



# Update on European auctions since Ofcom's consultation on Annual licence fees for 900 and 1800 MHz spectrum

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EE response to Ofcom's consultation

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## Introduction

Ofcom has published an “Update on European auctions since Ofcom’s consultation on Annual licence fees for 900 MHz and 1800 MHz spectrum”<sup>1</sup> (the ‘Update note’), stressing that it has not yet made any decisions on the proposals put forward in its main consultation on the revision of annual licence fees (ALFs).<sup>2</sup> Ofcom notes that a further 10 auctions that have completed since it published its consultation in October 2013 “may provide relevant evidence for the purposes of estimating the market value of licences” and invites stakeholders who want to provide comments on these auctions to do so by a given date.

Despite being styled as an “update”, in asking for stakeholder feedback and noting Ofcom has not yet made any decisions, this Update note is clearly another consultation. Ofcom must be minded to use the results of the further auctions including Austria in its assessment of the lump-sum value or there would be no reason to publish this Update note. However, the Update note does not put forward any views or proposals for how Ofcom would use the new information to inform its lump-sum valuation. It contains four different suggestions for what the information Ofcom has obtained from the Austrian regulator may tell us and no commentary on the nine other auctions listed in the Update note. We provide some views on these further auctions in this response but note it is difficult for stakeholders to respond to a consultation that only relates to part of Ofcom’s ALF methodology and does not contain any specific proposals.

The Update note follows another consultation published by Ofcom in April 2014 on adopting the CPI inflation index rather than the RPI in Ofcom’s ALF methodology as first proposed.<sup>3</sup> We had similar objections to the partial way that consultation was conducted and we explained in our response that we do not believe it met Ofcom’s duties to consult.

We were very concerned by the proposal for 1800 MHz ALFs that Ofcom put forward in October 2013, which we have serious objections to. We are now becoming increasingly concerned that Ofcom’s process for updating the ALFs in line with the Government Direction is also deficient.

This note is EE’s response to the Update note. In addition we are submitting two further documents, which should be considered integral parts of EE’s response:

- a) a report by Aetha and Analysys Mason, “Addendum to review of Ofcom’s benchmarking of the value of the 1800MHz spectrum band to determine annual licence fees” (‘the Addendum’). This was commissioned jointly by Three and EE and should be read together with their “Review of Ofcom’s benchmarking of the value of the 1800MHz spectrum band to determine

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<sup>1</sup> Ofcom, 16 May 2014

<sup>2</sup> Ofcom, “Annual licence fees for 900 MHz and 1800 MHz spectrum”, Consultation, published 10 Oct. 2013

<sup>3</sup> Ofcom, “Annual licence fees for 900 MHz and 1800 MHz: methodology to derive a discount rate consistent with CPI inflation”, published 17 April 2014

annual licence fees for EE and Three” submitted to Ofcom in January 2014; and

- b) a note by Aetha and Analysys Mason, “Application of the ‘distance method’ when estimating a lump-sum value for 900MHz spectrum” (‘900 MHz note’) illustrating how the ‘distance method’, which we advocated should be applied to 1800 MHz benchmarks, can be applied consistently to 900 MHz benchmarks.

EE’s response makes the following four points:

- First, it is not appropriate for Ofcom to consult on the ‘relevance’ of evidence without making clear both (i) the methodology that will be applied to interpret that evidence and (ii) the specific conclusions that Ofcom proposes to draw from it.
- Secondly, the update note appears to indicate that, whatever methodology is being applied, Ofcom is taking a selective approach to the evidence, without any explanation of why it is doing so.
- Thirdly, the new auction results are not likely to produce meaningful information as to market value when interpreted according to the methodology set out by Ofcom in the October 2013 consultation.
- Fourthly, certain of the new auction results, namely those for Austria, the Czech Republic and Slovakia, are relevant when interpreted by mean of the distance method, but should be treated as less important evidence. The other auction results are not relevant.

Before explaining each of these four points in turn, we summarise briefly our position on the use of auction benchmarks from other European countries in order to determine lump-sum valuations for spectrum licences in the UK.

## Background

We remain of the view that Ofcom’s benchmarking analysis as presented in the October 2013 consultation is flawed, in particular with respect to 1800 MHz. The Update note does not contain any information about whether or how Ofcom intends to rectify those flaws. EE and Three commissioned Aetha and Analysys Mason to review Ofcom’s benchmarking analysis. This was documented in the “Review of Ofcom’s benchmarking of the value of the 1800 MHz spectrum band to determine annual licence fees”, which EE submitted as a part of our response to the October 2013 consultation. In summary, Aetha and Analysys Mason’s report demonstrated how Ofcom’s benchmarking analysis of the 1800 MHz lump-sum value seemed biased in favour of a higher number and proposed a better alternative:

- The report criticised the unnecessary subjectivity in Ofcom’s assessment of which benchmarks were included in the sample and what weight they were given. It provided a set of criteria, which could be used for a more objective and robust assessment of individual auctions. On the basis of those criteria, the report discussed all relevant European auctions in detail and suggested whether they should be included in the sample and classified as more or less important evidence.
- It argued that the use of absolute benchmarks cannot be justified given the difficulty associated with converting figures in other currencies from different time periods into UK equivalent values and the fact that

country/auction specific factors will always affect the resulting spectrum prices. Moreover, the report demonstrated that Ofcom's approach to relative benchmarks of calculating separate values for 1800 MHz relative to 800 MHz and 1800 MHz relative to 2.6 GHz relies on a scatter gun methodology that only helps in justifying a large range of values. Hence Ofcom's mix of absolute and relative benchmark values with several data points generated by single auctions cannot be justified.

- It proposed a much more robust and simple method of benchmarking for 1800 MHz, namely the 'distance method'. The distance method simply measures where between the 800 MHz and the 2.6 GHz prices, the 1800 MHz price is for a given benchmark auction and applies that ratio to the 800 MHz and 2.6 GHz Linear Reference Prices ('LRPs') from the UK auction. Applying the distance method to the benchmark values, which should be included in the sample, achieved an 1800 MHz lump-sum value of £8.8 to £9.4m/MHz depending on the weighting of less and more important evidence.<sup>4</sup> This is much lower than the £15m/MHz proposed by Ofcom.

Our overall critique of Ofcom's benchmark approach as outlined in Aetha and Analysys Mason's first report stands regardless of the consideration of a number of further auctions. We remain of the view that our alternative methodology is superior. With that in mind, we now outline the pertinent points in relation to Ofcom's Update note in the following four sections.

## The relevance of evidence should be considered in relation to a methodology

It is inappropriate for Ofcom to consult on the 'relevance' of evidence without explaining the methodology that will be applied to interpret that evidence and the conclusions that Ofcom proposes to draw.

First, evidence is relevant insofar as it is linked to an ultimate conclusion (in this case, an estimate of full market value) by a robust chain of reasoning. The relevance of the evidence therefore cannot be addressed in isolation, without considering the methodology that will be used to analyse the evidence and draw conclusions from it, and the specific conclusions which are said to be drawn from it. It is therefore not meaningful to consult on the 'relevance' of evidence in isolation, nor does it discharge Ofcom's duties of consultation to do so.

In order meaningfully to consult on the relevance of this evidence Ofcom would need to articulate:

- the methodology which it proposes to apply to interpret this evidence;
- why (in Ofcom's view) that methodology is apt to produce an estimate of "full market value". That must include an explanation of why (i) the data

<sup>4</sup> Aetha and Analysys Mason also noted that a wider range of £7.7m to £10.6m is achieved by excluding the two highest and lowest observations in turn. See Aetha and Analysys Mason, "Review of Ofcom's benchmarking of the value of the 1800MHz spectrum band to determine annual licence fees for EE and Three", 9 January 2014, figure 7.6

points are reliable and (ii) the data points are comparable to the sale of spectrum in the UK; and

- the specific conclusions which Ofcom would seek to draw from this particular evidence.

Second, in principle Ofcom needs to consult on whether the ALF which it proposes to impose accords with full market value and meets Ofcom's statutory objectives, and to carry out a proper impact assessment of that measure. We do not think it is appropriate to consider certain benchmark data points hypothetically or in isolation:

- Under Article 6 of the 2010 Directions,<sup>5</sup> Ofcom is required to revise ALFs for 900MHz and 1800MHz licences so that they "*reflect the full market value of the frequencies in those bands*". Ofcom is also subject to its general duties under ss.3 and 4 Communications Act 2003 and Article 8 Framework Directive,<sup>6</sup> in particular to ensure that the *eventual ALFs imposed*: (i) promote the optimal use for wireless telegraphy of the electromagnetic spectrum;<sup>7</sup> (ii) promote investment and innovation;<sup>8</sup> (iii) do not distort competition or favour one form of electronic communications network over another;<sup>9</sup> and (iv) are objective, non-discriminatory and proportionate to what they are intended to achieve.<sup>10</sup>
- Each element of Ofcom's methodology in deriving ALFs therefore cannot be considered in isolation, without considering whether the *resulting* ALF both reflects full market value and accords with Ofcom's statutory duties. It would be wrong for Ofcom to adopt an approach in which, while each step might appear justifiable if viewed in isolation, the overall result is disproportionate and the ultimate end point obscure.
- The appropriateness of individual data points can only be considered within an overall framework for the benchmark analysis that sets out how data points are evaluated.

As we have now stated in three consultation responses, Ofcom must demonstrate that its ALF proposal, taking account of all aspects of the methodology, meets the criteria of constituting a good estimate of market value.

Thirdly, Ofcom is obliged to carry out an impact assessment of its estimate of market value (compared to other possible estimates) and explain how a given estimate promotes its statutory duties: see s.7 Communications Act 2003. Ofcom is also under a duty of transparency under ss. 3(3)(a) Communications Act 2003 and Articles 3(3) and 8(5) Framework Directive. The October consultation proposed a punitive ALF and Ofcom did not explain through which mechanism that estimate of market value would work to promote its statutory duties or the objectives of the Direction. In our response to the October 2013 consultation, EE explained how an ALF for 1800 MHz at the level proposed

<sup>5</sup> The Wireless Telegraphy Act 2006 (Directions to OFCOM) Order 2010

<sup>6</sup> Directive 2002/21/EC of the European Parliament and of the Council of March 2002 on a common regulatory framework for electronic communications networks and services

<sup>7</sup> See s.3(2)(a) Communications Act 2003; Article 8(2)(d) Framework Directive.

<sup>8</sup> See s.3(4)(d) Communications Act 2003 and Article 8(5)(d) Framework Directive.

<sup>9</sup> See s.3(4)(d) and 4(3) Communications Act 2003 and Article 8(2) and 8(5)(c) Framework Directive.

<sup>10</sup> See s.3 Communications Act 2003 and Article 8(5) Framework Directive.

would affect our 4G rollout to less populated areas and/or the prices we charge consumers. We note that EU law requires that, where a national regulatory authority intends to take measures in accordance with the Common Regulatory Framework, including when imposing fees for the rights of use of radio frequencies under Article 9 of the Authorisation Directive, it must allow interested parties the opportunity to comment on the draft measure within a reasonable period: see recital 15 and Article 6 of the Framework Directive. That requires consultation on the *whole* measure in order that its impacts may properly be evaluated by consultation respondents, not a partial or piecemeal consultation. We do not believe this current consultation listing 10 auctions which have occurred since Ofcom's October consultation is sufficient to discharge that obligation.

For the avoidance of doubt, Ofcom cannot escape its obligation to explain why its method of interpreting international auction results is apt to produce a sensible or reliable estimate of market value in the UK simply by stating that it has used regulatory expertise and judgment to determine the final lump sum valuation. In the absence of a proper explanation from Ofcom as to how it proposes to interpret these auction data, EE can only comment on the relevance of this evidence (i) on the basis of an assumption that Ofcom has made no changes to its methodology; and/or (ii) on the basis of the "distance method" methodology developed Aetha and Analysys Mason for EE and Three as set out in EE's response to Ofcom's October 2013 consultation.

## Ofcom's selective approach

The update note appears to indicate that, whatever methodology is being applied, Ofcom is taking a selective approach to the evidence, without any explanation of why it is doing so. That is, in itself, a breach of Ofcom's duties of transparency and it is a matter of serious concern insofar as it indicates that both Ofcom's methodology, and any conclusions it may draw on the basis of that methodology, are flawed.

Whatever the methodology chosen, it needs to be applied consistently. It is likely to skew the results if Ofcom carries out additional analysis of, and hence gives additional weight to, certain data points but not others, unless there are objective differences which justify such differences of treatment. If Ofcom chooses to carry out further investigation of certain auction results, but not others, it is therefore incumbent on Ofcom to explain its reasons for doing so, in order to comply with its duties of transparency, and to demonstrate that it is complying with its substantive duties.

Ofcom has not explained why it appears to have given special treatment to the Austrian (and Irish) auction results, by seeking information that is not publicly available in respect of these auctions but not others. This breach of transparency is particularly concerning, in that there are serious concerns that Ofcom is adopting a methodology that is substantively flawed.

As is clearly illustrated in the Addendum, adding only Austria will drive up the result<sup>11</sup> whereas adding the Czech Republic<sup>12</sup> and Slovakia<sup>13</sup> will push down the result. Ofcom has not explained in the Update note whether, in addition to RTR it also contacted the Slovenian and the Slovakian regulators to obtain more information about the results of their auctions. We are therefore gravely concerned that without providing any clue as to how Ofcom will incorporate the additional data points and discussing only a price calculation for Austria whilst not providing any details for other auctions, the Update note seems to continue the bias that was an unfortunate feature of the analysis and conclusions regarding the 1800 MHz lump-sum valuation in Ofcom's October consultation.

Another issue of selectivity, which Ofcom must address, is the difference in methodology for estimating band specific prices from CCA auctions. For the Irish auction, Ofcom used final primary round prices (as supplied to them by Vodafone and verified by ComReg) to estimate band specific prices from the package prices. As Aetha and Analysys Mason noted in their first report, the final primary round prices from the Austrian auctions were revealed in a press release by Telekom Austria and Aetha and Analysys Mason were able to develop an estimate of band specific prices analogous to that Ofcom had developed for Ireland.<sup>14</sup> Whilst we agree with a quest to get more accurate information generally, it is not clear why Ofcom had to go through the exercise of asking the Austrian regulator, RTR to run Ofcom's LRP software. Ofcom could have estimated the prices using the same method as it did for Ireland or conversely, why Ofcom asked ComReg in Ireland only to confirm the final round prices supplied by Vodafone and not to run LRP software for Ireland as well. In the case of the Netherlands, also a Combinatorial Clock Auction (CCA) where it is not possible to infer band specific prices from the auction results, Ofcom included an estimate of band specific prices from a third party (New Street Research) as less important evidence, despite New Street Research noting that these were only one set of mathematically feasible prices based on the published results. In other words, it appears Ofcom did not ask the Dutch regulator to confirm final round prices, nor run an LRP calculation for them. Finally in the case of Switzerland, Ofcom discarded the package auction results entirely, even if, as Aetha and Analysys Mason noted, it is possible to infer

<sup>11</sup> The UK equivalent 1800 MHz lump-sum value based on the LRPs from the UK combined award of 800 MHz and 2.6 GHz and the relative value of 1800 MHz to 800 MHz and 2.6 GHz in Austria is £18.7m/MHz, more than the weighted average of £8.7 to 9.0 MHz.

<sup>12</sup> The 1800 MHz distance result from the Czech Republic is £2.8m/MHz, considerably less than the weighted average.

<sup>13</sup> The 1800 MHz distance result based only on Slovakia is £4.2m/MHz so this data point will also push down the result.

<sup>14</sup> We commented on the accuracy of final primary round prices as an estimate of the final prices paid on p. 25 of our January 2014 response to the October 2013 consultation. Using the example of the UK (which is the only country we are aware of that has published a full set of bid data following a CCA) we noted that final primary round prices are not always a good reflection of final prices. With the LRPs that Ofcom has now obtained from Austria, we have a second example of that. In their first report, Aetha and Analysys Mason estimated band specific prices in Austria based on the final primary round prices and on the basis calculated that on the basis of the distance method, the UK equivalent 1800 MHz lump-sum valuation would be £19.6m/MHz. On the basis of (the weighted average of) the LRPs now available, the UK equivalent 1800 MHz would be £18.2 MHz, i.e. considerably less. As the Austrian benchmark is so high, this difference has a significant impact on the overall result. We estimate that this change alone brings down the central distance based result for 1800 MHz down from £9.4 to £9.2m/MHz.

some band specific prices from the published results.<sup>15</sup> It may also be Ofcom's intention to discard the auction results from Slovenia and Slovakia although we cannot know that on the basis of the Update note.

So it appears Ofcom has a separate 'methodology' for estimating band specific prices from each of the CCAs it has considered. Or, rather, Ofcom has no methodology but relies on subjective analysis, which unfortunately seems not to have been sufficiently robust to avoid bias.

We ask that Ofcom:

- Approach all potential benchmark data points consistently, using a robust methodology to assess whether they should be included or not and what emphasis should be awarded to a certain data point. We are very concerned that from the Update note this does not appear to be the case.
- Develops a consistent approach for how band specific prices may be estimated from CCA results and applies this to all relevant CCAs.
- Consider price benchmarks from CCAs as less important evidence generally because, aside from the UK, such benchmarks rely on information that is not publicly available or they are estimates based on publicly available information.

As such, the Austrian data could be included as a benchmark of *relative* prices subject to confirming an estimate of band specific prices resulting from the Austrian auction using a methodology consistent with that used for other CCAs and subject to other CCAs such as Slovakia and Switzerland being included in the sample as well.

## The new auction results are not meaningful in light of Ofcom's proposed methodology

As to the relevance of the auction results under Ofcom's previous methodology, EE's position is that Ofcom's methodology is not such as to produce sensible conclusions and the new spectrum auction results, as selected and interpreted under that methodology, are not likely to produce a reliable estimate of "full market value" or indeed to comply with Ofcom's general duties.

Absolute values paid for spectrum in other countries are not meaningful benchmarks for the full market value of spectrum in the UK, for the reasons set out at section 4.1 of the Aetha and Analysys Mason's first report.<sup>16</sup> For example the absolute 1800 MHz value from the Austrian auction is, when converted to a UK equivalent estimate, higher than the UK 800 MHz prices and on that basis seems an outlier that should be discarded.

<sup>15</sup> For the Romanian CCA results, Ofcom notes the package prices were very close to reserve prices and therefore uses reserve prices as estimates of band specific prices. This raises another, and quite separate issue as we explained in our January 2014 consultation response, namely that where spectrum was awarded at the reserve price, the reserve price is likely to overstate market value.

<sup>16</sup> Aetha and Analysys Mason, "Review of Ofcom's benchmarking of the value of the 1800MHz spectrum band to determine annual licence fees for EE and Three", 9 January 2014

Using the relative values of different spectrum bands from other countries does not suffer the same weaknesses. We can avoid the difficulties associated with converting prices in other currencies and from other time periods into pound sterling. It is reasonable to assume that some country specific factors affect all bands equally and so by considering relative rather than absolute prices, we do not need to correct for those country specific factors. In particular, the relative values of spectrum bands between countries can assist in drawing inferences as to the market value for 1800 MHz (and 900 MHz) spectrum in the UK from the values paid in the UK auction of 800 MHz and 2.6 GHz at the beginning of 2013.

However, Ofcom's approach to relative values for 1800 MHz (which uses two sets of ratios- 1800 MHz / 800 MHz and 1800 MHz / 2.6 GHz) is flawed and unlikely to provide a meaningful estimate of full market value of 1800 MHz spectrum in the UK. The main effect of Ofcom's approach to relative prices for 1800 MHz is to introduce additional variance into the sample; hence our description of it as a scatter gun. Accordingly, these further spectrum auction results will not produce sensible or reliable inferences as to market value insofar as they are interpreted through the application of Ofcom's methodology.

Further, Ofcom has not produced a coherent set of criteria or justification to explain why the data points which it has selected (i) are likely to be reliable; (ii) are properly comparable to the recent UK spectrum auction; and hence (iii) are likely to produce a sensible estimate of full market value of 1800 MHz spectrum in the UK. As set out above, the Update note indicates that Ofcom continues to take a selective approach to the evidence.

## Some of the further auction results are relevant in the 'distance method'

As regards the relevance of the auction results under the 'distance method' we note that Aetha and Analysys Mason have articulated both a method for the interpretation of auction spectrum results and a coherent set of criteria for selecting and weighing data points on the basis of whether they are reliable, are capable of being interpreted by that method, and is likely to be comparable to the recent UK spectrum auction. The distance method is based upon the view that the relative values of spectrum bands between countries can assist in drawing inferences as to the market value for 1800 MHz (and 900 MHz) spectrum in the UK from the values paid in the UK auction of 800 MHz and 2.6 GHz at the beginning of 2013. In our view, spectrum results from other European auctions are therefore relevant insofar as (i) they would be selected under Aetha and Analysys Mason's criteria; and (ii) they are interpreted according to the distance method, in conjunction with the UK 800 MHz and 2.6 GHz auction results.

We already provided some comments on the auctions in Austria, the Czech Republic and Norway in our January 2014 response to Ofcom's October 2013 consultation. On the basis of Aetha and Analysys Mason's Addendum to their first report, we note that:

- The auctions in Austria, the Czech Republic and Slovakia could be included in a benchmark calculation of 1800 MHz based on the distance method but should be treated as less important evidence.
- The auction results from Norway and Slovenia cannot be included as it is not possible to work out band specific prices from the published results. (Unless Ofcom obtains non-public information from the Slovenian regulator about relative band prices.)
- The auction results from Belgium, Estonia, Finland, Latvia and Lithuania do not contain any information about the relative value of 1800 MHz.

Given Aetha and Analysys Mason already included Austria and the Czech Republic in their first report, and following an assessment of the other auctions in Ofcom's Update, the net result is that Slovakia is added to the distance calculation and the Austrian data point is amended. This in turn reduces their central estimate of the distance based lump sum valuation of 1800 MHz to £8.7m to £9.0m/MHz.

In relation to 900 MHz, Aetha and Analysys Mason note that:<sup>17</sup>

- The auction results from Austria are relevant but should be given less weight.
- The auction results from Norway and Slovenia are irrelevant, insofar as it is not possible to calculate band specific prices from published results. (Unless Ofcom obtains non-public information from the Slovenian regulator about relative band prices.)
- The auction results from Belgium, the Czech Republic, Estonia, Finland, Latvia, Lithuania and Slovakia are irrelevant because they did not award any 900 MHz spectrum.

## Next Steps

We put forward a complete alternative framework for how to determine 1800 MHz benchmark prices in our response to Ofcom's 2013 consultation. We appreciate that Ofcom needs to estimate both 900 and 1800 MHz lump-sum valuations and requires a methodology that can be applied to both bands. On further reflection, we have therefore illustrated how the distance method can be applied to 900 MHz equally. This is set out in the attached note by Aetha and Analysys Mason. There are not as many data points for 900 MHz as for 1800 MHz meaning the result should perhaps be interpreted with caution but we note this is a general challenge, which applies to Ofcom's benchmarking analysis as well. Applying the distance methodology to 900 MHz we achieve a central estimate of approx. £25m/MHz for 900 MHz compared to approx. £9m/MHz for 1800 MHz. As noted in our response to Ofcom's 2013 consultation, this set of estimates should be further verified with reference to a third subset of benchmarking data, namely the relative value of 900 MHz and 1800 MHz in the few countries where both bands were auctioned.<sup>18</sup>

<sup>17</sup> Aetha and Analysys Mason, "Application of the 'distance method' when estimating a lump-sum value for 900MHz spectrum", 13 June 2014

<sup>18</sup> Please refer to "Annual licence fees for 900 and 1800 MHz", EE response to Ofcom's consultation, January 2014. See p.23-24 in particular table 2.

In conclusion, we believe it is quite clear what Ofcom must now do:

- Revise the methodology for benchmarking lump-sum valuation presented in the October 2013 consultation and take account of the additional auctions. In particular the estimate of an 1800 MHz lump-sum value is flawed and needs to be revised regardless of the further auction benchmarks now available. This requires an objective and robust framework for determining which auctions are included in the data set and what weight is attached to each data point. Aetha and Analysys Mason have put forward a suggested list of criteria, which we encourage Ofcom to adopt. We expect the result of this exercise to find a relatively narrow range of lump-sum values with central estimates of approximately £25m/MHz for 900 MHz and £8-9m/MHz for 1800 MHz. As a final step in estimating lump-sum values, Ofcom should apply the available benchmark information on the relative value of 900 MHz to 1800 MHz in a robust way as a cross check on its lump-sum valuation.
- Net off the terminal value component as explained in our January response, section 6.1.<sup>19</sup> In the absence of any adjustment of the lump-sum values (estimated on the basis of auctions of cleared spectrum) to reflect the terminal value, there is a clear argument that Ofcom's formula used to convert lump-sum values to annual fees is incorrect.
- Convert the net lump-sum values using an appropriate and up to date, forward looking discount rate. We continue to believe this should be the real cost of debt. As argued by Vodafone in their response to Ofcom's consultation on the CPI vs. RPI inflation measure, it is not necessary to use a convoluted formula to derive this. It can be simply derived by adding the debt premium to the real risk-free rate.<sup>20</sup> With Ofcom now having published updated, lower estimates of the real risk free rate and the debt premium, this more recent information must be considered. As argued by Telefonica and Three in their responses to Ofcom's October consultation, it is not necessary to complicate matters by a tax adjustment factor.

<sup>19</sup> "Annual licence fees for 900 and 1800 MHz!", EE response to Ofcom's consultation, January 2014.

<sup>20</sup> Or alternatively, Ofcom could adopt Vodafone's lower cost of debt for the ALF calculation. As argued in Vodafone's response, under a typical price control the use of a WACC for the Hypothetical Efficient Operator ('HEO') or an average operator penalises operators who have higher cost of capital than the average. However for ALFs, the use of a WACC for an HEO would imply the opposite. Unless the discount rate is set as that of the operator with the lowest cost of capital, operators who have lower than average capital costs are penalised in that ALFs would be higher than those that would make such an operator indifferent between paying a lump-sum upfront and paying annual fees.