions which prescribe the fees payable during this period. We are not proposing to amend the 2011 Regulations in respect of the 3.6 GHz Spectrum during this period.
- A5.30 Regulation 5 of the Proposed Regulations provides for the holder of a Spectrum Access 3.6 GHz licence to supplement (or “top-up”) its payments under the 2011 Regulation shortly after publication of our final statement. The First Payment Date will be expressly specified in the final regulations and, as noted above, we expect this to be the last day of the month following the month in which we publish our final statement.
- A5.31 The additional fee payable on the First Payment Date would be calculated on a per MHz basis, and would be in addition to the fee already payable (as at 31 December 2018) by the holder of a Spectrum Access 3.6 GHz licence in respect of its use of the 3.6 GHz Spectrum under the 2011 Regulations. We propose that this fee will be derived by means of the steps set out in regulation 5(2), and note that the first of these steps will use a formula identical to that outlined at paragraphs A5.21 to A5.24 above.
- A5.32 The additional fee will be a pro-rated amount for the period between the First Payment Date and the end of 2019. Regulation 5(2)(d) ensures that the fee is appropriately pro-rated by taking the additional 50% Fee Difference, dividing it by 12 and multiplying it by a number which is yet to be specified. That number would be specified explicitly in the final regulations and would be the number of whole months between the date on which the additional fee becomes payable and 31 December 2019.
- A5.33 Regulation 6 of the Proposed Regulations is similar to Regulation 5, albeit that it prescribes the additional fee payable in respect of the 3.6 GHz Spectrum for the remainder of the phasing-in period. This fee will be in addition to the fee already payable (as at 31 December 2019) by the holder of a Spectrum Access 3.6 GHz licence in respect of its use of the 3.6 GHz Spectrum under the 2011 Regulations, and will be a pro-rated amount for the six-month period from 31 December 2019 to the end of June 2020.
- A5.34 Where licensees have elected to pay the fees due under the 2011 Regulations (on either 31 December 2018 or 31 December 2019) in instalments over the year, their instalment plans will be automatically adjusted to reflect the additional fees due under Regulations 5 or 6.

Fees payable after the phasing-in period

- A5.35 Regulation 7 of the Proposed Regulations prescribes the fee payable in respect of the 3.6 GHz Spectrum on 30 June 2020. This is the date from which fees at the full rate of £358,000 per MHz (adjusted for inflation) will be payable. However, because the annual

payment date for the Spectrum Access 3.6 GHz licence class is 31 December, Regulation 7 provides for a pro-rated fee for the six-month period between 30 June 2020 and 30 December 2020.

- A5.36 We propose that this fee will be derived by means of the steps set out in regulation 7(2), and note that the first of these steps will use a formula identical to that outlined at paragraphs A5.21 to A5.24 above. We are proposing that this fee will be in addition to any sums payable on 31 December 2019 under the 2011 Regulations in respect of the 3.6 GHz Spectrum and it will, therefore, take effect as a “top-up” similar to the arrangements set out in Regulations 5 and 6.
- A5.37 Where licensees have elected to pay the fees due under the 2011 Regulations (on 31 December 2019) in instalments over the year, their instalment plans will be automatically adjusted to reflect the additional fee due under Regulation 7.
- A5.38 We are proposing that, on 30 December 2020, Schedule 2 of the 2011 Regulations will be amended. The effect of this amendment would be to exclude, from those Regulations, the 3.6 GHz Spectrum whose use is authorised by the Spectrum Access 3.6 GHz licence class. This would mean that the 2011 Regulations would no longer prescribe fees in respect of that particular spectrum. This proposed amendment is set out at Regulation 3 of the Proposed Regulations. From 31 December 2020, the fees payable in respect of this spectrum would be prescribed exclusively by the Proposed Regulations and, in particular, by Regulation 8.
- A5.39 Regulation 8 prescribes the fee payable in respect of the 3.6 GHz Spectrum on 31 December 2020 and on each anniversary of that date. We propose that these fees will be derived by means of the formula set out in regulation 8(2) which, like that used in Regulation 4 in respect of the 3.4 GHz Spectrum, adjusts the “base level” of ALF by inflation. For the reasons set out in this consultation, we are proposing that the base level of ALF for the 3.6 GHz Spectrum be the same as for the 3.4 GHz Spectrum (i.e. £358,000 per MHz).

### **Payment by instalments**

- A5.40 Regulation 9(1) will retain the current option of paying by 10 monthly instalments, in line with regulation 4 of the 2011 Regulations. This option will be available in respect of any payments due under Regulation 4 or Regulation 8 (i.e. payments which are not pro-rated “top-ups” to fees already payable under the 2011 Regulations).
- A5.41 As explained at paragraphs A5.34 and A5.37 above, where a licensee is required to “top-up” the fees due under the 2011 Regulations by virtue of Regulations 5, 6 or 7 of the Proposed Regulations, and that licensee has elected to pay the fees due under the 2011 Regulations in instalments over the year, their current instalment plans will be automatically adjusted by Ofcom to reflect the new fee levels.<sup>74</sup>

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<sup>74</sup> See, in particular, Regulations 5(4), 6(4) and 7(4) of the Proposed Regulations



## A6. Draft of the Proposed Regulations

*[Please see next page]*

**2019 No.**

**ELECTRONIC COMMUNICATIONS**

**The Wireless Telegraphy (Licence Charges for the 3.4 GHz frequency band and the 3.6 GHz frequency band) Regulations 2019**

*Made - - - - - [date to be specified in the final regulations]*

*Coming into force - - - Regulation 3 — 30 December 2020*

*Remainder — [date to be specified in the final regulations]*

The Office of Communications (“OFCOM”) make the following Regulations in exercise of the powers conferred by sections 12, 13(2) and 122(7) of the Wireless Telegraphy Act 2006 (“the Act”) <sup>(a)</sup>.

Before making these Regulations, OFCOM has given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with section 122(4)(b) of the Act, and have considered the representations made to them before the time specified in the notice in accordance with section 122(4)(c) of the Act.

**Citation and commencement**

**1.**—(1) These Regulations may be cited as the Wireless Telegraphy (Licence Charges for the 3.4 GHz frequency band and the 3.6 GHz frequency band) Regulations 2019.

(2) Regulation 3 shall come into force on 30 December 2020 and all other regulations shall come into force on [**date to be specified in the final regulations**].

**Interpretation**

**2.** In these Regulations—

“concurrent licence” means a licence held by two or more persons;

“licence” means a wireless telegraphy licence of the Spectrum Access 3.5 GHz licence class or Spectrum Access 3.6 GHz licence class, as applicable;

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<sup>a</sup> 2006 c. 36.

“licensee” means a person who is the holder of a licence authorising use of national channels within the 3.4 GHz frequency band or national channels within the 3.6 GHz frequency band, as applicable;

“MHz” means megahertz;

“OFCOM” means the Office of Communications;

“2011 Regulations” means the Wireless Telegraphy (Licence Charges) Regulations 2011<sup>(a)</sup>;

“3.4 GHz frequency band” means the frequencies from 3480.0 to 3500.0 MHz and 3580.0 to 3600.0 MHz; and

“3.6 GHz frequency band” means the frequencies from 3600.0 to 3680.0 MHz.

### **Amendment to the 2011 Regulations**

3.—(1) The 2011 Regulations shall be amended in accordance with paragraph (2).

(2) In Schedule 2 (Licence Charges and Payment Intervals), under the heading “Fixed Wireless Access”, insert “(exclusive of 3600 – 3680 MHz)” immediately after the reference to “Spectrum Access (3.6 GHz)”.

### **Licence charges payable for the 3.4 GHz frequency band**

4.—(1) On [date to be specified in the final regulations] and on each anniversary of that date, the holder of a licence authorising the use of frequencies in the 3.4 GHz frequency band shall pay to OFCOM a total sum which comprises the amount in pounds sterling calculated in accordance with paragraphs (2) and (3) for each authorisation under its licence of use of 1 MHz in that band.

(2) The formula to calculate the total sum mentioned in paragraph (1) is—

$$S = £358,000 \times (\text{CPI}_t \div \text{CPI}_0)$$

where:

- (a) “S” means the total sum;
- (b) “CPI<sub>t</sub>” means the most recent CPI value that is available on [date to be specified in the final regulations] of the year in which the charges are due;
- (c) “CPI<sub>0</sub>” means the CPI value for April 2018; and
- (d) “CPI” means the monthly all items consumer prices index published by the Statistics Board.

(3) If the total sum calculated in accordance with paragraph (2) is a fraction of a whole number, it shall be rounded down to the nearest whole number.

### **Licence charges payable for the 3.6 GHz frequency band for the period between [date to be specified in the final regulations] and 30 December 2019**

5.—(1) On [date to be specified in the final regulations], in addition to any sums due or paid under regulation 4 of the 2011 Regulations as of 31 December 2018 in respect of the 3.6 GHz frequency band, the holder of a licence authorising the use of frequencies in the 3.6 GHz frequency band shall pay to OFCOM an amount calculated in accordance with this regulation.

(2) The additional amount shall be calculated as follows—

- (a) an amount shall be calculated in accordance with the formula set out in regulation 8(2) for each authorisation under its licence of use of 1 MHz in that band;

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<sup>a</sup> SI 2011/1128, amended by S.I. 2011/1128, amended by S.I. 2012/1075, 2013/917, 2014/1295, 2015/1334, 2015/1995, 2016/643. S.I. 2015/1709 was quashed by an order of the Court of Appeal on 22 November 2017.

- (b) the amount shall be reduced by the amount of any payments due to OFCOM in respect of the 3.6 GHz frequency band under regulation 4 of the 2011 Regulations as of 31 December 2018;
  - (c) the amount shall be divided by two; and
  - (d) the amount shall be divided by 12 and multiplied by [**number to be specified in the final regulations**].
- (3) If the total sum calculated in accordance with paragraph (2) is a fraction of a whole number, it shall be rounded down to the nearest whole number.
- (4) If—
- (a) the licensee is making payments in instalments pursuant to regulation 4(8) of the 2011 Regulations in respect of a sum due under those regulations as of 31 December 2018; and
  - (b) the last instalment date has not passed;
- the total additional amount due pursuant to this regulation shall be paid in equal instalments on each of the instalment dates remaining between [**date to be inserted in the final regulations**] and 30 December 2019.

**Licence charges payable for the 3.6 GHz frequency band for the period between 31 December 2019 and 29 June 2020**

6.—(1) On 31 December 2019, in addition to any sums due under regulation 4 of the 2011 Regulations as of that date in respect of the 3.6 GHz frequency band, the holder of a licence authorising the use of frequencies in the 3.6 GHz frequency band shall pay to OFCOM an amount calculated in accordance with this regulation.

- (2) The additional amount shall be calculated as follows—
- (a) an amount shall be calculated in accordance with the formula set out in regulation 8(2) for each authorisation under its licence of use of 1 MHz in that band;
  - (b) the amount shall be reduced by the amount of any payments due to OFCOM in respect of the 3.6 GHz frequency band under regulation 4 of the 2011 Regulations as of 31 December 2019;
  - (c) the amount shall be divided by two; and
  - (d) the amount shall be divided by 12 and multiplied by six.
- (3) If the total sum calculated in accordance with paragraph (2) is a fraction of a whole number, it shall be rounded down to the nearest whole number.
- (4) If—
- (a) the licensee is making payments in instalments pursuant to regulation 4(8) of the 2011 Regulations in respect of a sum due under those regulations as of 31 December 2019; and
  - (b) the last instalment date has not passed;
- the total additional amount due pursuant to this regulation shall be paid in equal instalments on each of the instalment dates between 31 December 2019 and 29 June 2020.

**Licence charges payable for the 3.6 GHz frequency band for the period between 30 June 2020 and 30 December 2020**

7.—(1) On 30 June 2020, in addition to any sums due under regulation 4 of the 2011 Regulations as of 31 December 2019 in respect of the 3.6 GHz frequency band, the holder of a licence authorising the use of frequencies in the 3.6 GHz frequency band shall pay to OFCOM an amount calculated in accordance with this regulation.

- (2) The amount referred to in paragraph (1) shall be calculated as follows—
- (a) an amount shall be calculated in accordance with the formula set out in regulation 8(2) for each authorisation under its licence of use of 1 MHz in that band;

- (b) the amount shall be reduced by the amount of any payments due to OFCOM in respect of the 3.6 GHz frequency band under regulation 4 of the 2011 Regulations as of 31 December 2019; and
  - (c) the amount shall be divided by 12 and multiplied by six.
- (3) If the total sum calculated in accordance with paragraph (2) is a fraction of a whole number, it shall be rounded down to the nearest whole number.
- (4) If—
- (a) the licensee is making payments in instalments pursuant to regulation 4(8) of the 2011 Regulations in respect of a sum due under those regulations as of 31 December 2019; and
  - (b) the last instalment date has not passed;
- the total additional amount due pursuant to this regulation shall be paid in equal instalments on each of the instalment dates remaining between 30 June 2020 and 30 December 2020.

### **Licence charges payable for the 3.6 GHz frequency band from 31 December 2020**

**8.**—(1) On 31 December 2020 and on each anniversary of that date, the holder of a licence authorising the use of frequencies in the 3.6 GHz frequency band shall pay to OFCOM a total sum which comprises the amount in pounds sterling calculated in accordance with paragraphs (2) and (3) for each authorisation under its licence of use of 1 MHz in that band.

(2) The formula to calculate the total sum mentioned in paragraph (1) is—

$$S = \text{£}358,000 \times (\text{CPI}_t \div \text{CPI}_0)$$

where:

- (a) “S” means the total sum;
- (b) “CPI<sub>t</sub>” means the most recent CPI value that is available on 30 November of the year in which the charges are due;
- (c) “CPI<sub>0</sub>” means the CPI value for April 2018; and
- (d) “CPI” means the monthly all items consumer prices index published by the Statistics Board.

(3) If the total sum calculated in accordance with paragraph (2) is a fraction of a whole number, it shall be rounded down to the nearest whole number.

### **Payment by instalments**

**9.**—(1) If OFCOM receive notice from a licensee of the licensee’s intention to make payment in ten equal instalments of the total sum prescribed in either regulation 4 or regulation 8, the licensee—

- (a) shall not be required to make payment at the prescribed time other than in accordance with this paragraph; and instead
- (b) shall make payment of the sum in ten equal instalments with the first instalment to be paid to OFCOM on the day which shall be the same day as the total sum was due to be paid to OFCOM and each subsequent instalment to be paid on the same day in each of the nine consecutive months thereafter (or in a month in where there is no such day, on the last day of the month).

(2) Where at any time the licensee fails to make payment in accordance with paragraph (1)(b), the total of the outstanding instalment payments shall become immediately due for payment.

### **Concurrent licences**

**10.** In the case of a concurrent licence, the “holder of a licence” or “licensee” in these Regulations shall refer to all the concurrent holders of the licence.

Signatory text

For and by the authority of the Office of Communications