



**Vodafone's response to Ofcom's consultation**

**Annual licence fees for 900MHz and 1800MHz spectrum**

**April 2015**

**Non-confidential version**

## **Summary and conclusions**

Vodafone welcomes the opportunity to respond to Ofcom's *Annual licence fees for 900MHz and 1800MHz spectrum: Provisional decision and consultation* ('the February 2015 publication'), Ofcom's third consultation on the appropriate level of annual licence fees (ALFs) for 900MHz and 1800MHz.

We welcome that the proposed levels of ALF from this consultation are slightly lower than those proposed in the previous August 2014 consultation.

However we are still very seriously concerned about the proposed level of ALF and the errors and lack of conservatism in Ofcom's provisional views. Ofcom's analysis has led it to an outcome in which:

- Ofcom's latest proposal, at a base rate of £223m still represents an enormous increase in spectrum fees to the UK mobile industry at a time when the Government and Ofcom, recognising the economic value to the UK of improved mobile connectivity, are encouraging and requiring greater network investment. Ofcom has not been conservative in setting ALFs as it claims – the present proposal will still amount to an additional payment by the mobile industry of £4.1 billion over the next 20 years.
- Ofcom's proposals grossly overstate the value of 900MHz and 1800MHz. Furthermore, the changes in the present consultation from the previous one on relative valuation are unfair and discriminatory as between individual operators.
- Ofcom's analysis, in substance and in form, is marred by a number of errors of law that render it unsuitable to support a robust decision; and
- We are surprised that Ofcom might propose to conclude that although market conditions have changed enormously – specifically, the mobile industry has accepted a very significant 90% geographic coverage obligation since the last consultation – these changes have had no impact on spectrum values and fees. This flies in the face of a general view (and Ofcom's own view in July 2012) that spectrum with a coverage obligation has a lower value than spectrum that is unencumbered.

An enduring root cause of these problems is that Ofcom has never asked itself properly the purpose for which it is undertaking this review and has not carried out a proper impact assessment as it is required to do. We have made this point repeatedly during this process and urge Ofcom to re-consider it now.

Ofcom's failure to consider its overall purpose has led to both a flawed process and flawed substantive proposals. In the present consultation Ofcom cannot set out a series of 'provisional decisions' and then add consideration of coverage obligations as an afterthought. In order to carry out a fair, lawful and well-reasoned assessment, it must take account of all evidence. Part of that analysis is to incorporate the impact of the new coverage obligation in its analysis of the value of all relevant spectrum, including 800MHz, rather than tacking the coverage obligation analysis on at the end after forming a provisional view as to the level of ALFs.

Moreover, this February 2015 publication must be properly understood as a consultation on all issues relevant to the setting of ALFs. As we discuss in more detail in section 6, it is obvious that Ofcom's description of its having 'reached' a 'position' cannot describe a decision that it has already taken to issue regulations under section 12 WTA06 (or if it has, that decision has not been known to Vodafone, since no regulations have been made, as far as Vodafone is aware). The term 'provisional decision' is not used in either the CA03 or the WTA06 and has no purpose here. Therefore, Vodafone has responded fully to this consultation, by cross reference to previous responses where appropriate, and anticipates that Ofcom will wish to take full account of all stakeholder responses.

Finally Ofcom has also changed its approach between the present and the previous consultation on a number of important issues, such as the interpretation of certain auctions and a change in the likelihood of LTE900 roll-out. For the reasons set out in this submission, Vodafone is concerned that there is no sound evidence supporting such changes.

Vodafone believes that, in relation to each of the original steps, and the additional step relating to the coverage obligation, each of Ofcom's present provisional outcomes suggested in the February 2015 publication are incorrect.<sup>1</sup> Inevitably therefore, the claimed licence fee outcome that Ofcom has reached in the February 2015 consultation is also incorrect.

Specifically:

- the method used to obtain a value from the 800MHz auction is not the best one and errors in its execution have led to too high a view of the value of 800MHz spectrum even before considering the impact of the coverage commitment,
- the relative values of 900MHz in particular and to a lesser extent 1800MHz are too high,

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<sup>1</sup> With the exception of the 2600MHz value, where Ofcom's use of £5.5m per MHz is unexceptional

- the coverage obligation has had a deflating impact on spectrum value that should have been reflected in spectrum fee levels but as yet has not,
- the discount rate adopted for the annualisation process is wrong.

In this response, to avoid repetition, we do no more than summarise arguments that we have made in responses to the previous consultations. In many cases, our submissions have not been adequately dealt with, with a number of important points ignored, or treated in ways that miss the point (often, because the point that Vodafone seeks to make has been lumped in with other, broadly similar but materially different, points being made by other respondents. Vodafone respectfully asks that each of its previous submissions be considered as part of the response to the February 2015 publication.

### *This consultation response*

The main focus of this response relates to a consideration of new elements or changes introduced in the February 2015 consultation, i.e. in particular Ofcom's changes in methodology and outcome between the August 2014 and February 2015 consultation documents. We see three key changes and one new element:

- The introduction of yet another method to develop an appropriate value from the auction of 800MHz spectrum. The marginal bidder analysis from August 2014 (which replaced the linear reference price from October 2013) has been replaced by an opportunity cost analysis. While it produces a slightly lower valuation (£33m per MHz vs. £35.63m) the approach still suffers, as we discuss in section 1 below, from some of the flaws of Ofcom's version of the marginal bidder analysis. In particular both continue to derive a marginal value some way above the average value obtained in the auction whereas Vodafone's marginal bidder analysis produces an outcome where the marginal value is less than the average value. The output of the linear reference price analysis that derives the average value can at worst be the ceiling, not the floor for the appropriate value. Our view as we have previously argued is that the correct method to obtain a value from the 800MHz auction is a marginal bidder analysis. A properly constructed approach will yield a value per MHz of £17.9m to £21.4m. Even at its highest this value can be no more than £25m - £26m per MHz.

- Since the August auction Ofcom has as part of its international benchmarking analysis pushed down the relative value of 1800MHz and pushed up, by a non-trivial extent, the relative value of 900MHz, leading to an asymmetric outcome between mobile operators. As discussed in section 3 below, a conservative view should have led to the pair of relative values being pushed down from the levels in the August consultation. In particular the relative value of 900MHz against 800MHz should be around 60% rather than the 70% of Ofcom's latest analysis and the 65% of August 2014. Certainly there is no additional useful data available to Ofcom since the August consultation that can justify the Ofcom's upward revision of 900MHz relative value.

These changes have had the impact that the reduction in Ofcom's view of the 800MHz value of 9% since the August consultation has flowed through into the 1800MHz value, causing a similar decrease in value. However by contrast Ofcom's estimated absolute value of 900MHz has not changed between the two consultations – the downward movement of 800MHz and the upward relative movement in 900MHz have cancelled each other out. This is unjustified. The effect of an appropriate matching 9% reduction in the value of 900MHz, from £23m to £21m<sup>2</sup> would have been a reduction in the ALF burden on Vodafone from £61.3m to £57.3m p.a., a similar percentage to that provisionally given to the 1800MHz operators by Ofcom.

- Another change that has been made between the two consultations is in the annualisation process. Ofcom has moved from a discount rate that was derived in August 2014 from the cost of debt, to a discount rate in February 2015 that is a blended mix of cost of debt and WACC. In Vodafone's view the use of a blended rate is inappropriate. As we discuss in section 4, there are considerable problems with any blended or partial WACC based solution, and in particular with one that is certainly not conservative. The more appropriate simple cost of debt measure would have reduced Vodafone's ALF exposure from £61.3m to £54.6m p.a.
- In respect of the impact on spectrum value of the coverage commitment, Ofcom's view is anything but conservative. Despite the acknowledgement by the Secretary of State and by Ofcom that the coverage commitment will have an impact on incremental network expenditure, Ofcom's provisional view implies that it has no impact whatsoever on the level of spectrum fees. This does not appear likely –

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<sup>2</sup> Leaving the relative valuation of 900MHz at 65%

as discussed in section 2 below we do not consider that Ofcom's methodology of restricting its view to a simple direct effect on ALF is correct. Stepping back and considering the general point that spectrum with a coverage commitment (particularly the comprehensive one now applied to UK mobile operators) should have a lower value than unencumbered spectrum, we would expect to see some reduction in spectrum value and hence in spectrum fees. In considering the impact of the obligation on spectrum values, Ofcom has not followed its own methodology of the four steps to deriving ALF levels, but arbitrarily and inappropriately confined itself to a single step.

To maintain its general four step approach, Ofcom needs to identify the impact of the coverage obligation in step 1 of its analysis, i.e. in the derivation of a post-auction value of 800MHz and 2600MHz that takes account of the new factor of the obligation. This approach then allows any diminution of spectrum value to flow through the four steps to enable a revised level of ALF for 900MHz and 1800MHz.

But it is important to note that there is and must be no asymmetric effect of the new coverage commitment on individual operators – it would be very wrong to compensate individual operators for past underinvestment in coverage when as we discuss in section 2 all operators are in practice impacted similarly, by giving up coverage advantages, losing the ability to reduce future investment, as well as incurring the need for ongoing network investment in perpetuity.

Far from than taking a 'conservative' approach to weighing the evidence, Vodafone finds that Ofcom treats the evidence aggressively, inconsistently and, at times, mechanistically. Ofcom's new proposed charge levels, while less than under its first two consultations, would still represent a net additional cost to the mobile industry (and ultimately, mobile consumers) of £223m per year in real terms - nearly three and a half times the current annual cost of this spectrum (even before considering the impact of inflation). By failing to assess the significant impacts that such a decision would have, Ofcom leaves itself unable to demonstrate to the requisite standard that such an outcome is consistent with its statutory objectives.

### *Conclusion and next steps*

For all the reasons outlined above and set out more fully in the body of this response, it is clear that Ofcom cannot responsibly proceed to implement the current proposals as they stand.

Fundamentally, Ofcom needs to do three things:

- It needs to correct the various clear errors Vodafone has identified;
- In particular, it needs to reconsider its incoherent and implausible view that newly agreed mobile coverage obligations make no difference to spectrum valuation;
- It still needs to conduct a proper impact assessment with reference to its legal duties as a whole.

Failure to consult on this basis and consider these matters with an open mind risks vitiating any decision Ofcom might seek to make, for reasons set out more fully in Section 6 below. Therefore, we trust that Ofcom will reflect carefully on these submissions and acknowledge the substantive need for meaningful consultation based on an appropriate impact assessment before attempting to give effect to any final decision.

The rest of this document and the accompanying annexes consider these points in more detail.

Section 1 addresses Ofcom's step 1, the valuation of 800MHz (and 2600MHz) from the Auction. Further analysis on 800MHz value is contained in the paper from Frontier Economics entitled "An analysis of Ofcom's candidate value for 800 MHz spectrum" that forms Annex 1.

Section 2 considers how the new coverage commitment impacts the value of spectrum in general and how this should flow through Ofcom's four step process to change the level of ALF.

Section 3 considers Ofcom's step 2, the relative valuations of 900MHz and 1800MHz that can be derived from benchmarking and applied to the Auction outputs to determine an appropriate lump sum spectrum value for 900MHz and 1800MHz. The Frontier Economics paper of Annex 2, "Ofcom's International Benchmarking Analysis" also considers this in more detail.

Section 4 reviews the discount rate introduced by Ofcom in the current consultation and together with a report from Oxera that is Annex 3 produces an alternative rate. We also consider other implementation issues here, in particular the phasing in of ALF over only two years – this, whilst similar to the recent decision on MTR charge control implementation, is an inconsistently short period in comparison with Ofcom implementation decisions and expressed intentions in fixed telecoms and DTT.

Section 5 considers the insubstantial extent of Ofcom's actual conservatism in the present consultation's provisional outcomes.

Section 6 contains our legal analysis of the deficiencies in Ofcom's approach. We append for Ofcom's convenience the executive summaries from our two previous consultation responses.

## **Section 1: Derivation of 800MHz and 2600MHz lump sums from the auction**

### **Summary**

The estimate of market value for 800MHz spectrum is one of the most important inputs to setting an appropriate level of ALF, in particular for 900MHz spectrum. Ofcom has accepted that setting ALF at an appropriate level can encourage a more efficient allocation of spectrum. In addition, Ofcom accepts that setting the ALF too high could result in inefficiencies, with spectrum being relinquished that is not then acquired by another operator. Ofcom has also accepted that there is an asymmetry in risks in setting the level of ALF above the true market clearing value, compared to setting the price below the market clearing value.

We do not believe that the value that Ofcom has provisionally arrived at for 800MHz in the February 2015 consultation is correct – the value is implausibly high, even before any consideration of the downward effect on spectrum values of the new coverage obligation.

Vodafone's position is that a suitable marginal bidder analysis is the correct way to proceed – such an analysis must show a value below the prices paid. A properly constructed marginal value for 800MHz spectrum can be estimated at £17.9 - £21.4m per MHz if Ofcom strips out contiguity and/or strategic premiums from EE's bids. However, even including such premiums and adopting Ofcom's suggested marginal unit of 2\*10MHz, proper application of the marginal bidder analysis suggests the opportunity cost of 800MHz is no greater than £25m - £26m per MHz<sup>3</sup>, a value which is consistent with the proposition that prices actually paid<sup>4</sup> in the auction are an upper bound for market value.

We discuss this in more detail below and in Frontier's accompanying annex "An analysis of Ofcom's candidate value for 800 MHz spectrum".

### **The value of 800MHz spectrum**

Ofcom has recognised that operators' valuations of spectrum are complex, with a number of non-linearities in valuation. This is consistent with Ofcom's approach to the 2013 spectrum auction, where it implemented a sophisticated

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<sup>3</sup> Without co-existence costs.

<sup>4</sup> In fact, this is in line with Ofcom's previously preferred LRP methodology (from the October 2013 consultation) with revenue constraints (£26.85m/MHz) and the average prices paid (£26.81m/MHz)

combinatorial approach to allow the optimal allocation of spectrum, given these non-linearities in valuation.

Ofcom also sets out a number of complications arising from the structure of the 2012 Ofcom auction design, which means that bid information may be distorted or may not provide a good indicator of the appropriate value when setting the ALF of 900MHz.

However, Ofcom has not applied this understanding systematically when estimating the appropriate value of 800MHz spectrum in the UK from the bid data in the UK auction. This unsystematic approach is reflected in the fact that Ofcom has changed the approach to estimating the market value of 800MHz spectrum over the consultation process. Ofcom now provisionally proposes an ‘opportunity cost’ approach to estimate the value of spectrum, having previously consulted on a ‘marginal bidder’ approach and before that ‘linear reference pricing’.

We have previously argued in our response to earlier consultations that:

- Linear reference prices calculated with revenue constraints are likely to provide a ceiling to the values that can be obtained in the UK auction. The most appropriate rate to use is one defined from the marginal bidder analysis, inside the value derived from the linear reference price approach – this as we argued in our response to the October 2013 consultation should lead to a market value of between £17.9 and £21.5m per MHz.
- Ofcom’s second valuation method, of a marginal bidder analysis that yields a value above the revenue constraint was seriously flawed, for a variety of different reasons, discussed in detail in our response to the second, August 2014, consultation. We reiterated our belief in our response to this consultation that the outcome of a proper marginal bidder analysis is between £17.9m and £21.4m. In the alternative even if *“irrelevant drivers of value are included, and Ofcom’s proposed 2\*10MHz marginal unit is adopted, a marginal bidder analysis supports an 800MHz value slightly below the average price paid – between £25m and £26m per MHz. It does not and cannot properly support Ofcom’s proposed value of £32.6m”*<sup>5</sup> (before co-existence costs)

Ofcom’s new analysis, like the previous marginal bidder analysis version continues to be one that is flawed. In particular:

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<sup>5</sup> Vodafone response to August 2014 consultation, at page 3

- The calculated opportunity costs are based on the potential for significant re-arrangement of spectrum under a combinatorial approach, which allows for an optimal reallocation of spectrum. Such reallocation is not possible in an ALF regime.
- The opportunity cost results are inflated by contiguity premia in bids for 800MHz spectrum, which would not be applicable when operators are valuing spectrum in the 900MHz band, which is obviously not contiguous with the 800MHz band.

Ofcom has used this new approach to calculate two values: for a 2\*5MHz increment and a 2\*10MHz increment. The values arrived at per MHz for these are widely spread. Ofcom has then adopted an interpolated value between the two to determine a candidate value to use as its input for calculation of the ALF. The process to derive this “weighted” average has not been disclosed. Ofcom has not provided any details of how it derived the weighting used to derive the candidate value.

Ofcom has also used a number of other methodologies, including approaches it previously considered and rejected, as supporting evidence for the candidate value and to argue that the candidate value is conservative. However, Ofcom’s arguments are partial and are not soundly based.

An appropriate estimate of the value of UK 800MHz spectrum for input to the ALF calculation would:

- Be based on the value at which spectrum may be efficiently relinquished by one operator and acquired by another;
- Adjust valuations from the auction for premia which would, or may, not be available for ALF spectrum relinquished or acquired;
- Take account of all the available bid data to provide a robust estimate of value; and
- Set the value conservatively, in view of the complexity of the bid data, to take account of the asymmetry of risk.

The approach that Vodafone set out in its response to the initial ALF consultation is consistent with these principles. We continue to believe that it is correct and that the flaws in the opportunity cost method make Ofcom’s provisional view of a valuation of £30m before any co-existence premium implausible and very certainly not conservative.

Vodafone’s position is that in assessing the evidence to identify the marginal value of an appropriate unit of 900MHz spectrum in the UK (which is the task now facing Ofcom) it should use a marginal bidder analysis *if* there is good

evidence that the indicated value is *below* the value implied by an analysis of prices paid in the Auction, for example due to the influence of reserve prices on the prices paid. Ofcom now recognises in its international benchmarking analysis that auctions clearing at reserve prices implies that those auction prices overstate market value but it does not apply this logic to the UK Auction. Vodafone demonstrated in Annex 1 of its response to the August 2014 consultation that the marginal bidder analysis does show a value below the prices paid, and that a properly constructed marginal value for 800MHz spectrum can be estimated at £17.9 - £21.4m per MHz if Ofcom strips out contiguity and/or strategic premiums from EE's bids.

However, even including such premiums and adopting Ofcom's suggested marginal unit of 2\*10MHz discussed below, proper application of the marginal bidder analysis suggests the opportunity cost of 800MHz is no greater than £25m - £26m per MHz<sup>6</sup>, a value which is consistent with the proposition that prices actually paid<sup>7</sup> in the auction are an upper bound for market value.

Ofcom's marginal bidder analysis from August 2014 and the new opportunity cost analysis from February 2015 are both faulty because they come to the same surprising and implausible result that gives a greater value to spectrum than the sums paid in the Auction. Unless there has been a material increase in the value of UK spectrum since the Auction or the rules governing spectrum acquisition, whether by trade or auction have changed fundamentally since then, this cannot be correct. In fact the evidence that Ofcom has put forward on post-auction values points in the opposite direction (even before any consideration of the further diminution in value that must have arisen from the post-auction acceptance of the coverage obligation – this we discuss in section 2 below). Therefore, the sums paid in the Auction must provide a ceiling to the market value of that spectrum.

The virtue of a marginal bidder analysis lies in revealing whether or not the value to the marginal bidder is lower than the average sum paid. Neither the marginal bidder analysis nor the opportunity cost approach can be reasonably used to suggest that the value to the marginal bidder is greater than the average sum paid in the Auction.

By producing an estimate which does not reflect the market value of the ALF bands as a whole, the Ofcom marginal bidder analysis and the opportunity cost outcomes do not meet the requirements of the Government Direction. Furthermore by considering each band in isolation, the Ofcom marginal bidder

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<sup>6</sup> Without co-existence costs.

<sup>7</sup> In fact, this is in line with Ofcom's previously preferred LRP methodology (from the October 2013 consultation) with revenue constraints (£26.85m/MHz) and the average prices paid (£26.81m/MHz)

analysis and the opportunity cost outcome are inconsistent with the multi-band design of the UK 4G auction, in which bidders were encouraged to express complementarities for packages of 800MHz and 2600MHz spectrum.

We consider these matter in more detail in the Frontier annex, which forms part of our response.

### *Spectrum caps*

One significant element that Ofcom has not properly addressed is its dismissal of the auction spectrum cap as a constraint on EE when establishing marginal or opportunity cost value.

*“We consider that the overall spectrum cap of 210 MHz which applied in the 4G auction should be treated as non-binding on a forward-looking basis. This is because of the upcoming availability of additional mobile spectrum, including the 1.4 GHz, 2.3 GHz and 3.4 GHz bands. In our recent consultation on the forthcoming award of 2.3 GHz and 3.4 GHz bands we have also proposed an overall spectrum cap, but at the much higher level of 310 MHz. There is a significant implication for the market value of 800 MHz for the purpose of ALF, because the auction prices and opportunity costs of 800 MHz in the auction were affected by the bids of EE whose winning package was at the overall cap. This meant that the opportunity costs in the auction of 800 MHz were reduced, compared to the forward-looking opportunity cost, by EE’s value for additional spectrum, reflecting a trade-off between more 800 MHz spectrum and less 2.6 GHz spectrum.”<sup>8</sup>*

We do not agree with this conclusion at all. The relevant question is whether Ofcom’s spectrum caps in the Auction (or more precisely the reasoning and evidence which led Ofcom to impose them) would be a constraint on EE’s current acquisition of additional sub 1GHz spectrum. In this connection any discussion of the provisional 2.3GHz and 3.4GHz spectrum cap is wholly irrelevant. There are at least two significant reasons for this:

- The assessment of the spectrum cap for the 2.3GHz and 3.4GHz spectrum auctions was made from the starting point of the established post auction holdings, with the additional lower utility spectrum being overlaid as an increment. What Ofcom is speculating about is the possibility that the outcomes of the auction could be changed – it is in effect treating the addition of 2.3GHz and 3.4GHz spectrum as equivalent to a change in holding of sub1GHz spectrum. This is very different – it follows that if the marginal bidder EE were to acquire

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<sup>8</sup> February consultation at paragraph 2.42

additional sub 1GHz spectrum, then another operator would be relinquishing that spectrum and its post auction holdings of sub 1GHz spectrum would be reduced. This would lead to a change in the balance of such spectrum between operators, in favour of EE.

But Ofcom's 2012 competition assessment concluded that in order to be credible national wholesalers, both O2 and Vodafone would need to acquire 2\*10MHz of 800MHz<sup>9</sup>. For Ofcom to recklessly abandon this view and suggest that 2.3GHz and 3.4GHz spectrum would be a palliative that would allow Vodafone and O2 to remain credible national wholesalers, without any detailed specific analysis of the implications of any adjustment to post-auction holdings is simply wrong<sup>10</sup>.

- The utility of the 2.3GHz and 3.4GHz to a mobile operator is in any event very much less than sub 1GHz, 1800MHz or even 2.6GHz paired spectrum. By applying a 310MHz provisional cap whose increase from the 2012 cap of 210MHz relates to the release of this lower utility 2.3GHz and 3.4GHz spectrum Ofcom is in effect equating sub 1GHz spectrum with 2.3GHz and 3.4GHz spectrum. This cannot be correct, and is not sustainable in any coherent analysis. Whilst the improved knowledge of the future release of these bands does have a downward impact on the value of spectrum in general, as we have previously argued, this relates to the long term use of these additional bands.

The reasons for the lower current utility of 2.3GHz and 3.4GHz spectrum (both of which are unpaired) do not need going into here. However the Ofcom 2.3GHz and 3.4GHz consultation in November 2014 makes very clear the lower value of this spectrum. In comparison with 800MHz which had a reserve price of £22.5m<sup>11</sup> per MHz in the 2012 Auction (and Ofcom now assesses its value at £33m), the consultation suggests that 2.6GHz unpaired had a value of £0.5m - £1.3m per MHz, that 2.3GHz is worth a similar sum, and that the reserve price of 3.4GHz should be £0.2m per MHz. These are one and two orders of magnitude smaller than Ofcom's view of the value of 800MHz.

- Furthermore we note that Ofcom published on 8<sup>th</sup> April 2015 a consultation entitled "Inclusion of the 1452-1492 MHz, 2350-2390MHz and 3410-3600MHz bands in the Mobile Trading Regulations". This notes at paragraph 1.7 in connection with the 1400MHz band:

*"We have not at this stage established any specific concerns which might result from any particular operator acquiring the 1452-*

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<sup>9</sup> Ofcom July 2012 Statement, at paragraphs 4.132 and 4.134

<sup>10</sup> Particularly given EE's earlier launch of 4G than all competitors

<sup>11</sup> Plus £3m co-existence cost

*1492MHz spectrum but recognise that issues could arise which warrant further consideration. To the extent that competition concerns arise in respect of a given trade, we can consider them at the time that any trade occurs”.*

This seems to suggest that Ofcom would be prepared to formally consider the impact on competition if an operator, for example EE, were to acquire some of the 1400MHz spectrum. But this is a very different position from the apparent refusal in the present context to conduct an analysis on changes in sub 1GHz spectrum holdings by considering the likelihood of EE being allowed to acquire additional sub 1GHz spectrum. Given the much higher value and present utility of sub 1GHz spectrum over 1400MHz spectrum we find this apparent contradiction perplexing.

### *The new coverage obligation*

The other matter that we find perplexing is the apparent absence in Ofcom’s step 1 analysis of any consideration as to whether the value of 800MHz spectrum has been changed in any way by the new coverage obligation. Given that

- the coverage obligation cannot have been anticipated at the time of the auction,
- but compliance with it can be satisfied by any spectrum held by each operator, and that
- 800MHz represents the lowest frequency band in use for the “non-legacy” technology of 4G and
- is a band that is held by all four operators who have received the coverage obligation,

It would seem obvious that there might be some effect on the post auction value of the 800MHz spectrum. At the very least, the question should have been properly addressed.

As we discuss in section 2 below Vodafone has concluded that the new obligation must have had an impact on 800MHz spectrum and other “coverage spectrum” generally, and consider alternative ways in which this diminution in value can be recognised, on 800MHz and other bands, and hence on the level of ALF.

We consider the valuation of 800MHz before the overlay of the coverage obligation in more detail in the attached document from Frontier Economics that

forms an integral part of our response, at Annex 1. The impact of the coverage obligation is considered in section 2 below.

### **The value of 2600MHz spectrum**

With respect to the value of 2600MHz paired spectrum in the auction, there would appear to be less variation in the potential outcome when alternative methodologies are employed. Ofcom's view has varied between £4.95m and £5.5m. We are not in disagreement with this level of value, and do not consider, given the limitations of the 2600MHz band that it can be seen as capable of making much contribution to the coverage obligation, so its value is unlikely to have changed as a result of the new obligation.

The outputs from the analysis of the value of 800MHz and 2600MHz after the coverage commitment adjustment then feed into the next step, the calculation of the lump sum values of 900MHz and 1800MHz. We consider this stage in section 3 below.

## **Section 2: The impact of the new coverage commitment on ALF**

### **Summary**

In respect of the impact on spectrum value of the coverage commitment, Ofcom's view is anything but conservative. Surprisingly despite the acknowledgement by the Secretary of State and by Ofcom that the coverage commitment will have an impact on incremental network expenditure, Ofcom posits it will have had no direct impact on the value of spectrum fees. This does not appear likely – we do not consider that Ofcom's methodology of restricting its view to a simplistic direct effect on ALF is correct.

Stepping back and considering the general point that spectrum with a coverage commitment (particularly the comprehensive one now applied to UK mobile operators) should have a lower value than unencumbered spectrum, we would expect to see some reduction in spectrum value and hence in spectrum fees. In considering the impact of the obligation on spectrum values, Ofcom has not followed its own methodology of the four steps to deriving ALF levels, but simply and arbitrarily looked at the impact on a single step as a final overlay. Ofcom needs to take an approach that is rather more comprehensive and internally consistent.

We consider that given its general four step approach, Ofcom needs to identify the impact of the coverage obligation in step 1 of its analysis, i.e. in the derivation of a post-auction value of 800MHz and 2600MHz that takes account of the new factor of the obligation. This approach then allows any diminution of spectrum value to flow through the four steps to enable a revised level of ALF for 900MHz and 1800MHz.

But it is important to note that there is and must be no asymmetric effect of the new coverage commitment on individual operators – it would be very wrong to compensate individual operators for past underinvestment in coverage when as we discuss in this section all operators, by giving up coverage advantages, losing the ability to reduce future investment, as well as incurring additional investment in perpetuity, are in practice impacted similarly.

We set out in this section a couple of ways in which Ofcom could measure the diminution of value in spectrum that has arisen from the new coverage obligation. Both methods suggest that a reduction in value of approximately 10% in 800MHz value is likely to be necessary – under either method this value reduction would flow directly into the lump sum values of 900MHz and 1800MHz as part of Ofcom's overall four step process of setting the level of ALF.

## The new task

Since the last consultation the mobile operators have been given a new and comprehensive coverage obligation. The task that is new to the present consultation is to consider the impact of this obligation on ALFs.

The obligation is included for Vodafone in revision 15 to its 900MHz and 1800MHz licence, dated 30<sup>th</sup> January 2015:

*“Coverage Obligation*

*7. The Licensee shall by no later than 31 December 2017 provide and thereafter maintain an electronic communications network that is capable of providing mobile voice telecommunications services to an area covering at least 90% of the geographic landmass of the United Kingdom at at least one of the minimum signal strengths set out in Table 1 of this condition. For the avoidance of doubt the Licensee shall be permitted to meet the obligation set out in this condition using any frequencies and technologies available to the Licensee.”*

**Table 1: Signal Strength Thresholds**

<b>Technology and Band</b>	<b>Signal Threshold</b>
GSM900	-93 dBm
GSM1800	-93 dBm
UMTS2100	-103 dBm
LTE800	-115 dBm

Ofcom was asked to consider the effect of the new obligation by the Secretary of State in his letter to Ofcom in December 2014:

*“in view of the significant improvement in mobile phone coverage that will require an incremental increase in investment from MNOs to meet the new commitment, Ofcom should extend its current analysis to afford all interested parties a reasonable opportunity to comment on whether they consider this new commitment, taking account of the associated incremental costs incurred by the MNOs, should impact on future ALFs”<sup>12</sup>*

Ofcom addresses the impact of this new coverage obligation in section 6 of the present consultation. Ofcom provisionally concludes that *“the geographic coverage obligation is unlikely to have a material effect on the market value of either 900MHz or 1800MHz spectrum for the purpose of ALF”<sup>13</sup>*. Whilst given

<sup>12</sup> Letter from the Secretary Of State, DCMS to Ed Richards 17<sup>th</sup> December 2014

<sup>13</sup> Consultation at 6.4

Ofcom's selected very narrow methodology this conclusion is virtually unavoidable, it is clear that alternative approaches would have and should have yielded different answers.

There is no particular reason to believe that Ofcom's first provisional approach to this matter is likely to be the correct one. From a broader viewpoint, the implication of Ofcom's conclusion, that there is no interrelationship between spectrum values, spectrum fees, and licence obligations, does not appear to be the right one to come to.

Vodafone does not believe that Ofcom has approached this matter from a wide enough analysis, particularly given the fact that, in its ALF calculations, 900MHz and 1800MHz spectrum values have not been arrived at directly by Ofcom from, say, some empirical data derived from technical modelling, but rather have been reached indirectly through the multi-step analysis described elsewhere, i.e. purely by reference to values of other spectrum. It must be remembered that in Ofcom's analysis that all of these values have been derived in the absence of the new comprehensive coverage obligation.

We consider that had Ofcom approached the issue from a broader starting point, that embraced rather than ignored the source of its derivation of 900MHz and 1800MHz value, then it could well have reached a rather different answer. As a general principle, there are several grounds on which it is reasonable to anticipate that the post-auction imposition of an onerous and broad coverage obligation will have had a general downwards impact on the value of all the spectrum bands that could be used to satisfy this obligation – this is totally ignored in Ofcom's analysis.

Such a downward movement could, using Ofcom's own methodology be best expressed via an adjustment in steps 1 - 2, by considering the impact on the coverage obligation on the post-auction value of the 800MHz and 2600MHz spectrum and the related impact that this would have on 900MHz and 1800MHz spectrum and hence on annual spectrum fees.

In the sections below we first consider the limitations of Ofcom's approach before examining the reasons to expect a diminution in spectrum values and developing some alternative methods of estimating this general reduction in value, and thus deriving illustrative revised values for 900MHz and 1800MHz.

### *Ofcom's limited approach*

Ofcom's approach looks at the potential effect the coverage agreement may have on the value of additional ALF spectrum to the marginal operator<sup>14</sup>:

- the impact of additional ALF spectrum on the incremental cost to the marginal operator of meeting its own geographic obligation; and
- the impact on the marginal operator's value of additional ALF spectrum of the existence of the geographic coverage obligation on other competing MNOs.

Ofcom looks at these two potential effects separately for 900MHz and 1800MHz spectrum, concluding that it is unlikely that the coverage agreement could significantly influence the marginal operator's value of **additional** 900MHz and 1800MHz spectrum, and therefore should not impact ALF.

Vodafone agrees with Ofcom's initial view that if one were to consider the issue purely from this limited direct point of view then inevitably the conclusion would be that this geographic coverage obligation, or any other obligation, is unlikely to directly affect the value of 900MHz and 1800MHz ALFs. But, from a general viewpoint, this does not appear to be the right conclusion to come to, as it would suggest that there is no interrelationship between spectrum values, spectrum fees, and licence obligations.

In relation to 900MHz spectrum, Ofcom's view is that EE would be the marginal operator for additional 900MHz spectrum and that it is unlikely that EE's cost of meeting the geographic coverage obligation would be materially lower with acquisition of 900MHz spectrum. This is because EE already holds 2\*5 MHz of 800MHz spectrum and would likely use this spectrum to meet its coverage obligation. Vodafone agrees with this view – we are aware that EE's CEO has already said EE will launch VoLTE services<sup>15</sup> and use its 800MHz spectrum for rural coverage purposes<sup>16</sup>.

Ofcom also considers an effect on the market value of 900MHz arising from the existence of the geographic coverage obligation on competing operators, i.e. part of the value of additional 900MHz spectrum to EE in the absence of the coverage obligation could be driven by the ability to gain a competitive advantage in voice coverage. Ofcom's view is that the competitive position in voice coverage is unlikely to be a significant factor in EE's value for additional 900MHz spectrum. This is because it is unlikely that an increment of 900MHz spectrum would allow EE to gain any competitive advantage in voice coverage

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<sup>14</sup> Marginal bidder is an operator with the second highest private valuation for an incremental block of ALF spectrum had it been auctioned today.

<sup>15</sup> <http://ee.co.uk/our-company/newsroom/2015/02/11/ee-commits-to-new-network-investment-plan> page 8

<sup>16</sup> Ibid page 7

that could not be achievable through its 800MHz spectrum holdings. Vodafone would, in general, agree with this view, at least with respect to the post-obligation world.

In a world where EE has accepted the 90% area coverage obligation, and has decided to meet this in the long run largely at 800MHz (or possibly 1800MHz in urban areas) with VoLTE, then 900MHz no longer provides any extra competitive advantage to EE in terms of voice coverage. However in a world where EE has not as yet, or had not accepted the 90% obligation, then most likely its optimal coverage mix for voice would have involved a higher proportion of 1800MHz and a lower proportion of 800MHz. Against this lower baseline, acquiring 900MHz would shift EE's optimal voice coverage upwards via UMTS900, and the extra competitive advantage of a better voice coverage claim would indeed have been a driver of value for 900MHz. In short, competitive voice coverage would have been a value driver for EE at 900MHz. But in a world where EE and its competitors have all accepted the 90% obligation, it is no longer a value driver at 900MHz.

A similar set of arguments is applied to 1800MHz spectrum – here it is not clear to Ofcom (or to Vodafone) that the acquisition of additional 1800MHz spectrum by any of the four current holders of spectrum would either advance or retard their ability to satisfy the new coverage obligation.

But this is misdirected analysis, as fundamentally each operator is in principle able to meet the coverage obligation from its existing stock of spectrum – the need for additional spectrum simply to meet the coverage obligation is not obvious. By definition each operator has no licenced restriction on the extent of its national deployment of its spectrum – so if the operator can deploy its existing spectrum to provide coverage across 80% of the UK there is no clear reason why that same spectrum cannot be used to provide coverage over an additional 10%. Comparing the incremental cost of meeting the coverage commitment with and without additional spectrum is therefore somewhat misplaced – it is not additional spectrum that an operator needs to increase its coverage, but increasing investment in network infrastructure, as the Government and Ofcom have recognised.

Ofcom's argument in practice boils down to two simple propositions:

- for both 900MHz and 1800MHz spectrum, it is likely to be the case that neither prospective marginal operators nor existing operators need additional 900MHz or 1800MHz spectrum to achieve the coverage obligation that all four operators share. It is likely that each operator can satisfy the obligation with its existing spectrum – therefore the value of incremental spectrum in the context of satisfying the obligation is moot.

- It is not axiomatic that the ALF spectrum of 900MHz and 1800MHz spectrum will necessarily be used to satisfy the coverage obligation in part or in full.

We would not be inclined to disagree with either proposition, but collectively they would seem to miss the overall point. It would appear to Vodafone that the new factor of the coverage commitment should suggest the need for a revision to the way in which Ofcom should discharge its duty to revise the fees for 900MHz and 1800MHz spectrum.

What Ofcom's analysis does not properly consider is the general impact on the value of spectrum as a result of the imposition of the obligation in the first place. There is a brief discussion in 6.18 (summarised in 1.17) that Ofcom cannot do this since this would involve the situation where:

*“If market value for the purpose of assessing the impact of the geographic coverage obligation on ALF were to depend on the private value of the ALF spectrum to the licensee, instead of the opportunity cost (and if the operators' holdings of non-ALF spectrum did not provide similar voice coverage capabilities to their ALF spectrum). Therefore, such a different approach would require us to define “market value” as the private value instead of the opportunity cost, which we do not consider appropriate.<sup>17</sup>”*

We agree with the point that the individual private values of 900MHz and 1800MHz are not the target output. However in its present ALF analysis Ofcom has not derived its opportunity cost directly from say any technical modelling analysis of the use of 900MHz and 1800MHz spectrum or any other UK spectrum band specific valuation.

In reality the opportunity cost/marginal bidder valuation of the ALF spectrum has been derived by Ofcom indirectly, from an interpretation of the UK auction values of 800MHz and 2600MHz at £30m and £5.5m respectively, and from international benchmarking evidence interpolating proportionate values of 900MHz as 70% of the 800MHz value and 1800MHz as the 27<sup>th</sup> percentile between the 2600MHz and the 800MHz value. It follows therefore that to be consistent with this valuation methodology, Ofcom should consider the extent to which any of the constituent elements of these assessments may have varied as a result of the new coverage commitment.

*Which band is impacted by the coverage obligation?*

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<sup>17</sup> Consultation at 6.18

One complication in the present circumstances is the fact that whilst the coverage obligation is vested in the 900MHz and 1800MHz licences of the operators, it can be satisfied by a mix of bands and technologies, and that whatever mix is adopted can vary over time. Furthermore given the multiple technologies adopted by each operator, individual operator compliance might be seen as being satisfied in varying ways.

Note that compliance via 4G is dependant on the existence of VoLTE, but as the first date of compliance is the end of 2017 this does not appear to Vodafone to be an unreasonable expectation. Ofcom concurs:

*“Although the LTE networks in the UK do not currently provide voice services, we consider it is reasonable to assume that voice over LTE (VoLTE) will become a viable option for providing voice services before the end of 2017 (i.e. within the timeframe relevant to meet the geographic coverage obligation).<sup>18</sup>”*

To illustrate the different ways in which compliance with the new obligation might be achieved we can assume an operator has in a given year 90% 2G coverage, 87.5% 3G coverage and 85% 4G coverage. Whilst there are potentially an infinite number of alternatives, compliance might therefore be expressed as:

- 90% 2G (in 900MHz or 1800MHz) or;
- 87.5% 3G (in 900MHz or 2100MHz) and 2.5% 2G (in 900MHz or 1800MHz) or;
- 85% 4G (in 800MHz or 1800MHz) 2.5% 3G (in 900MHz or 2100MHz) and 2.5% 2G (in 900MHz or 1800MHz) or;
- 85% 4G (in 800MHz or 1800MHz) and 5% 2G (in 900MHz or 1800MHz).

Therefore it might be expected that any and all bands below 2GHz could be used by operators to contribute to the satisfaction of the coverage obligation. It is difficult if not impossible to be definitive therefore which band is satisfying which proportion of the coverage obligation – what is certain however is that as the Government states, satisfaction of the obligation does involve a network investment cost to operators.

Given these permutations, it is clear that the obligation may not necessarily be satisfied in every year by every operator in part or in full by either of the bands in which the obligation is actually vested i.e. 900MHz and 1800MHz. Thus whilst there will have been a general impact of a downward pressure on valuation as a

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<sup>18</sup> Consultation at paragraph 6.2

result of the coverage commitment, it is difficult to expect that this will be manifested only in a specific band – but generally the downward pressure will be greatest on the lowest frequency bands since these are the ones where the coverage obligation can be satisfied at the lowest cost to the operator, with the lowest investment choices foregone.

It is notable that all four MNOs have the 800MHz in common, and it is clear that the 800MHz band is being employed by operators in the latest generation of mobile technology, 4G, rather than being devoted to either of the legacy technologies.

In the long run, the 800MHz band may be able to provide the most cost effective wide area coverage at the current most important mobile technology, and therefore will most likely be capable of providing a major proportion of the coverage obligation for some years to come for all operators. Given that ALF is being set over a 20 year period, it would therefore make sense to recognise that the coverage commitment will most likely be achieved in the some part from 2017 onwards by the lowest common denominator of the 800MHz band.

Ofcom does recognise the relevance of 800MHz to the coverage commitment with reference to its evaluation in 6.27 of the need of EE or H3G for 900MHz spectrum:

*“We do not consider it likely that EE’s (or H3G’s) cost of meeting the geographic coverage obligation would be materially lower with acquisition of 900 MHz spectrum. The obligation relates to voice coverage, which does not have the same bandwidth requirements as data services. EE and H3G each hold only 2x5 MHz of 800 MHz spectrum. But this limited bandwidth of sub-1 GHz spectrum may still be sufficient to deliver sufficiently wide coverage to assist in meeting the obligation for voice services, without the need for additional sub-1 GHz spectrum (and, as noted at paragraph 6.2 above, we consider it reasonable to assume that voice over LTE will become a viable option for providing voice services by the end of 2017).”*

Clearly if an operator chooses to satisfy its coverage obligation in part with higher frequency offerings, involving higher cost than would otherwise be incurred (due to additional cell site construction) then that is simply an operator’s choice.

#### *General reduction in spectrum value from the coverage obligation*

There are several reasons for the general expectation of a value reduction, including but not limited to:

- The loss of potential competitive advantage from voluntary coverage differentiation between operators. The marginal value of spectrum to an operator consists of several factors, namely: increased capacity, increased top speed, lower costs of network deployment, and improved coverage (vs other operators). Since all operators in UK will now have very high coverage, the final factor disappears (extra spectrum no longer buys competitive advantage in that respect). So the marginal value of all spectrum should be depressed, and particularly the value of the coverage bands of sub 2 GHz spectrum.
- The effect of the coverage obligation is to suppress the valuation of all spectrum, on a fairly symmetric basis, and one way to estimate the suppression, given Ofcom's multi-step analysis is to use the 800MHz coverage commitment as a proxy for the population coverage obligation and observe from the Auction the lower value for the coverage lot, i.e. to compare the 800MHz A2 lot value against the value of two A1 lots. It is notable that in the Auction the coverage lot was assigned a very substantially lower reserve price by Ofcom than the unencumbered lots.
- Finally there will have been changes to the private values of operators given the enhanced coverage obligation. Such changes need to be taken into account either directly or indirectly in the calculation of ALF, given the statement by the Secretary of State that the costs of meeting the new obligation should be taken into account in the consideration of ALF levels.

It is generally accepted that other things being equal the value of spectrum with a coverage commitment is lower to the licensee than the same spectrum without such a commitment. For example in the UK combined auction the reserve price of the coverage lot of 2\*10MHz of 800MHz spectrum was set by Ofcom at £250m, whereas the reserve price for a 2\*5MHz lot of 800MHz spectrum without such encumbrance was set at £225m. Ofcom stated:

*“8.50 We consider that spectrum with a coverage obligation attached is likely to be a close substitute for spectrum of the same type without such an obligation for at least some bidders. However, we would expect the former to have a lower intrinsic value than the latter, reflecting the incremental costs that bidders are likely to incur as a result of the obligation (net of incremental revenues from the additional coverage). For this reason, we identify a separate spectrum category (and hence set a separate reserve price) for the 800 MHz block subject to a coverage obligation.”<sup>19</sup>*

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<sup>19</sup> Ofcom July 2012 spectrum statement “Assessment of future mobile competition and award of 800 MHz and 2.6 GHz spectrum”

In relation to the coverage commitment for this 800MHz auction lot that was included in the July 2012 Statement, BT is reported as saying:

*“The cost of a 98% coverage obligation, or an obligation benchmarked to 2G voice coverage, represents very large costs for high speed mobile data provision”<sup>20</sup>*

One might therefore reasonably expect that the new 90% coverage commitment will have had a similar downward impact on the value of UK mobile spectrum generally. Obviously this new obligation is an area coverage one, rather than a population coverage one. Given the distribution of population in the UK a population coverage requirement of 90% represents a requirement for an area coverage that is significantly smaller than 90%.

Internationally, most countries that require a coverage obligation express this in population terms, rather than in area coverage. The new coverage obligation in the UK is thus atypically comprehensive in any international comparison.

To Vodafone, it is logical that the general diminution of value will have impacted UK spectrum generally, but with particular focus on those lower frequency bands that will be used to satisfy the coverage obligation from 2017. The coverage commitment is attached to the 900MHz and 1800MHz bands licenced to the UK MNOs – therefore for as long as operators keep such spectrum and are required to pay ALFs they will also be obliged to observe (from 2017) the coverage commitment.

The obligation necessitates the maintenance of sites in low population and low traffic areas. Such sites will tend to generate very low levels of incremental revenue. In order to comply, operators will have to maintain from 2017 a certain number of sites that they may not otherwise have chosen to install in the first place or to retain in perpetuity.

But Vodafone is very clear that any analysis of the effect of the coverage obligation would have to be applied in an objective manner on all operators who are all in varying degrees giving up a competitive advantage, giving up the ability to reduce coverage (and costs) and committing to permanently higher levels of network expenditure. Any suggestion that specific operators should be rewarded for historic or even potential future apparent under-investment with a discriminatory ALF reduction cannot be countenanced and would be strongly resisted by Vodafone.

There are at least two components to this universal loss of value to operators:

- The removal of voluntary coverage differentiation between operators;

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<sup>20</sup> July 2012 statement at 5.9

- The acceptance of an unavoidable commitment to ongoing network investment in sufficient sites necessary to achieve the coverage obligation;

We consider these in turn.

#### *Loss of coverage differentiation*

There is no doubt that coverage advantage can provide competitive differentiation. EE for example is at present making a substantial virtue out of its superior 4G area coverage:

*“We will also further expand our 4G network so that it covers more areas than existing 2G networks, and we will do so at a pace far outstripping our rivals. We will achieve with coverage what we have with mobile speeds: deliver beyond our customers high expectations.”<sup>21</sup>*

This does suggest that EE considers there must be some competitive value in having a coverage advantage over other operators.

The coverage commitment at 90% area level is however, as discussed, a very comprehensive one in terms of the distribution of population and traffic across the UK. It is extremely unlikely that any measurable competitive advantage could be obtained from further investment beyond that level. Acceptance of the new commitment, which through its equalisation of coverage effectively extinguishes competitive coverage differentiation in the UK means that all mobile operators have in practice given up one area of obtaining potential competitive advantage. The equalisation of coverage between operators will mean that coverage will cease to become a possible competitive element between them. So as discussed above the marginal value of all spectrum should be depressed.

#### *The acceptance of an unavoidable commitment for future network spend to maintain the obligation*

There are potentially two components of this acceptance:

- each operator will have to commit not only to some varying degree of incremental capital spend to reach the required coverage level, but also to the ongoing opex and replacement capex in perpetuity to maintain

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<sup>21</sup> EE press release 11th February 2015 “Signalling the Future”

service at those individually very uneconomic marginal sites that are necessary to retain the 90% coverage.

- All operators will have now lost the option value of being able to vary their coverage levels downwards in the future, irrespective of how uneconomic marginal sites become, or in the face of other changed circumstances. Effectively the choice between build, maintain, and remove no longer exists inside a 90% area coverage level.

#### *Overall loss in value from the commitment*

Putting these two effects of loss of differentiation and increased costs together, there is absolutely no reason to consider that there is any real operator asymmetry in the effect of eliminating coverage differentiation through the coverage obligation – operators presently with higher coverage levels will have lost their coverage advantage and the ability to reduce network expenditure in the future, whilst operators with lower coverage levels will have incurred additional network investment as the price for eliminating coverage differentiation.

So operator A with the highest existing coverage has lost its present coverage advantage, together with the ability to give up this coverage advantage in the future and at the same time reduce its network expenditure. Prior to the acceptance of the obligation it could reduce its coverage level to say that of operator D, the one with the lowest coverage or to any other level, but that choice has now been foregone. Operator D has committed to extend its coverage to the new obligation level, thus committing itself to additional capital expenditure, but at the same time this coverage extension will erode the coverage advantage of operator A. The adverse impact on operators of the coverage commitment is thus not confined to the operator D position only.

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Furthermore it would seem obvious that as a matter of principle operators who have historically chosen not to compete so strongly on coverage should not be compensated for ✂ underinvestment in coverage compared with other operators. Vodafone strongly believes that it would be invidious if the present coverage differential between operators led to differential adjustments to the future level of spectrum fees.

In practice it is the value of all of the bands that could be used to comply with the obligation that will be impacted, i.e. the 800MHz, 900MHz and 1800MHz bands. This value reduction could be measured consistently with Ofcom's

relative valuation of the relevant bands, so that proportionate decline of value in each band was equal.

We conclude from this that whilst the impact of the new coverage obligation will have been a downwards movement in sub 2GHz spectrum values in general, the simplest way to express this in the present context, for the purposes of deriving an appropriately reduced 900MHz and 1800MHz value is by way of a specific reduction to the UK 800MHz spectrum value, as well as to 900MHz and 1800MHz. Given Ofcom's methodology, any reduction in 800MHz will then have a knock on effect on 900MHz and 1800MHz spectrum value, as is appropriate.

### *Measuring the diminution in value*

So whilst an coverage obligation could not and should not lead to a specific ALF discount to particular operators to reflect past or potential future underinvestment, there is still a need for the general diminution of sub 2GHz spectrum values resulting from the coverage obligation to be allowed for in Ofcom's valuation of such spectrum and in spectrum fees. Ofcom has as yet failed to attempt to incorporate this into its calculations or consulted on a method to do so.

Vodafone can see two potential approaches as to how to accomplish this.

### **Method 1**

One potential way to measure the effect on spectrum values of the elimination of coverage differentials and the general obligated increase on mobile coverage in a non-operator specific manner is to consider the costs to the operators, both in terms of opportunity foregone and network cost, of complying with the new obligation. These costs can stand as a proxy for the overall decline in spectrum value arising from the new obligation.

As part of submissions in connection with national roaming and the establishment of the coverage commitment, Ofcom received information from the mobile operators on current and planned area coverage and, we understand, the likely annualised additional expenditure to reach the new coverage obligation. If Ofcom were to obtain access to such data for ALF purposes, it would offer a source for two pieces of information:

- The present operator area coverage levels;
- The annualised incremental cost to raise that average to 90%

Suppose for the sake of argument that this data were to establish that the range of operator current area coverage levels is between 80% and 90% and the average say 85%. This would mean therefore that future expenditure would be necessary for the average operator to raise the average coverage level to 90% (and then subsequently maintain it at that level).

But this is not the whole story. In a world of the absence of a mandated area coverage level, and the absence of any competitive advantage from coverage, the average efficient operator would have rolled out coverage consistent with the lowest common denominator of say 80%<sup>22</sup>. The higher observed average, plus the area coverage differences between operators confirms that coverage differentiation provides a competitive advantage.

Operator A with an assumed present coverage of 90% has a coverage differential of 10% - i.e. it has the option at present to reduce its coverage level to that of the lowest coverage provided by any other operator, D, assumed in this example to be 80%. By reducing its coverage to D's, the operator will eliminate its coverage advantage, but save the future network expenditure on maintaining such coverage. The acceptance of the coverage obligation will destroy that advantage, and remove that option. Operator A would not have sunk its past capex and opex costs had it known that the coverage advantage it thus gained was going to evaporate.

Similarly operator D with the lowest current coverage will, by accepting a coverage obligation, be committing to a future investment of coverage in the same 10% area. The cost of this operator, in effect raising the minimum standard from 80% to the obligation level of 90%, can be used to as a good estimate of the value that will have been lost by each and every operator in complying with the obligation.

In effect therefore the average efficient operator will be increasing coverage and losing coverage advantage from the lowest common denominator of 80% to the new obligation level of 90%. The cost of expanding from 80% to 90% can act as a proxy for the impact on operator A's foregone coverage advantage as well as operator D's additional expenditure (as well as for the presumed intermediate positions of B and C).

So if for example Ofcom were to establish say that for operator D the costs involved for advancing coverage from 80% to 90% were £10m per annum, it would then follow that at total industry level the incremental costs and lost value arising from the new coverage obligation would be a £40m annualised expenditure. Converting this into a lump sum over 20 years at an industry WACC of 5.2% would represent a total of £516m.

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<sup>22</sup> Driven in part by the 3G population coverage obligation

This cost would stand as the proxy for the diminution in value of coverage capable spectrum, and could be distributed across the total volume of sub 2GHz spectrum pro rata to Ofcom's prior assessment of relative value in the consultation.

The calculation below illustrates how this could be done in an equitable manner. For simplicity we use the values of 800MHz, 900MHz and 1800MHz that Ofcom has provisionally determined in the February 2015 consultation, rather than the revised Vodafone values that we consider to be more appropriate, but the principle would be the same under either circumstance.

	800MHz	900MHz	1800MHz	Total
Total quantity of spectrum	60MHz	69.6MHz	143.2MHz	-
Current Ofcom values per MHz	£33m	£23m	£13m	-
Implied total value	£1,980m	£1,600.8m	£1,861.6m	£5,442.4m
Diminution in value	-	-	-	(£516m)
Adjusted implied total value	-	-	-	£4,926.4m
Distributed revised value	£1,792.3m	£1,449.0m	£1,685.1m	£4,926.4m
Revised value per MHz	£29.9m	£20.8m	£11.8m	-
% reduction per MHz	9.4%	9.4%	9.4%	-

**Table 2.1. Assessing the loss in spectrum value from the coverage obligation**

The resulting revised values per MHz of £20.8m and £11.8m could then be fed into the annualisation calculation in Ofcom's step 3 of the ALF process. The method has the advantage that with an equal proportionate reduction in the value of all spectrum, the loss in spectrum value would result in an identical percentage reduction in ALF for all operators.

## Method 2

An alternative method would be to use the 800MHz coverage obligation as a proxy for the area coverage obligation, by comparing the lower value of the 800MHz A2 coverage lot with the value of two A1 (unencumbered) lots. (The

4G coverage obligation is likely to be less onerous an area coverage requirement than the 90% area obligation, so the proxy is likely to be on the low side.) Vodafone can see two possible approaches to doing this.

The first (and simplest) is to rebase all spectrum valuations on the value of the A2 block revealed at auction, as opposed to the auction value of A1 blocks. Ofcom’s opportunity cost calculation for the A2 block is **£24.9m per MHz** (paragraph 2.66) and this broadly agrees with Vodafone’s decomposition calculation for Telefonica. This assessed value is about 6% lower than Ofcom’s opportunity cost calculation for two A1 blocks of **£26.45m per MHz**, which is again broadly in line with Vodafone’s own calculation – the remaining differences are explained by our different treatment of core pricing. Using Ofcom’s preferred approach here (Vickrey pricing) we can say that if Ofcom were to use the A2 block rather than 2 A1 blocks as the starting point for its valuations **this would depress all spectrum values (and all ALFs) by 6%.**

The second, more sophisticated, approach considers what price the 800MHz would have sold for if **all** 800 blocks (both A1 and A2) had incurred a similar coverage obligation to the A2 block. This approach is potentially more informative, because it factors in the extra coverage costs revealed by EE, who are the most relevant marginal bidder. (The first approach only factors in the coverage costs revealed by Vodafone and Telefonica). Indeed, in EE’s case, this calculation is especially pertinent because the geographical coverage obligation effectively does create a >98% population obligation on its A1 block. (As explained elsewhere, EE is likely to use 800MHz spectrum to meet its enhanced obligation, which would entail rolling out coverage at 800MHz to >98% of the population.)

EE bid substantially less for the A2 block (or packages containing the A2 block) than it bid for spectrum-equivalent packages containing A1 blocks. Table 2.2 below shows that EE’s delta in value varied between £85m and £400m depending on the amount of 2600MHz spectrum also won as part of the package. (The amount of 2600MHz presumably affected the cost of rollout required at 800MHz.) We can adjust for A1 blocks having the same coverage obligation as A2 by lowering EE’s bids for A1 packages until they match the bids for the corresponding A2 packages. Or – if there is no exactly matching package – lowering the bids by the value deltas expressed for the most similar A2 packages. **Such lowered bids reflect - to the best we can now estimate - the marginal bidder value and so opportunity cost of 800MHz spectrum, after allowing for extra coverage costs.**

Package	Auction	Lowered	Delta (m)	Explanation
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	Bid (m)	Bid (m)		
A1	230	-170.001	400.001	Delta between A2 and 2A1
A1 + 9E	480	152	328	Delta between A2+9E and 2A1+9E
A1 + 2C	260	-73	333	Delta between A2+2C and 2A1+2C
A1+2C+9E	536.443	203.443	333	Delta between A2+2C and 2A1+2C
A1 + 3C	479.558	172.558	307	Delta between A2+3C and 2A1+3C
A1+3C+9E	731.111	424.111	307	Delta between A2+3C and 2A1+3C
A1 + 4C	640	465	175	Delta between A2+4C and 2A1+4C
A1+4C+7E	823.111	648.111	175	Delta between A2+4C and 2A1+4C
A1 + 5C	742.3	577.3	165	Delta between A2+5C and 2A1+5C
A1 + 6C	899	803	96	Delta between A2+6C and 2A1+6C
A1 + 7C	1049.5	953.5	96	Delta between A2+6C and 2A1+6C
2A1	650.001	250	400.001	Matches bid for A2
2A1 + 5E	725.5	397.5	328	Delta between A2+9E and 2A1+9E
2A1 + 9E	1090	762	328	Matches bid for A2 + 9E
2A1 + 2C	865	532	333	Matches bid for A2 + 2C
2A1+2C+5E	1008.858	675.858	333	Delta between A2+5C and 2A1+5C
2A1 + 3C	1035.478	728.478	307	Matches bid for A2 + 3C
2A1 + 4C	1145.478	970.478	175	Matches bid for A2 + 4C
2A1 + 5C	1233.478	1068.478	165	Matches bid for A2 + 5C
2A1 + 6C	1360	1264	96	Matches bid for A2 + 6C
4A1	1176.622	776.622	400	Matches bid for A2 + 2A1
4A1 + 9E	1563.622	1478.622	85	Matches bid for A2 + 2A1 + 9E
4A1 + 2C	1445.478	1349.478	96	Delta btw A2+2A1+3C and 4A1+3C
4A1 + 3C	1568.478	1472.478	96	Matches bid for A2 + 2A1 + 3C
4A1 + 4C	1798	1652	146	Matches bid for A2 + 2A1 + 4C

**Table 2.2: Summary of EE's lowered bids**

Note that some of the lowered bids are greyed out because they are negative or below the reserve price: fortunately, the analysis is insensitive to these bids.

But EE's winning bid for A1 + 7C does turn out to be important for the analysis. Since we have estimated the lowered bid indirectly (in red) by using the A2+6C coverage delta, we also explore as a sensitivity test what would happen if that lowered bid was £10m higher – thus continuing the trend of a reducing delta with increasing 2600MHz - or (less likely) if it was £10m lower still.

We can similarly adjust the bids by Telefonica and Vodafone: however in Telefonica's case this makes no difference (their preference was actually £1000 in favour of the A2 block)<sup>23</sup>, and in Vodafone's case the geographical obligation makes no direct difference to our relative valuations at 800MHz (since the obligation is already met at 900MHz). Nevertheless, we consider adjusting Vodafone's bids as a further sensitivity test.

H3G is problematic: as their bids were most likely not to value in the real auction, it is unclear how to adjust them. An adjustment similar to EE's coverage deltas for small packages of spectrum (about £300m - £400m) would place H3G's supplementary round bids for A1 packages below the reserve price. But that would suggest that H3G should not have opted in at all, and so its bid strategy would likely have been completely different! Accordingly, we attempt no adjustment to H3G's bids.

Fortunately, since 800MHz prices are mostly determined by the interaction of EE's, Vodafone's and Telefonica's bids, and are rather insensitive to H3G's bids (see our previous paper), this does not leave a major gap in the analysis.

***Auction Results for Lowered EE Bids***

Below we present the results of the auction if EE had bid as shown in table 2.3.

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<sup>23</sup> At the time of the auction, the A2 block was anticipated to be clear for 4G roll-out some months ahead of other blocks and this may have influenced Telefonica's valuation. Now that all UK MNOs have rolled out some 4G, this driver of value is irrelevant for the purposes of determining ALFs

BIDDER	A1	A2	C	E	Price paid (£)
Vodafone	2	0	4	4	721,761,000
Telefonica	0	1	0	0	514,000,000
EE	0	0	8	0	418,376,000
H3G	1	0	0	0	225,000,000
Niche	0	0	2	5	158,000,000
Unsold	1	0	0	0	0
Totals	4	1	14	9	2,037,137,000

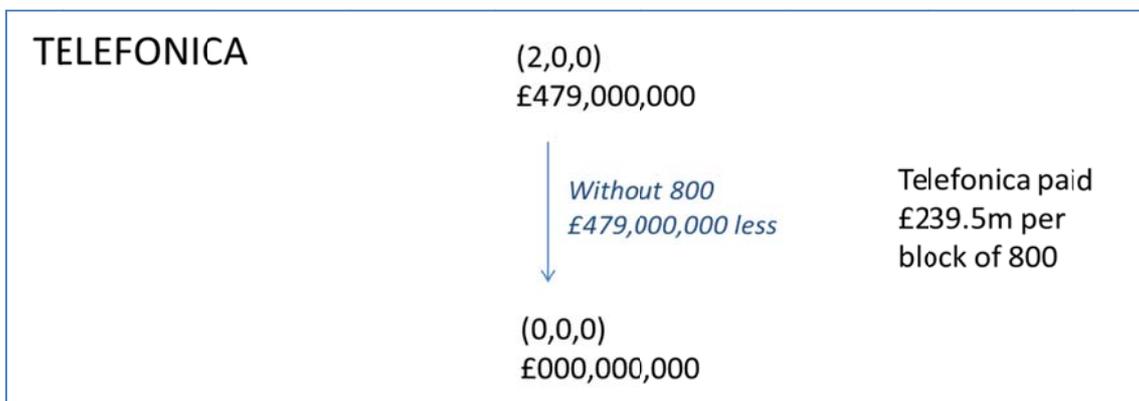
**Table 2.3: Outcome with Lowered EE bids (Principal Stage)**

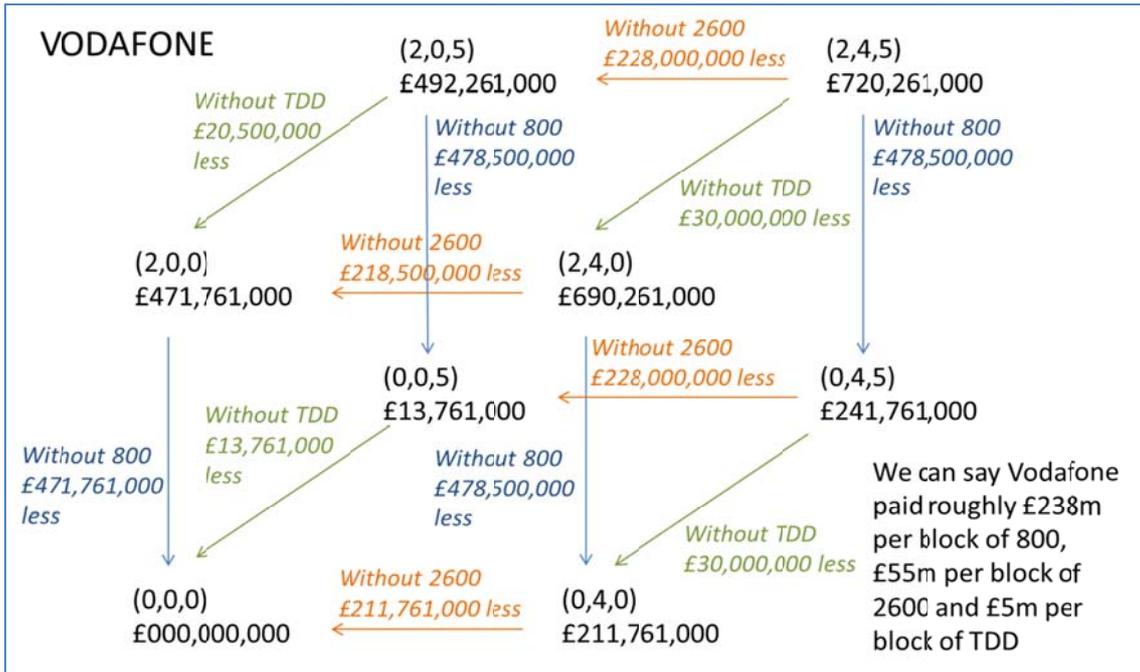
Notice that the outcome is different from the real auction: there is unsold A1 spectrum. This is an artefact of the reserve price: in an alternative auction where A1 blocks also had a strong coverage obligation, the reserve price may well have been lower. As in our previous paper, we also explore the effect of removing the fictitious reserve-price bids from the winner and price determination software (as this helps remove the reserve-price distortions):

BIDDER	A1	A2	C	E	Price paid (£)
Vodafone	2	0	4	5	720,261,000
Telefonica	0	1	0	0	479,000,000
EE	1	0	7	0	388,875,000
H3G	1	0	0	0	225,000,000
Niche	0	0	3	4	186,476,000
Unsold	0	0	0	0	0
Totals	4	1	14	9	1,999,612,000

**Table 2.4: Outcome with Lowered EE bids but no Fictitious Bids (Principal Stage)**

The decomposition analyses for Telefonica and Vodafone reveal the opportunity costs for 2\*10 MHz of spectrum. In line with Ofcom’s preference, these decomposition diagrams now use Vickrey pricing rather than core pricing, although the differences are very minor.





This gives an estimate of **£23.9m per MHz** as the opportunity cost of 2\*10 MHz of 800MHz with strong coverage obligation. We can compare this with Ofcom's calculation of £26.45m per MHz without coverage obligation. Using the revised £23.9m estimate **would depress all spectrum values (and ALFs) by 10%**.

**Sensitivity Test 1: Varying EE's Winning Bid**

Table 2.5 below shows the results if EE's winning bid for the A1 + 7C package is made £10m *higher*, consistent with a further reduced coverage delta with the increased holdings of 2600MHz. (Notice for instance that EE's delta drops by exactly £10m moving between A2+4C and A2+5C). The fictitious bids are still removed.

BIDDER	A1	A2	C	E	Price paid (£)
Vodafone	2	0	4	5	710,261,000
Telefonica	0	1	0	0	469,000,000
EE	1	0	7	0	388,875,000
H3G	1	0	0	0	225,000,000
Niche	0	0	3	4	186,476,000
Unsold	0	0	0	0	0
Totals	4	1	14	9	1,979,612,000

**Table 2.5: Outcome with EE's Winning Bid raised by £10m (no Fictitious Bids)**

Each of Vodafone's and Telefonica's prices becomes £10m lower, and the opportunity cost of 800MHz drops by about £0.5m per MHz (to **£23.4m per MHz**).

Alternatively, if EE's winning bid is made £10m *lower* (because the coverage delta inferred from the A2 + 6C package is not large enough), then each of Vodafone's and Telefonica's prices becomes £10m *higher*, and the opportunity cost of 800MHz *increases* by about £0.5m per MHz. However note that this is a much less likely direction of error, as the costs of covering at 800MHz with a 2\*5 MHz block should be very similar to covering with a 2\*10 MHz block, and there is no obvious reason why an *increased* holding of 2600MHz (2\*35MHz vs 2\*30MHz) should then lead to any increase in coverage costs.

Such sensitivities suggest that the coverage obligation depresses spectrum value in the range **8%-12%** (with the upper end of **10-12% more likely**).

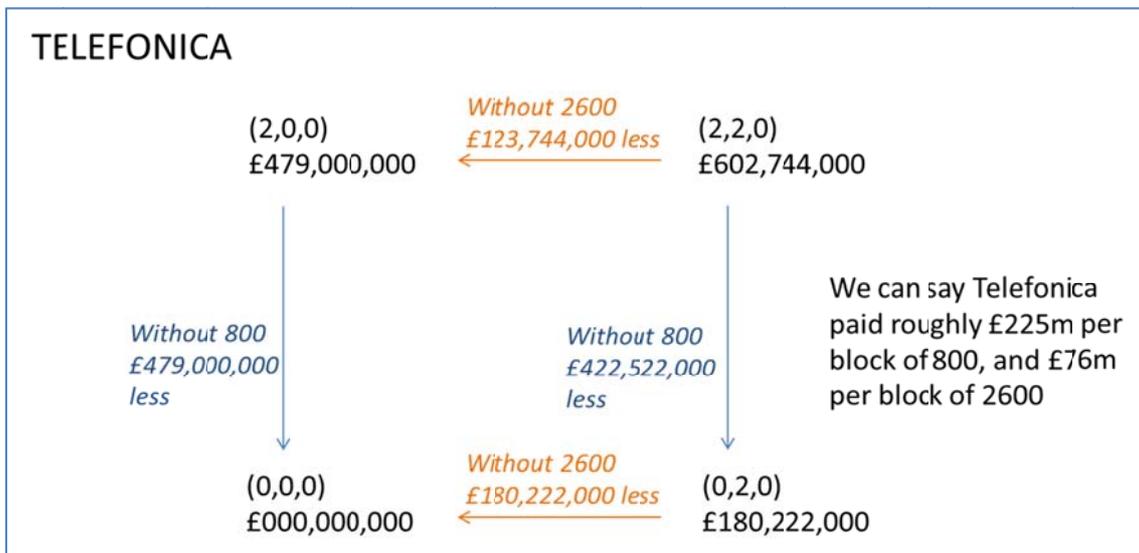
### ***Sensitivity Test 2: Reducing Vodafone's Bids for A1 packages***

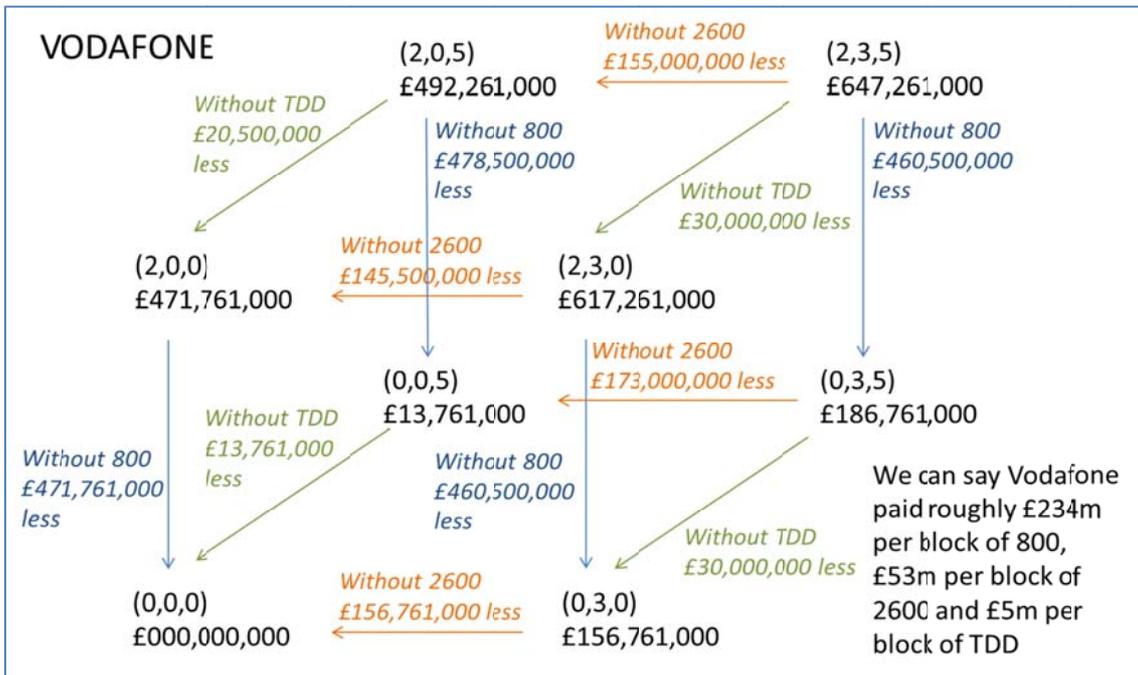
Table 2.6 below shows the results if Vodafone's bids for A1 packages (2A1 + x) are also reduced to the bids for the corresponding A2 packages (A2 + x). Again fictitious bids are removed, but the results need to be viewed with caution, as there is a changed outcome compared to the real auction:

BIDDER	A1	A2	C	E	Price paid (£)
Vodafone	2	0	3	5	647,261,000
Telefonica	0	1	2	0	602,744,000
EE	1	0	7	0	384,619,000
H3G	1	0	0	0	225,000,000
Niche	0	0	2	4	127,220,000
Unsold	0	0	0	0	0
Totals	4	1	14	9	1,986,844,000

**Table 2.6: Outcome with Vodafone’s bids also lowered (no Fictitious Bids)**

The decomposition analyses for Telefonica and Vodafone with Vickrey pricing are as follows. They indicate an opportunity cost for 800MHz spectrum of **£23m per MHz**, which would suggest spectrum value is depressed by about **13%**.





### Conclusion

Method 2 reveals a substantially lower valuation for 800MHz spectrum, one which accounts for the different value of encumbered spectrum (with strong coverage obligation) compared to unencumbered spectrum (without such an obligation). The depression in value is at least 6%, even by the simplest analysis. On a more sophisticated analysis (also taking into account EE's coverage costs), the depression in value is **around 10%**, with sensitivity tests showing that it is **more likely to exceed 10% than to be lower than 10%**.

Applying either Method 1 or 2 would give a revised lower post-auction valuation for 800MHz. This result should then be fed into step 1 of the ALF calculation and the remaining steps flow through from this, leading to a roughly 10% deduction in all ALFs.

### **Section 3: Extraction of 900MHz and 1800MHz lump sums by overlaying UK auction outcomes and relative international benchmarks**

#### **Summary**

We are concerned that the changes Ofcom has made in this consultation with respect to the use of international benchmarking are both incorrect and asymmetric in their effect between operators, in that the relative value of 900MHz has gone up by a non-trivial amount, from 65% to 70%, whereas the relative value of 1800MHz has fallen slightly from 28% to 27%.

We believe that a conservative view should have led to the pair of relative values both being pushed down slightly from the view in the August consultation. Certainly there is no additional useful data available to Ofcom since the August consultation that can justify the inconsistent treatment of Ofcom's upward relative movement in 900MHz relative value.

This asymmetry has had the impact that the reduction in Ofcom's view of the 800MHz value of 9% since the August consultation has flowed through into the 1800MHz value, causing a similar decrease in value of 9%. However by contrast Ofcom's estimated absolute value of 900MHz has not changed between the two consultations – the downward movement of 800MHz and the upward relative movement in 900MHz have cancelled each other out.

The effect of the more appropriate matching 9% reduction in the value of 900MHz, to maintain a 65% relative value, from £23m to £21m (rounded) would have been a reduction in the ALF burden on Vodafone from £61.3m to £57.3m, a similar percentage to that given in this third consultation to the 1800MHz operators by Ofcom.

Ofcom's table 5.2 shows this very clearly:

**Table 5.2: Break down of the change in lump-sum values**

	Lump-sum values from August 2014 consultation	Effect of changes in:			Revised lump-sum values
		UK values of 800 MHz and 2.6 GHz	International benchmark analysis	Both factors together	
900 MHz	£23m per MHz	-7% (x 0.93)	+8% (x 1.08)	0% (x 1.0)	£23m per MHz
1800 MHz	£14m per MHz	-5% (x 0.95)	-2% (x 0.98)	-7% (x 0.93)	£13m per MHz

Source: Ofcom

As we discuss below and in more detail in the Frontier report “Ofcom’s International Benchmarking Analysis” that forms Annex 2 to this response, we consider that the available evidence suggests that a 65% relative valuation is on the high side of any reasonable range of values – a conservative approach similar to that adopted for 1800MHz would place its value at around 60% of the 800MHz value including co-existence costs.

#### *Changes between the first and second consultations*

In the October 2013 consultation Ofcom used a small sample of observations that possessed a high degree of variability to arrive at a value of 900MHz of £25m per MHz that was not robust. By using a mixture of absolute and relative international benchmarks without an appropriate assessment of the comparability of the international results to the UK, Ofcom ran the risk of setting ALF’s some way above true market value.

Frontier Economics’ analysis that formed part of the response to the October 2013 consultation corrected for many of the errors, isolated the outlier values, and came up with an average outcome that was in effect around 62 - 65% of the value of 800MHz.

In the second consultation Ofcom changed its methodology somewhat to exclude absolute international values, so as to only make use of relative international benchmarks where simultaneous auctions took place with both the UK auction bands of 800MHz and 2600MHz and the candidate bands of 900MHz and 1800MHz. This method can be seen as rather more robust, but the limited data set available and Ofcom’s categorisation of countries into Tier 1, Tier 2 and Tier 3 was somewhat problematic.

Vodafone concluded in our response to that consultation that “*overall Ofcom’s proposed relative valuation of 900MHz at 70% of the value of 800MHz (before adding in any possible cost of co-existence) is within but at the top of the range that might be proposed*”<sup>24</sup>. Translating this into an 800MHz value including the co-existence costs, Ofcom’s calculation represented a 65% relative value. We continued “*we consider that for 900MHz the international benchmarking data suggests the possibility of a range of 62 - 71% relative value (or 57% - 65% after increasing the 800MHz value with co-existence costs) but based on a proper assessment of the evidence the most reasonable interpretation is a percentage close to or at the lower bound of that range*”.

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<sup>24</sup> Vodafone response to August 2014 consultation, page 23.

*Changes between the August 2014 and February 2015 consultations*

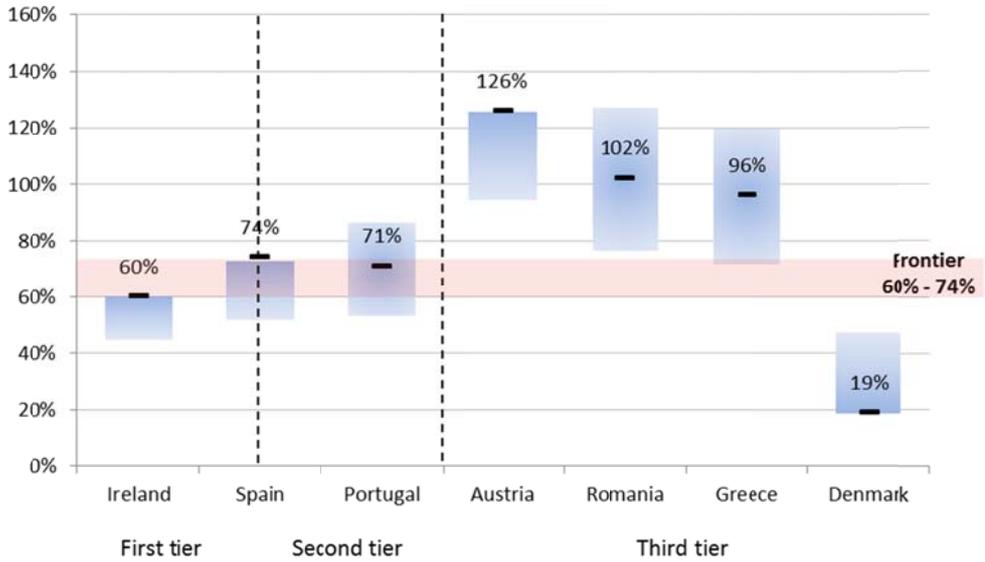
Since its August 2014 consultation, Ofcom has altered both the UK equivalent values that it uses and its approach to calculating the UK value. We believe that the outputs that result from these changes are not correct. Shortcomings in Ofcom's methodology still remain, and these have led to an overstatement of the relative valuation of 900MHz against 800MHz, and an asymmetrical change in this consultation versus the previous one between 900MHz and 1800MHz values. These matters need to be re-addressed.

Obviously the necessary change to the valuation of 800MHz as discussed in sections 1 and 2 above will have the effect of ratcheting down the absolute values of 900MHz and 1800MHz. But the key factor that is an output from the analysis of step 2 is the relative value, which Ofcom assesses at 70% for 900MHz and 27% on the distance method for 1800MHz. These relative values are then applied to the outputs of step 1 to produce the lump sums of 900MHz and 1800MHz for the input into step 3. The relative values adopted in the previous consultation were 65% and 28% respectively - so 900MHz has gone up by a non-trivial amount, and 1800MHz has come down slightly.

We do not agree with the upwards movement of 900MHz relative value. We continue to believe that the appropriate range for the relative value of 900 MHz spectrum in the UK is between the ratios suggest by the outcomes in Ireland and Spain, with the appropriate value likely being closer to the ratio from Ireland, which is a more reliable 900/800MHz benchmark – i.e. around 60%, using Ofcom's 800MHz base. Ofcom's current proposal is above the maximum of the appropriate reasonable range for the relative 900MHz value. Thus Ofcom's view will lead to an overestimation of the best, conservative view of market value of 900MHz spectrum.

This can be seen in figure 3.1 below, taken from the Frontier analysis. As explained in the Frontier document, to provide a consistent comparator, Ofcom's proposal of £23m. which is expressed as 65% of the value including the £3m of co-existence costs (£33m), could be seen as 77% of the value excluding co-existence costs (£30m):

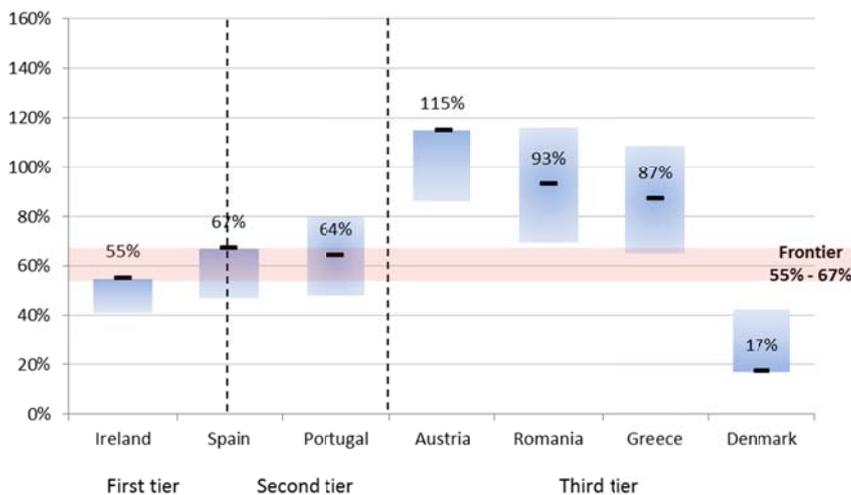
**Figure 3.1. The appropriate range for 900 MHz relative value**



**Source: Frontier elaboration based on Ofcom data**

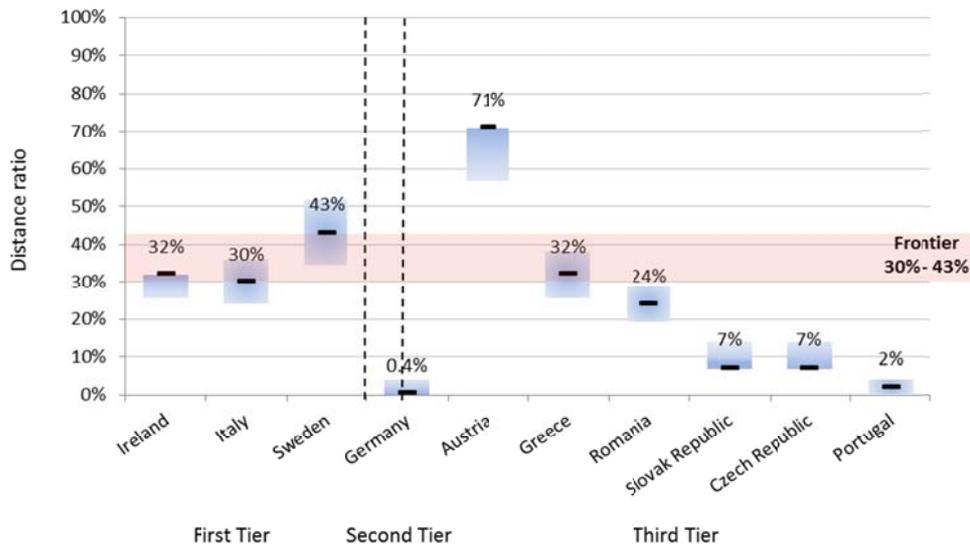
For ease of understanding, we have recast this chart into the Ofcom relative basis that incorporates the co-existence cost element into the 800MHz value. Here the Ofcom provisional view of 70% is above the reasonable range of 55% - 67%. This is shown in figure 3.2:

**Figure 3.2. The appropriate range for 900 MHz relative value, restated to Ofcom method**



Similarly, we still consider that the appropriate range for the relative value of 1800 MHz in the UK is between the Italian and Swedish distance ratios, with the appropriate value likely being closer to more reliable benchmarks at the lower end of this range, namely Italy and Ireland. Ofcom’s current estimate of 27% (rebased using the Frontier method to 31%) is consistent with what the benchmarking evidence indicates is the appropriate relative value of 1800MHz spectrum in the UK. This can be seen in figure 3.3 below.

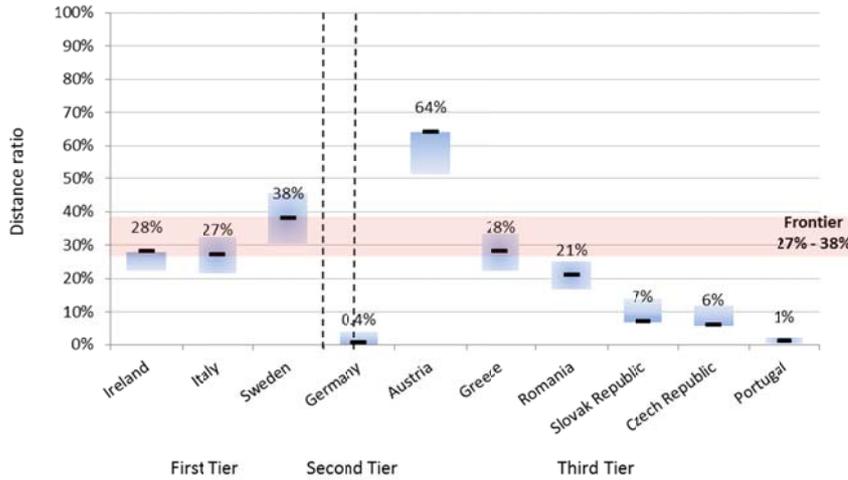
**Figure 3.3. The appropriate range for the 1800 MHz relative value**



Source: Frontier elaboration based on Ofcom data

Restating this chart to the Ofcom method clearly shows that the Ofcom view of 27% relative distance is at the bottom of the reasonable range:

**Figure 3.4. The appropriate range for the 1800 MHz relative value, restated to Ofcom method**



The differentiation between 900MHz and 1800MHz is very clear. Our concern thus focuses on the derivation of the 900MHz value, rather than the 1800MHz value, but we are also obviously concerned with the resulting different direction of travel of the absolute values – despite the fall in 800MHz value between the second and third consultations, the 900MHz absolute value has remained constant at £23m, whereas the 1800MHz absolute value has fallen in line with the 800MHz value reduction. This asymmetric impact is unjustifiable.

Our issues with these provisional relative values are:

- As already stated in our response to the August 2014 consultation, the appropriate treatment of the available benchmarking evidence indicates that the results from the Austrian auction are likely to be a poor indication of relative market value of spectrum in the UK. This is because the estimated value of 900MHz spectrum in Austria exceeds the value of 800MHz spectrum, which is inconsistent with Ofcom’s position that the value of 800MHz spectrum should be expected to be higher. Austria should therefore be given minimal or no weight when deriving the market value of spectrum in UK. This would be in line with the weight Ofcom attaches to Romania which is the only other benchmark country whose auction data suggests that 900MHz is more valuable than 800MHz spectrum.
- Ofcom’s change in the treatment of 900MHz benchmarks is not justified. Firstly, Ofcom’s decision to change its risk assessment on the key 900MHz benchmarks from auctions that took place prior to 2012 because of the greater commercial opportunities for LTE in the 900MHz band is not supported by any credible evidence. Secondly, there is no

conclusive evidence that strategic bidding in the Irish auction may have led to an underestimate of the true market value of 900MHz spectrum.

- Ofcom adopts an inconsistent approach to estimating the UK value of 900MHz and 1800MHz spectrum. This leads to the value of 900MHz spectrum being inappropriately high relative to the value of 1800MHz spectrum. Taking into account the evolution of benchmark values since the last consultation in August 2014, the key inputs into Ofcom's estimate have decreased for both 900MHz and 1800MHz spectrum. It would therefore be appropriate for Ofcom to proportionally decrease its estimate of both 900MHz and 1800MHz spectrum. However, Ofcom adjusts only the value of 1800MHz estimate, leaving the absolute 900MHz value unchanged at the level proposed in August 2014. This is an error.

Ofcom's uprating of 900MHz from 65% to 70% appears to rely solely on one change to its benchmarking approach, namely the assessment of the risk of understatement or overstatement for some key benchmarks, in particular relating to a revision since August 2014 of the prospects for LTE900.

#### *The prospects of LTE900*

Ofcom changes its risk assessment on the key 900MHz benchmarks from auctions that took place prior to 2012 (Ireland, Denmark, Greece, Portugal and Spain) because of the "*greater commercial opportunities for LTE in the 900 MHz band*". Ofcom now finds that these auctions risk understating the forward-looking value of 900MHz spectrum in the UK. We do not agree with this conclusion.

For the Tier 1 country, Ireland, in particular, Ofcom finds that in addition to the greater commercial opportunities of LTE900, the 900MHz price may underestimate the true market value of the spectrum due to the incumbents accommodating H3G in the 900MHz band.

These arguments, as is discussed in some detail by Frontier in annex 2, are not supported by convincing evidence. Therefore, Ofcom cannot credibly rely on them to justify its current view that the relative UK market value of 900 MHz spectrum has risen since the August 2014 consultation.

Vodafone believes that Ofcom's view cannot possibly be correct. We would obviously agree that 900MHz is a band that is designated for LTE and it would be reasonable to expect that ultimately 900MHz will be used for LTE in the UK

and elsewhere in Europe – but this is not new information that has emerged since the simultaneous 900MHz and 800MHz auctions; rather it is a fact that would have been well known at that time, and been taken into account in any valuation.

Further one would naturally expect that simply due to the passage of time since Ofcom's assessment of the prospects of LTE900 in the Auction Statement in July 2012 it may be that LTE900 as a general concept is now, in February 2015, less of a distant prospect than it was in July 2012. However we not consider that the LTE900 activity reported by Ofcom in this elapsed time (or in the period August 2014 to February 2015) can possibly lead to any conclusion that the value of 900MHz needs to be pushed upwards in the international benchmarking evaluations.

If anything the limited evidence that Ofcom cites in the present consultation on any increasing propensity to deploy 900MHz LTE is less than might have been anticipated in July 2012 (or any other past international auction date) that would have occurred (or been announced) by February 2015. Potentially it might well be argued from the paucity of current 900MHz LTE take-up that the benchmarking data should be pushed down, not up.

In terms of European LTE900 deployment the numbers of active operators are currently, as Ofcom reports, very small, and only one of those seven countries used by Ofcom for 800/900MHz benchmarking are indicating much prospect of activity (and that one is the tier 3 Romania, already considered by Ofcom to be less relevant evidence generally). But even if more of these countries were to be actively considering LTE900, Ofcom would still have to definitively establish that for each country, operators' current LTE900 plans have been brought forward from those that were in mind at the time of the respective auctions, and this Ofcom has failed to do.

We would also consider that the availability to date of LTE900 devices is less, not more than was suggested in Ofcom's July 2012 Auction Statement. The Real Wireless report "*LTE and HSPA device availability in UK-relevant frequency bands*" that accompanied the statement noted in section 3.1.2 that:

*"most device OEMs and operators believe a two-tier system will emerge, with 3-4 universally supported bands per region. In Europe these will certainly include 2.6GHz, 1.8GHz and 800MHz for LTE."*

It then went on to consider:

*"whether 900MHz will fall on the universally supported side of the fence or not in Europe. The research indicates that it will, though it will not appear in as large a number of devices as 800MHz LTE. Its growth is initially being*

*driven by the Middle East but by 2015 also by some European operators and parts of Asia”.*

*“However, there remain risks associated with LTE900 and most carriers remain open-minded on how to use this band, with no short term plans. Of the 59% which are considering this as an LTE band, only one in five expect to refarm 900MHz before 2014. This creates a (probably) temporary but real disadvantage for operators which want to roll out LTE more quickly in 900MHz, perhaps because they have failed to secure 800MHz. Achieving a critical mass of devices will take 12-18 months longer than for 800MHz. No tier one operator has yet thrown its full weight behind supporting a 900MHz ecosystem and though all the major OEMs plan to support 900LTE in at least some of their products, this is likely to be at a later date and with fewer models than for other bands, at least for the next few years.”*

The report seems now to be relatively prescient, except that it may have over-anticipated the speed of LTE900 deployment. It is hard to see that a critical mass of LTE900 devices (even when considered globally) was achieved as soon as 12-18 months after LTE800, which from Ofcom’s figure A9.1 was likely to have been achieved no later than mid-2013. Also the report overstates the likelihood of imminent LTE900 European deployment “by 2014”.

The other point to note is that LTE900 is a largely supplementary LTE band (and certainly would be in the UK), i.e. its general use will be to supplement bands on which LTE has already been deployed. In these circumstances for 900MHz to be useful to add general capacity to an existing LTE network, it would have to be available on devices that allowed at least two of the three core bands of 800MHz, 1800MHz and 2600MHz to be used as well, and with carrier aggregation on LTE-A enabled. Whilst the latest GSA report “*the status of the LTE ecosystem February 2015*” notes that there are 538 tri-band 800/1800/2600 devices available globally (nearly as many as the 605 devices which it records as 800MHz capable), it does not choose to note how many tri-band phones are actually quad-band (i.e. also include LTE900 capability).

The available evidence shows therefore that if anything, on the device side, LTE900 capability has not advanced as rapidly as was expected by Ofcom in 2012. We can certainly see no evidence for a rapid change in expectations that can justify an increase in relative 900MHz valuation beyond that judgement made by bidders in the historic simultaneous auctions of 800MHz and 900MHz.

## *Conclusion*

We note that Frontier's assessment of 900MHz and 1800MHz places Ofcom's view of 900MHz above the reasonable range of values that can be drawn from the evidence available to Ofcom but Ofcom's view of 1800MHz is towards if not at the bottom of the appropriate range. We conclude therefore that the asymmetric adjustment to 900MHz and 1800MHz that Ofcom has made between the second and third consultations is very much unjustified, particularly in relation to the incorrect hypothesis of changed perceptions on LTE900. At the very most the 900MHz relative value can be no more than 65%, and a more realistic and conservative assessment, paralleling that made for 1800MHz would put the relative value closer to or below 60%. Applying a relative value of 65% against Ofcom's step 1 800MHz value of £33m would give an absolute value of £21.4m (or £21m rounded down) and applying 60% would give £19.8m (or £20m). Obviously once Ofcom has adjusted for its errors in step 1 discussed in sections 1 and 2 above then these absolute values would ratchet down further.

## **Section 4: Annualisation of ALF from lump sums and ALF implementation**

### **Summary**

Ofcom has moved from a discount rate that in August 2014 was derived from the cost of debt, to a discount rate in February 2015 that is a blended mix of cost of debt and WACC. In Vodafone's view the use of a blended rate is inappropriate and certainly not conservative. We see considerable problems with any blended or partial WACC based solution, and in particular with one that is certainly not conservative. The use of the preferable simple cost of debt measure would reduce Vodafone's ALF exposure from £61.3m to £54.6m.

We also consider that the short "split the difference for the first year" implementation method that Ofcom continues to use is, whilst similar to the recent decision on MTR charge control implementation, an inconsistently short period in comparison with Ofcom implementation decisions and expressed intentions in fixed telecoms and DTT.

We urge Ofcom to think again, particularly in the absence of any impact assessment on the implications of either the discount rate or the implementation period.

### **The annualisation process**

The input to the annualisation process is the lump sum values of 900MHz and 1800MHz, derived as discussed in the sections above, by the post-auction and post-coverage obligation values of the auctioned spectrum, overlaid with the relative values of 900MHz and 1800MHz spectrum obtained from benchmarking.

In the August 2014 consultation Ofcom considered in some detail the appropriate type of discount rate that would leave MNOs indifferent between paying ALF and paying a lump sum amount. It concluded that the form of rate adopted depends on the extent to which MNOs rather than the Government are exposed to the effect of such changes.

*"In principle, an average efficient MNO (on which our estimation of the discount rate is based) and the Government should be indifferent between payment for the spectrum in the form of a lump-sum payment or ALF. This means that the discount rate used to annualise the lump-sum value should reflect the risk of the cash flows coming from MNOs to the Government*

*through the ALF, rather than the risk to the MNOs of the cash flows associated with using the spectrum.<sup>25</sup>*

The level of this “risk” was then related by Ofcom to the level of the ALF obligation. In 4.13 Ofcom described two “polar alternatives”:

- *“If the ALF payment were set up such that the risk of the ALF payment were the same as the risk of the future after-tax free cash flows (e.g. through some form of net revenue sharing arrangement between the MNOs and the Government), the correct discount rate to use would be the rate used to convert the expected cashflows from using the spectrum into the bid value. This may be approximated by the MNOs’ WACC.*
- *If the ALF payment were set up so that they were completely fixed regardless of circumstances, and MNOs had no option but to pay this level of fee, the ALF would effectively be akin to a form of highly secured debt and the correct discount rate would be the corresponding interest rate for such a debt instrument.”*

Ofcom went on to identify the major components of the ALF determination:

- Sums are fixed in advance and will not vary with operator returns;
- The ALF payments are secured against an asset;
- But MNOs could hand back the spectrum, avoiding future payments;
- The level of ALF might be revised up or down.

From this, and relating in particular to the degree of possibility of the last factor, Ofcom determined that there was no solution that perfectly fits the situation it was considering here. It considered that it was possible that the appropriate rate could lie at some point between the WACC and the discount rate. But Ofcom then took the view that:

*“However, for the reasons set out in Section 1 we consider it appropriate to take a conservative approach when interpreting the evidence to derive ALFs. We therefore propose to use the cost of debt rate for the purposes of deriving ALFs”<sup>26</sup>*

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<sup>25</sup> August 2014 consultation at 4.12

<sup>26</sup> Ibid at 4.25

We did not disagree with that conclusion. In the February 2015 consultation unaccountably Ofcom has had a rethink, and has now determined to adopt a blended discount rate, of 75% cost of debt and 25% WACC. We find it hard to understand this change of mind, when there is no more empirical evidence available on this issue than there was in August 2014. Ofcom quotes the advice of BT, and appears to rely on this as one justification for the change.

Ofcom's revised view would appear to centre around the argument in 4.43 that *"there is scope for spectrum value to change over time"* and therefore *"we consider that it is reasonable to assume that these fee rates are likely to be reviews at some stage during a 20-year period, although we cannot predict with any certainty at what point any such review or reviews might occur"*.

Ofcom then continues:

*"we agree with BT that it is not appropriate to assume that the Government bears zero risk and the licensees all of the risk. We therefore consider that we should exercise our regulatory judgement about the extent of risk sharing to be reflected in the discount rate (in contrast to our proposal in the August 2014 consultation).<sup>27</sup>"*

We do not agree with the first part of this conclusion. Obviously Ofcom must exercise its regulatory judgement, (and as we discuss below it is very relevant that Ofcom considers that it is doing so here), but this does not mean that the best option to select is some level considerably above the cost of debt. Ofcom has stated that it will exercise its judgement conservatively – this argues for an outcome not below the range of all reasonable possibilities, but at the lower end of any reasonable range.

Whilst Ofcom's discussion of the level of discount rates is somewhat esoteric, the decision is very much not a trivial one – but this is not evident from the consultation document. Using Ofcom's latest values for WACC and cost of debt, at a WACC rate the total industry ALF would be £298m, whereas at the cost of debt the total would be £199m. Or expressing it another way the increase from cost of debt to WACC involves an increase in annual outpayments of 50%. Over 20 years, at 2% CPI the aggregate difference between the use of cost of debt or WACC as the discount rate is £2.4bn in outpayments from the mobile industry. This is not an inconsiderable difference.

We are aware that Ofcom has taken the position that it does not need to conduct a formal impact analysis since it is bound by the SI to set fees at full market value, but to a very considerable extent the assessment of market value stops at step 2 of the process, once the determination of the lump sum value of 900MHz and 1800MHz spectrum has been made. Ofcom is very clear in the

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<sup>27</sup> February consultation at 4.51

quote above from paragraph 4.51 that in deriving a discount rate to annualise these lump sums, it is exercising its regulatory judgement. It is surprising therefore that Ofcom is doing so on the annualisation exercise without an impact assessment, given the very broad range of impacts on the mobile industry between the use of a cost of debt rate and a WACC rate. We discuss this point further in section 6.

Vodafone has already commented in responses to previous consultations on the low level of industry profitability and the resulting impact on EBIT of high ALFs – this concern is obviously heightened by the new coverage obligation which obviously whilst it is to the benefit of the UK as a whole has a further adverse impact on operator profitability. There is a clear UK benefit from additional network investment, but this investment is potentially imperilled by high ALFs. Consideration of this would obviously form part of any future impact analysis.

*Ofcom's view that the cost of debt must be too low*

We would agree with Ofcom that any strong blend of WACC with the cost of debt must be entirely off the table. We consider however that Ofcom's mix of 25%:75% is some way above any reasonable ceiling of an appropriate blend, but we are also very clear that a cost of debt discount rate is not below the floor of any reasonable range.

The belief that the cost of debt must be too low arises from an expectation that the ALF levels will be revised over the 20 year period. But Vodafone considers that it is by no means axiomatic that any review within the next 20 year period will conclude that an ALF change is appropriate or necessary. Obviously this is made with the proviso that the level of ALF has been set at the correct level in the first place – clearly as we discuss in the sections above Vodafone's view is that this has as yet not been achieved. An inaccurately set ALF will very much increase the likelihood of a future review, particularly if it is set at a level that is unsustainably excessive. A conservative value of spectrum is in and of itself less likely to trigger a review on these grounds.

There are several grounds for believing that a properly and conservatively set ALF will not need to be revised:

- The present spectrum fee charges per channel were derived from a review carried out in 1996 - 98. When Ofcom (and its predecessors) conducted an extensive review into potentially raising these levels in

2002 - 2004<sup>28</sup>, the conclusion was made in September 2004 that there were “no proposed changes to fee levels”. The present charges per channel are thus approximately 20 years old.

Whilst the past constancy in fee levels per channel may be merely a historical anecdote, a principal reason that Ofcom could not conclude that the value of the 900/1800MHz spectrum was out of step with the fee levels in 2004 was the uncertainty caused by the emergence of 3G, in a different spectrum band.

*“Ofcom expects that the mobile sector will experience potentially significant changes in the coming three years, which introduce considerable uncertainty in the calculation of the current and future opportunity cost. For example, changes in 2G network planning and congestion as a result of the potential growth of 3G services could have a major impact on the opportunity cost calculation for 2G spectrum. Since the scale of these changes is so uncertain, there is a major risk that setting AIP fees with the information available now could result in a serious error in estimation. If, in three years’ time, AIP fees needed to change significantly because of this misestimate, the disruption to business might have a worse impact on efficiency than holding AIP fees at their current level and reviewing these in 3 years time when the uncertainty is reduced.”*

*In addition, Ofcom intends to release more spectrum suitable for mobile applications, such as the re-assigned Public TETRA spectrum, over the next 18 months. This further strengthens the case for waiting till the next review period to adjust AIP charges for mobile spectrum, because the release of further mobile spectrum may have an impact on the value of existing mobile spectrum, though the impact is uncertain.”<sup>29</sup>*

We are not saying that it is wrong to review the level of spectrum fees today – rather that the uncertainty Ofcom experienced in 2004 and presumably prior to the 4G auction is a general one that is likely to be experienced in the future, making any subsequent revision of fees after the present review significantly less likely. The eventual development of 5G, potentially in different, higher frequency bands than those currently in use for mobile services, is clearly within the ALF 20 year timetable and may very well present Ofcom with a very similar problem to the one

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<sup>28</sup> Starting from the “Cave report” in March 2002 to the RA, through the Indepen report to Ofcom of March 2004 and completing in the Ofcom Spectrum Pricing document in September 2004

<sup>29</sup> Ofcom Spectrum Pricing, October 2004

faced in 2004 and lead to a similar disinclination to adjust fee levels in the future.

- We are aware that additional spectrum will be auctioned in the next few years. This may or may not provide relevant evidence that 900MHz and 1800MHz fees are sufficiently out of step that a review is necessary, and such a review may or may not then conclude that the level of fees should be changed. But obviously the knowledge of future availability of mobile spectrum is something that at the very least will provide some degree of dampening down on any potential tendency for any future upwards valuation of spectrum, tending towards stabilisation of spectrum values.

However it is important to note that Ofcom is very much in control of future spectrum auctions beyond the 2.3GHz and 3.4GHz auction planned for next year, in both timing and spectrum quantity. With respect to 700MHz, whilst the decision to release 2\*30MHz for mobile use has now been made, the timing of the release is still variable, not fixed. Ofcom notes in the November 2014 700MHz Statement that its “*objective is to make the band available for mobile by the start of 2022 and sooner if possible*”.

In relation to any additional spectrum suitable for mobile broadband use, Ofcom has very clearly said that it will adjust its plans dependent upon need. In the Mobile Data Strategy statement of May 2014 Ofcom states in the executive summary:

*“However, the potential scale of the future challenge<sup>30</sup>, the potential benefits that could be achieved by meeting it, and the long lead times normally associated with changing spectrum use, mean that developing a long term strategy is important.*

*This document therefore identifies additional spectrum bands for potential mobile use and prioritises our efforts on these. It describes what we plan to do to better understand the possibilities for each band, and, where appropriate, ensure there is an option for future mobile use.*

*We will take forward the band-specific actions identified in this document and continue to develop our understanding of future demand and technology trends. We will update and refine our strategy periodically as necessary.”*

In other words there is a clear intention to avoid any “capacity crunch” in future growth in mobile data demand by preparing for the timely release of additional spectrum as needed. A very detailed list of candidate

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<sup>30</sup> Of any capacity crunch arising from mobile demand exceeding mobile supply

bands, opportunities, and priorities accompanies the MDS Statement. As a minimum this provides a cap on any tendency for the value of mobile spectrum to rise if demand exceeds supply. Ofcom has in effect assumed the role of gatekeeper in future spectrum supply and must therefore be able to exert some strong control over the level of future spectrum value, particularly in any upward direction.

- It is not impossible that the number of active or potentially active mobile operators will shrink from five to four and even to three in the future. This too may as a minimum potentially limit any extent to which the value of spectrum may rise in the future.
- All these considerations serve to reduce the likelihood that any future Ofcom review would consider that the level of ALF was so significantly out of step with underlying value that it was necessary to adjust the rate – clearly a review that concludes that the status quo is acceptable is not a transfer of risk.
- There is a peculiar circularity in Ofcom’s logic, in that the use of a blended rate in itself drives fees upwards. For Vodafone the provisionally suggested starting fee using a 75%:25% blended rate is £61.3m, whereas at the cost of debt the fee would be £54.6m – i.e. the use of a blended discount rate has driven Vodafone’s costs up by 12%. It would be a very unsatisfactory circumstance if any future pressure from mobile operators for Ofcom to review the ALF were to arise because the high level of ALF was derived in the first place from the assumption of a need for a review to reduce it.
- The terms of any future review are obviously unclear – would it involve re-setting the clock for another 20 years, or would it, as is suggested by Ofcom’s blending methodology be for the remaining part of the current 20 years period, and thus of necessity require the post-review period to use the cost of debt rate? In this case the unsatisfactory circularity rears its head again.

We conclude from these observations that whilst it is very unlikely that Ofcom will not consider in some informal manner whether the 900MHz and 1800MHz fees are out of step with an appropriate future level, it is by no means certain that the outcome of such assessment will be a formal review that will significantly change the level of ALF. Therefore it is wrong to state as BT did in

their response to the August consultation that the cost of debt rate “*is guaranteed to be below the right value with complete certainty*”<sup>31</sup>.

We consider therefore that there is a very strong case for the use of the cost of debt measure as the discount rate rather than any higher blended mix – the selection of the latter would not be a conservative choice on Ofcom’s part.

#### *The assessment of the level of the blended rate*

Vodafone has asked Oxaera to consider the robustness of Ofcom’s adoption of the particular values of a 75%:25% blended rate. Their report is appended to this document as Annex 3.

Oxaera concludes that:

*Ofcom’s assessment of 40% risk share can only overstate the true level of risk share, since the reality is that the value will only be recalculated following a material and low probability event, and such an event is likely to relate to a change in technology rather than the systematic risk or wider market risk that would justify an equity premium.*

*In addition, nothing has changed since August, and Ofcom’s approach then of using 0% weighting for equity remains most appropriate as a ‘point estimate’ now as it is the most likely case and consistent with the principle of a conservative approach.*

*Ofcom’s application of regulatory judgment in coming to 25% does not appear to be ‘conservative’, and the previous approach of 0% would be more consistent with a realistic range which would include zero and which our analysis suggests should have a higher end below Ofcom’s mid-point of 25%.*

At the very worst therefore, should Ofcom choose a mid-point rather than a low end alternative in the range of possibilities, a significantly weaker blend than 25%:75% would be at the mid-point of any plausible range – for example 10%:90%. This would imply a discount rate of 1.3%, rather than 2%.

#### *The calculation of the WACC and the cost of debt*

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<sup>31</sup> Quoted in the Ofcom February consultation at 4.21. We are not sure whether BT will still have this view

In the present consultation Ofcom has very slightly amended the WACC to keep it in line with the latest version produced by the Mobile Termination Rate statement. Vodafone is comfortable with this.

We would also agree with the calculation of the cost of debt rate, which produces a result very similar to that suggested by Vodafone and Oxera in the response we made to the second consultation.

### *Implementation*

In August 2014 Ofcom proposed a limited phasing in of ALF, in that half of the increase in spectrum fees would be imposed in the first twelve months, with the full ALF being imposed for the second year onwards. This “split the difference for year one” approach is identical to the one that Ofcom has just adopted in the mobile termination rate statement, in March 2015. By contrast Ofcom continues to allow a more extended glidepath in fixed telecoms regulation, where regulated fixed operators are allowed to spread any change from old regulation to new over a three year period – i.e. it is not until the beginning of year three that the target rate is imposed.

We discussed the issue of the short glidepath for ALF in some detail in section 6 of our response to the previous consultation. Any implementation timetable is an exercise of Ofcom’s regulatory judgement, and in the absence of a specific impact assessment on alternative implementation options of ALF, the exercise of that judgement can only be seen in the context of other related implementation decisions, such as DTT where Ofcom is proposing to set a 4 - 5 year glidepath for an increase that is likely in absolute terms to be of the same order of magnitude as the AIP to ALF change, and the more extended glidepaths of fixed regulation.

Ofcom states in paragraph 7.20 of the present consultation that the link Vodafone establishes between ALF implementation and the use of glidepaths in setting charge controls is not valid.

*“In the context of price controls, a glide path is used to reinforce the incentive for the regulated company to make cost savings which can then be passed on to consumers in time. If the regulated company cannot retain at least some of the benefits of cost reduction for a period then it will have a reduced incentive to make them. This cost-reduction incentive does not arise in a similar way with ALFs.”*

We would however point out that this only applies in the case of charge controls that involve an extensive fixed and common cost recovery if it can be assumed that the starting point of any charge control i.e. year 0 is, in terms of the total

sums recovered i.e. regulated unit rates multiplied by actual volumes, the one Ofcom intended. In the absence of any P0 adjustment to eliminate volume forecast error the present glidepath approach allows retention of rather more than simply some of the benefits of any achieved cost reduction. Ofcom is aware that Vodafone has already drawn attention to the excessive returns that the regulated part of BT has been able to make over the past decade, and the fact that the present glidepath policy is one of the reasons for this.

It may be that the MTR decision and the provisional ALF implementation decision are setting precedents for each other, and that there is a bifurcation emerging in implementation decisions, in that in mobile Ofcom is generally proposing a more rapid implementation for regulatory charges than it is in fixed telecoms or for DTT. Vodafone would find this differentiation troubling and potentially discriminatory. Or in the alternative it may be that Ofcom is planning using the mobile MTR and ALF precedent to lead to a steeper and more taxing glidepath for fixed charge controls, for example in the upcoming BCMR consultation. If so we would be less concerned by the steep glidepath Ofcom is adopting for ALF.

However we would urge Ofcom to think again and apply a rather less onerous ALF implementation timetable to the mobile operators, that is more consistent with its observed practice elsewhere.

## **Section 5: Risk asymmetry & the lack of general conservatism of Ofcom's outcome**

In coming to a view on the appropriate value of ALF for 900MHz and 1800MHz in the UK Ofcom has considered again in the February 2015 consultation the issue of the asymmetry of risk as between the effects on spectrum efficiency from setting the ALFs above or below market value. Ofcom considers that most of the respondents to the previous consultation (with the notable exception of BT) misunderstood what Ofcom meant by the term '*adopting a conservative approach when interpreting the evidence*' (1.44). Ofcom clarified that what it meant was that '*We will generally prefer approaches which we consider are more likely to understate full market value than to overstate it, where such a choice arises.*'

Ofcom then proceeded to apply its approach to dealing with the asymmetry in risk when considering the derivation of the appropriate 800MHz value (para 2.186), the use of the benchmarking evidence (para 3.56, 3.59), and in the derivation of the degree of risk transfer to the Government, which determines the 'uplift' of the discount factor above the cost of debt (para 4.62).

In summary however, Vodafone continues to believe that Ofcom has failed to deal appropriately with the asymmetry of risks in the setting of ALF for the following reasons:

First, the evolution of Ofcom's overall approach to the setting of the 800MHz value indicates in itself a high degree of uncertainty. This requires Ofcom to be *more* conservative in the setting of the value for the purposes; and

Second, Ofcom's approach to reflecting the asymmetry of risk in each one of the key elements used to derive the ALF for 900MHz (and to an asymmetrically lesser extent 1800MHz) is not conservative, as Ofcom claims.

We would also consider, as we discuss in section 2 above that Ofcom's narrowly based view of the impact of the new coverage obligation on the value of spectrum and thus on the level of ALFs is certainly not a conservative expression of the likely diminution in spectrum value that will have resulted from the acceptance of the aggressive 90% area coverage obligation.

### **Uncertainty in setting ALF and asymmetry of risks**

Vodafone agrees with Ofcom (para 1.44) that there is inevitably considerable uncertainty in any method for deriving ALFs for the 900MHz and 1800MHz bands to reflect full market value: the process of deriving ALFs involves some

regulatory judgement when considering the evidence. As Ofcom recognises that there is a greater risk of inefficient spectrum allocation if ALF is set too high, regulatory judgement needs to take into account the *degree* of uncertainty involved.

Vodafone considers that the evolution in Ofcom's methodologies used to decide on the appropriate level of the key inputs to the setting of the ALF demonstrates that there is a *very high level* of uncertainty in the setting of the ALF. More specifically, Ofcom:

- changed three times in as many consultations the methodology it adopted in the derivation of the UK 800MHz (and 2600MHz) value;
- modified at least two times the methodology it adopted in the use of the benchmarking evidence to derive a 900MHz (and 1800MHz) value; and
- modified at least one time the methodology adopted in the setting of the appropriate discount factor.

The table below summarises some of the more important changes in methodology adopted by Ofcom across the different consultations. As indicated in the Frontier reports attached to this consultation response and to previous responses, Ofcom has changed its assumptions and/or methodology used in relation to a large number of other elements that affect the derivation of the 900MHz and 1800MHz ALF value.

	October 2013	August 2014	February 2015
UK 800MHz value	LRP with revenue constraint	Marginal bidder analysis (unconstrained)	Opportunity cost analysis (unconstrained)
International benchmarks	<ul style="list-style-type: none"> <li>• Absolute and relative values, adjusted</li> <li>• Two tiers of evidence</li> <li>• Relative 1800 MHz values based on 800 MHz and 2.6 GHz ratios</li> <li>• Ignore benchmarks that imply UK value of 900 MHz is greater than value of 800MHz</li> </ul>	<ul style="list-style-type: none"> <li>• Relative values, adjusted</li> <li>• Three tiers of evidence</li> <li>• Relative 1800 MHz values based on “distance method”</li> <li>• Consider a benchmark that implies UK value of 900 MHz is greater than value of 800MHz to be key evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Relative values, updated adjustments</li> <li>• Three tiers of evidence</li> <li>• Relative 1800 MHz values based on “distance method”</li> <li>• Consider a benchmark that implies UK value of 900 MHz is greater than value of 800MHz to be key evidence</li> </ul>
Discount rate	WACC	Cost of debt	Blended

**Table 5.1 ALF methodology changes between consultations**

Whilst Vodafone recognises that Ofcom needs to consider and reflect on consultation responses, the methodology changes have generally been made in the light of hardly any genuinely new data/information. For example, the very material change in the approach of Ofcom to the setting of the discount factor between the second and third consultations seems to reflect a ‘generic’ comment made by a single respondent (BT) on the overall methodological approach of Ofcom. Equally, the fact that Ofcom reduced the 1800MHz ALF value but not the 900MHz value between the second and the third consultations seems to reflect again the comments of one respondent in relation to how to interpret the evidence from one benchmark auction.

From this and other evidence Vodafone therefore considers that the setting of the ALF value involves a high and likely unprecedented level of uncertainty, and the significant changes made in the methodology and approach of Ofcom between the second and third consultations confirm this. The benchmarking evidence on the range of possible market value of 900MHz spectrum further

supports this, as discussed in some detail in the Frontier report that forms Annex 1.

Such a high level of uncertainty requires Ofcom to be even more conservative, under the reasonable assumption of risk aversion in relation to the efficiency impact of the risk asymmetry: i.e. the 'cost' to consumers from setting the price too high would be higher than the cost from setting the price too low. By failing to recognise the degree of uncertainty involved in the setting of the ALF, Vodafone considers that Ofcom's approach continues to risk an inefficient allocation of spectrum by setting the ALF too high.

The issue is obviously exacerbated by the failure to conduct an impact analysis, which we discuss in section 6 of this response, and have discussed in previous responses. As a result of this Ofcom has little in the way of evidence to help it decide the degree of sensitivity of any individual view it is taking and to judge the real extent of conservatism or otherwise that it is embedding in each provisional view. Obviously however the materiality of the sums being arrived at, in terms of the very much greater level of ALF expenditure output by Ofcom's current provisional view over the existing fee level (an additional outflow of £4.1 billion over 20 years) are very significant to the industry.

### **The approach to the derivation of the 800 MHz market value is not conservative**

Ofcom has provided a number of reasons as to why it considers that its approach to the derivation of the 800MHz market value in the UK is conservative – these are considered in more detail in the Frontier report that forms Annex 1, and in section 1. As explained in the Frontier report, none of the reasons offered by Ofcom support its claim that it has adopted a conservative approach.

### **The approach to the impact of the coverage obligation on spectrum values and ALF is not conservative**

As we discuss in section 2 above, Ofcom's conclusion that the level of ALFs do not need to be adjusted for the new coverage obligation is the very opposite of any conservative approach. It is very clear that spectrum with a coverage obligation is worth less than unencumbered spectrum, for the reasons discussed in section 2 – leaving ALF unchanged in the face of this obligation is therefore hardly conservative. We discuss in that section various ways in which the reduction in the value of spectrum could be expressed in the level of ALFs,

in a way that reflects the symmetrical nature of the aggregate impact between operators and does not attempt to reward individual operators for historic relative underinvestment in coverage.

**Ofcom’s approach to the use of the benchmarking evidence is not conservative**

Ofcom states that it has also been conservative in its approach to the assessment of the benchmarking evidence<sup>32</sup>. Ofcom’s claim appears to be founded on:

- the fact Ofcom has chosen a UK market value of 900MHz spectrum which is in a lower part of the range of first-tier 900MHz benchmarks: “A figure of £23m is halfway between these two points (or a quarter of the way from the lower benchmark to the upper benchmark), could be appropriate, looking solely at first-tier benchmarks”; and
- the fact that Ofcom’s preferred UK market value is only slightly higher than the average of the two second-tier benchmarks: “The average or mid-point between the two second-tier benchmarks is £21.7m. This is just 5% lower than the figure of 23m we derive from first-tier benchmarks.”

For the reasons explained in the Frontier report at Annex 2 and in section 2 above, Vodafone does not consider that Ofcom has adopted a conservative approach on benchmarking.

- **Ofcom’s approach to determining UK spectrum value based on benchmarks has changed significantly over time, suggesting a high degree of uncertainty.** For instance, the table above demonstrates that Ofcom has moved from using absolute and relative benchmarks to only relative benchmarks and has changed the way it categorises benchmarks. The net effect of these changes (and others) is that Ofcom has moved from relying on a number of benchmarks in its first consultation to effectively relying on only two in its latest consultation – Austria and Ireland. Moreover, the Austria benchmark implies that the 900MHz spectrum is more valuable than 800MHz spectrum in the UK, a position which Ofcom used as a basis to dismiss the Romania benchmark in its first and second consultations.

**Ofcom is not sufficiently conservative within its current approach.** Placing the value of 900MHz spectrum one quarter of the way between the lowest and highest tier 1 observations

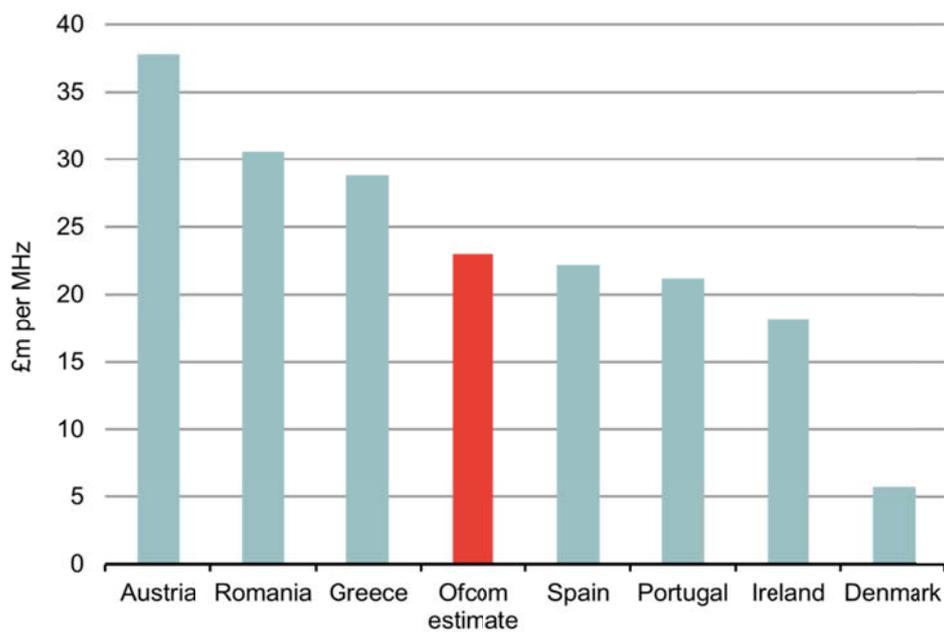
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<sup>32</sup> See for instance paras 3.56-3.59 for 900 MHz benchmarks

does not appropriately reflect the high degree of uncertainty surrounding Ofcom’s approach to assessing the benchmarking evidence. For example, four of the seven international benchmarks that Ofcom refers to in its assessment imply a lower UK value of 900MHz spectrum than the value that Ofcom ultimately decides on, as shown in in the chart below

- **Figure .** Ofcom should address this in a conservative manner by placing the UK value of 900MHz spectrum closer to the lower bound of the tier 1 evidence (i.e. Ireland).

**Figure 5.1.** UK value of 900 MHz spectrum based on international benchmarks



Source: Vodafone based on Ofcom data

**The approach to the derivation of the appropriate discount factor is not conservative**

Ofcom claims that it has been conservative in its approach to the discount factor, by setting the level of the risk sharing adjustment at 25% (which means the discount factor is set at the cost of debt, plus 25% of the difference between the WACC and the cost of debt).

For the reasons explained in section 4 above and in the Oxera document that is annex 3, the appropriate discount factor that should have been used, especially when evaluating the issue on a conservative basis, is the cost of debt, not a higher blended rate. Oxera observed in annex 3 that:

*“Ofcom’s application of regulatory judgment in coming to 25% does not appear to be ‘conservative’, and the previous approach of 0% would be more consistent with a realistic range which would include zero and which our analysis suggests should have a higher end below Ofcom’s mid-point of 25%.”*

With the exception of one respondent’s comment on the overall methodology, which Ofcom surely must have considered in its second consultation, there is no new information or empirical evidence provided by respondents or by Ofcom to justify this change in approach. Vodafone therefore considers that Ofcom’s claim that its approach to the setting of the appropriate discount factor is conservative is totally unjustified.

## **Section 6: Legal analysis**

### **Executive summary**

1. This section sets out Vodafone's points with respect to Ofcom's legal reasoning as set out in Ofcom's 'Annual licence fees for 900 MHz and 1800 MHz spectrum: provisional decision and further consultation' ('February 2015 publication'). Our objective is to assist Ofcom in reaching a robust and lawful decision.
2. This section covers:
  - (a) Vodafone's re-affirmation of the points made previously that Ofcom has made a number of errors of law in its approach to revising ALFs;
  - (b) Responding on a preliminary basis to legal issues arising from Ofcom's analysis in the February 2015 publication (about which Ofcom does not consult) in dealing with the question of revising ALF without taking into account the impact of the coverage obligation; and
  - (c) Legal issues arising in response to Ofcom's limited consultation regarding Ofcom's analysis of the impact of the coverage obligation.
3. Throughout the ALF consultations, Vodafone has raised concerns about, amongst other things, Ofcom's inconsistent approach to the role of the Direction and the exercise of regulatory discretion across different proceedings, and Ofcom's failure to properly equip itself with an adequate impact assessment. In its 'provisional decision', despite receiving submissions identifying with precision the source and nature of Ofcom's errors, Ofcom fails even to adequately document or discuss those concerns, much less address them or demonstrate any properly reasoned basis for ignoring them. Those submissions remain unanswered.
4. This submission also responds to aspects of Ofcom's reasoning and approach that are novel to the February 2015 publication. Vodafone does not accept Ofcom's 'provisional decision'.<sup>33</sup> Ofcom does not give any signal that it has an open mind with respect to most of the reasoning set

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<sup>33</sup> Vodafone notes that it is not clear what that term means in this context. Vodafone understands the position to be that Ofcom has not made any decision to issue regulations under section 12 WTA06, but is signalling that it proposes to do so. Particularly given that Ofcom's reasoning contains material new information and adopts materially different methods and reasoning as compared with Ofcom's prior consultations on ALF, Ofcom is obliged to consult with parties likely to be affected by that provisional decision. By expressing its position as a 'provisional decision' and by not inviting comments, Ofcom does not appear to have met its statutory obligations in relation to that proposal. Vodafone makes this submission on the basis that it ought to treat Ofcom's provisional decision as a proposal for consultation, and reserving its position as to the deficiencies in Ofcom's consultative process.

out in the February 2015 publication.<sup>34</sup> This failure to consult with an open mind is contrary to Ofcom's statutory duties and deviates from Ofcom's guidelines on consultation, and principles of best regulatory practice.<sup>35</sup> This failure must be added to the list of legal deficiencies in Ofcom's highly unorthodox approach to this matter, and is an additional point of inconsistency when ALF is compared to other, closely aligned policy proceedings (such as, for example, the 4G auction process) where Ofcom consulted, and applied its duties, consistent with best practice and the relevant statutory requirements.

5. Unless Ofcom addresses this and the other errors of law Ofcom makes during this proceeding, any decision that Ofcom takes on ALF will be *ultra vires*.
6. Nonetheless, Vodafone has responded to the February 2015 publication in its entirety, given that there is one final chance for Ofcom to spare all affected stakeholders, including UK mobile consumers and UK taxpayers, the consequences of an expensive and wasteful error.

**Recap: Ofcom does not address errors identified in Vodafone's previous submissions**

7. Vodafone has consistently raised concerns related to Ofcom's approach to ALF. Those concerns are as set out in the first and second submissions.
8. They are not repeated here in full but each of the relevant sections of, and annexes to, the previous submissions (in their entirety) is re-iterated as a submission made in response to the February 2015 publication.<sup>36</sup> For convenience, we have annexed the executive summary of those two submissions to this document.
9. In essence, Ofcom fails to recognise that in setting regulations for spectrum licence fees pursuant to the Direction, Ofcom must act otherwise in accordance with its other relevant statutory duties and only deviate from doing so to the extent necessary to give effect to the Direction.
10. These duties include:
  - (a) **To act for lawful purposes.** Specifically, for the purposes set out in section 2 of the Direction, and/or for the purposes set out in

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<sup>34</sup> Other than to the limited extent that it is inviting comment on impact of the coverage obligation.

<sup>35</sup> Ofcom's consultation guidelines (November 2007) state that 'During the consultation [w]e will be clear about who we are consulting, why, **on what questions** and for how long.' (emphasis added).

<sup>36</sup> The comments in this submission that summarize or refer to those earlier submissions are made without prejudice to Vodafone's previous submissions, the full text of which constitutes Vodafone's views, and which are made in response to February 2015 publication in full.

legislation (UK and European). It is necessary in law to identify the purpose of Ofcom's action, both because (in this case) Ofcom is required to act with a view to achieving specific purposes by virtue of the Direction and section 5(3)(d) WTA06, and because without identifying a purpose, it is not possible to assess the proportionality of its action.

- (b) **To promote competition.** To act consistently with its primary duty to promote competition requires Ofcom to have some assessment of the effects of its action on competition, and to have due regard to that assessment in its decision. Ofcom does not undertake any assessment of the implications of its proposals for competition, nor does it use such an understanding of those impacts to inform its regulatory judgement. This is particularly acute in relation to, for example, Ofcom's assessment of what constitutes a "well-functioning market" for spectrum where to equip itself with an understanding of the relevant market dynamics would be particularly informative. To the extent it is recognisant of these questions at all, it appears to rely on the 2012 competition assessment, that is now rendered quaint by virtue of being more than three years out of date.
- (c) **To act proportionately.** Acting in a proportionate manner requires consideration of the purpose (or objective) of administrative action. Ofcom does not accept that it has any objective of the sort imposed by its statutory duties; nor does it recognise the purposes of the Direction itself as relevant. Therefore, it is not equipped to, and does not, assess the proportionality of its action. Proportionality also implies that Ofcom should set the lowest (least distorting) ALFs that will achieve a given outcome.
- (d) **To carry out an impact assessment.** Without this assessment, Ofcom's regulatory judgement (which it refers to as playing a significant role in its reasoning on ALFs) is not properly informed, leading it into error.
- (e) **To apply the statutory rules relating to setting spectrum licence fees.** When setting spectrum licence fees in particular, Ofcom is required to act in accordance with the requirements imposed by WTA06 (and reflecting the requirements of the CRF).
- (f) **To act consistently.** Ofcom acts inconsistently by deviating from the approach that it takes in other proceedings, including other proceedings governed by the same statutory provisions (for example, in relation to setting licence fees for other spectrum bands) and in relation to other proceedings governed by the Direction (for example, in relation to the 4G auction). Ofcom is also required to act

consistently in terms of the different elements of its decision – for example, in adopting a ‘conservative approach’, Ofcom should apply that in a broadly consistent way to the different elements of its analysis.

11. Ofcom’s errors are related to Ofcom’s failure to ask itself the right questions.
12. Ofcom’s approach seems to be to ask, first: what must be done to give effect to the Direction, taken in isolation? And then, is the result demonstrably inconsistent with our other statutory duties?
13. The correct formulation (and Vodafone’s view of the correct approach) is to ask, first: what statutory provisions and duties would be applicable if Ofcom were setting spectrum licence fees absent the Direction? And then, how does the Direction change the operation of those provisions?
14. It should be clear that the correct approach in law cannot depend on what order those questions are asked. But Ofcom fails to fully engage in the second step in its approach (considering its wider duties). In so doing, it creates a gap between its approach and the legally correct approach.
15. Thus, the approach urged by Vodafone (and, we understand, the other licensees) would provide a valuable cross-check on Ofcom’s own legal reasoning.
16. Ofcom has not performed this cross-check. If it had done so, that would have assisted it in understanding the significance and scope of its errors, and what must be done to correct them.

**Part 1: Ofcom’s analysis in the February 2015 publication (excluding coverage)**

17. In the February 2015 publication, Ofcom:
  - (a) Adopts a new approach to valuing the 800 MHz spectrum (opportunity cost), producing materially different values to those it proposed in the second consultation;
  - (b) Changes its view on the relationship between 800 MHz and 900 MHz spectrum market values;
  - (c) As a result, adopts a materially different approach to valuing 900 MHz spectrum (which is not rendered immaterial by the fact that the changes result in the same value being reached on a per MHz basis);
  - (d) Adopts a materially different value for 1800 MHz spectrum; and

- (e) Adopts a materially different discount rate.
18. Ofcom's position seems to be that it is not open to stakeholders to comment on the 'provisional decision' that it characterises as being subject only to 'subject to final internal confirmation and approvals'.
19. The following sections deal first with Ofcom's failure to consult on these amendments in general and then with submissions related to the individual changes.

#### **Failure to consult with an open mind**

20. The changes between the August 2014 consultation and the February 2015 publication affect the interests of all ALF licensees, but the impact is particularly significant for Vodafone.<sup>37</sup>
21. Ofcom does not argue that these changes are immaterial or *de minimis* (and it would be wrong to do so, given that Ofcom describes the resultant 'substantial differences' and that the impact of those changes on the final ALF figures is significant, being in the range of 7-13%). Indeed, Ofcom itself devotes an entire section of its document to a detailed comparison of the changes and the previous proposals, including their individual and combined effects on the final outcome.<sup>38</sup>
22. It follows that those changes, where they relate to matters or approaches where licensees have not yet had the chance to comment, ought to be subject to the scrutiny of a public consultation.
23. Ofcom does not do so. Ofcom is clear that it has already made up its mind how it intends to act with respect to a future decision to issue regulations setting ALFs - subject only to any changes necessary to take account of the coverage obligation (emphasis added):

*1.4 As a result of this agreement [between operators and the Secretary of State], we confirmed in an exchange of letters with the Secretary of State of 17 December 2014 our view that all interested parties should be given a reasonable opportunity to comment on whether they consider that the geographic coverage obligation, taking account of the associated incremental costs incurred by the MNOs, should impact future ALFs.*

*1.5 This consultation is intended to afford all interested parties that opportunity to comment. We think that the clearest way of doing this is to set out the position that we had*

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<sup>37</sup> This is because the changes lead to 'substantial differences' in the value of the 800 MHz spectrum – see the third consultation at 2.39.

<sup>38</sup> Third consultation, paragraphs 5.4 to 5.7.

*reached on the revised levels of ALF before considering the impact of the geographic coverage obligation, as well as our initial views on whether, and if so how, the geographic coverage obligation affects the market value of the ALF spectrum.*

*1.6 In this document, we therefore set out our provisional decision on the level of ALF and we consult on the impact of the geographic coverage obligation on ALF. We set out below our view that the impact of the geographic coverage obligation should be considered as part of the analysis that results in the derivation of a lump-sum value for the ALF spectrum, before that lump sum is annualised and implemented.*

24. These words need to be interpreted carefully. It is obvious that Ofcom's description of its having 'reached' a 'position' cannot describe a decision that it has already taken to issue regulations under section 12 WTA06 (or if it has, that decision has not been known to Vodafone, since no regulations have been made, as far as Vodafone is aware).<sup>39</sup>
25. The term 'provisional decision' is not used in either the CA03 or the WTA06. It may be that Ofcom intended the term to be used in the sense meant by the Competition and Markets Authority in relation to a merger decision.<sup>40</sup> Alternatively, it may be adopting the terminology of the CAT, which has used that term to describe Ofcom's proposals on which it consults.<sup>41</sup>
26. If so, the term has been mis-used here, since the essence of provisional findings (in both those contexts) is that they are not a final outcome, but are set out specifically for the purpose of providing affected parties an opportunity to respond.
27. As highlighted above, in this case, Ofcom takes care to emphasise that in this case, no such opportunity is being provided. On this occasion, Ofcom does not invite comment, nor does it give any signal that it regards its proposals as being a matter about which it retains an open mind. With respect to the February 2015 publication, the opportunity to comment is limited to the question of how Ofcom has taken into account the coverage obligation.
28. Thus, with respect to the assessment of ALF more generally, although Ofcom has not yet taken a statutory decision, and notwithstanding that, on the face of its own analysis, there are material changes to the approach

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<sup>39</sup> Vodafone reserves its position with respect to any such decision.

<sup>40</sup> See, for example, the CMA's Merger Procedure Guidelines at 12.16 on page 116.

<sup>41</sup> See, for example, *Colt v Ofcom* [2013] CAT 29 at 77.

set out in previous consultations, Ofcom has ‘reached’ a ‘position’ and its mind is made up (subject to ‘internal approvals’). The fair reading, taking the document as a whole, is that Ofcom does not consult on its reasoning with respect to ALF.<sup>42</sup> It is obliged to do so, and falls into error in its failure to fulfil that duty.

29. There is some language deeper within the February 2015 publication that suggests that Ofcom has not yet taken a decision (for example, many of the conclusions are expressed to be outcomes that Ofcom is ‘minded to’ adopt). If this is intended to mean that those decisions are matters on which Ofcom is consulting, then Ofcom’s failure is to properly inform stakeholders of their opportunity to comment, since this language is unheralded and unaccompanied by any consultation questions.<sup>43</sup> Equally, Ofcom’s statements that it is ‘minded’ to do something could be read as a reference simply to the need to secure necessary ‘final internal confirmation and approvals’, rather than being indicative of an open mind.
30. Either way, the approach Ofcom takes is inconsistent with Ofcom’s duties; consultation should be conducted with an open mind and must be sufficiently well-signalled to give those who might respond an reasonable opportunity to do so. The obligation to consult arises both because it is required by the European Framework and in any event as a matter of domestic administrative law. As well as being a failure to comply with those obligations, Ofcom’s failure to consult in this case is an unreasoned and unjustified deviation from Ofcom’s long-standing practices (to which Vodafone legitimately expects Ofcom will adhere) and from its published guidelines committing it to consultation. Finally, it represents a failure to live up to the commitment given in Ofcom’s regulatory principles, and best regulatory practice.

### **Changes in the approach to valuing the 800 MHz spectrum**

31. In the February 2015 publication, Ofcom notes that:

*In the light of the responses to the August 2014 consultation we have made some modifications to our analysis and our view of the market value of the 800 MHz band.<sup>44</sup>*

32. Ofcom adopts a new approach to valuing the 800 MHz spectrum, compared to the second consultation.<sup>45</sup> In the August 2014 consultation:

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<sup>42</sup> See *R (Greenpeace Ltd) v Secretary of State for Trade and Industry* [2007] EWHC 311 (Admin) (15 February 2007) at 70.

<sup>43</sup> See, for example, the third consultation at paragraph 2.211.

<sup>44</sup> Third consultation, at 2.2.

2.6 We considered the following three methods to estimate market value of 800 MHz and 2.62.6 GHz for the purpose of ALF:

- LRPs without revenue constraint;
- ASM; and
- marginal bidder analysis.

2.7 Our preferred method was the marginal bidder analysis...

33. In the February 2015 publication, Ofcom now draw on four methods:

#### **High-level overview of methods**

2.32 We provide in this sub-section a high-level comparison between the different methods which we use in our assessment of market value:

- a) Prices in the 4G auction, which are based on opportunity cost of the spectrum, given the highest losing bids for additional spectrum (where they exceed the reserve price);
- b) Opportunity costs in the 4G auction, which reflect highest losing bids for additional spectrum in the absence of reserve prices. For this analysis we use the Additional Spectrum Methodology and the decomposition method (put forward by Vodafone) to attribute amounts for multi-band packages between the constituent bands;
- c) Linear Reference Prices, which seek to estimate the linear prices that are closest to market-clearing prices (by a linear price we mean the same price per MHz in a given band, such as 800 MHz, to all operators and for all block sizes); and
- d) Marginal bidder analysis to analyse opportunity cost by assessing the bids of the highest losing bidder for additional spectrum.

2.33 We use these methods in our analysis of the market value of both 800 MHz and 2.6 GHz spectrum. In particular, we derive candidate value(s) from the opportunity costs in the

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<sup>45</sup> The approach taken in the second consultation was itself novel, compared to the first consultation.

*auction, which we compare against the LRPs, and we use the marginal bidder analysis either as a cross-check (in the case of 800 MHz) or to select the market value figure from within the range of candidate values (in the case of 2.6 GHz). The differences in the detail of our analytical steps for the 800 MHz and 2.6 GHz bands reflect differences in the circumstances, notably the absence for the 2.6 GHz band of most of the complications that arise in the analysis of the 800 MHz band.*

*2.34 Whilst the methods are not identical, they share a substantial degree of overlap and commonality...*

*2.39 The methods are not identical. In the 2.6 GHz band this is reflected in the results of the methods not being the same, even though they all lie within a fairly narrow range between £4.99m and £5.7m per MHz. But the sources of difference between the methods are much more prominent in the analysis of the 800 MHz band due to the greater importance of various complications than for the 2.6 GHz band. These complications, which are outlined below, lead to substantial differences between some of the results from the different methods for the 800 MHz band.*

34. As noted above, Ofcom does not consult with affected stakeholders before deciding to adopt this change, which Ofcom considers leads to 'substantial differences' in results.
35. The accompanying Frontier Economics report provides expert economic assessment as to the question of whether, as a matter of economic theory, Ofcom have set out a sufficiently robust framework for determining the value of 800 MHz spectrum.
36. In addition to the consultation issue, a number of legal concerns arise that dovetail with the points being raised therein:
  - (a) Ofcom have changed their approach to valuing the 800 MHz spectrum, again. This raises concerns about whether Ofcom's framework is sufficient stable for Ofcom to satisfy itself that it has fulfilled the task it recognises that it must fulfil in setting ALFs (revising them so that they "reflect full market value");
  - (b) Ofcom's approach is predicated on scope for spectrum re-arrangement when, as a matter of practical assessment, the prospects for such re-arrangement are (in Frontier's assessment) not possible; and

- (c) Ofcom's approach to assessing whether EE has engaged in strategic bidding places undue weight on a simple denial by EE, when other evidence of greater probative value, is available to Ofcom.
37. Overarching concerns that this uncertainty raise include that:
- (a) It underscores the role played by regulatory judgment and, correspondingly, the need to be informed in the exercise of that judgment by relevant evidence as to, amongst other things, the impact of Ofcom's proposals;
  - (b) It emphasises the important and growing gap between the approach taken in Ofcom's analysis to limit the external events and market circumstances which Ofcom takes into account, and the growing body of evidence that Ofcom does not consider – including in Ofcom's own consultations and decisions. This leaves Ofcom's ALF analysis increasingly adrift of reality and under logical strain. Events that no stakeholder could have predicted (such as the agreement between the MNOs and the Secretary of State) have resulted in a situation where more time has passed between the auction and the revision of ALF than anyone could have anticipated. As this period of time has grown, Ofcom's decision not to re-visit issues such as its competition assessment and the wider question of current market value of spectrum has been less defensible (if it ever was). Rather than change its approach in those circumstances, Ofcom seems determined not to take into account those factors, regardless of their probative value or their materiality.
  - (c) It illustrates why it is vital to take a conservative approach. The core rationale for Ofcom taking a conservative approach is that the risks of setting ALFs too high are greater than the risks of setting them too low. Additional volatility increases the risk that ALFs will be set either too high or too low, but the asymmetry of risk means that the consequences of that volatility is greater in the event that ALFs are set too high. Accordingly, all other things being equal, an increase in volatility in the resultant ALFs for 900 MHz spectrum (for example, because the framework for valuation of the 800 MHz spectrum on which the ALF is based has been recast three different ways in three consultations) means an increase in the weight that should be given to the need to act conservatively in setting ALFs.
38. The 'complications' referred to above include some matters that involve questions relating to Ofcom's legal reasoning.

## Evidence concerning the risk of strategic bidding by EE

39. A specific concern arises in Ofcom's treatment of the question of whether EE's bids were strategic. Ofcom had submissions from various sources, including Vodafone, flagging the concern.
40. Ofcom's assessment in section 2 of Annex 6 to the February 2015 publication makes it clear that the logic upon which it reaches its conclusion that EE did not engage in strategic bidding is highly conditional, and rests on a number of points involving Ofcom taking a view on the relative likelihood of EE finding itself unexpectedly winning on the basis of a strategic bid. It assesses those considerations, concluding:

A6.149 *Therefore, in our view EE could not have safely assumed that its bid for 4xA1 + 4xC was riskless – it had some chance of being a winning bid. In these circumstances a price-driving strategy means that a bidder would be risking its primary objective – securing the spectrum it wishes to acquire – to pursue another, secondary objective of raising its competitors' prices. We commented on this when finalising the rules for the 4G auction:*

26 *“In our view a bidding strategy aimed at raising the prices paid by rival bidders, carries significant risks for a bidder pursuing it. Any bid made during the auction can potentially win and the strategy described would involve placing bids that are above the value the bidder places on the package. Unlike in the potential scenarios that led us to remove the Final Price Cap we had proposed in an earlier consultation, the bidder cannot be sure that its inflated bids will not win.”*

A6.150 *Our view above is consistent with the evidence from EE that it did not engage in price driving.*

41. Ultimately, Ofcom takes at face value EE's assertion that 'all bids ... were within our valuation':

2.140 *We also asked EE to provide its response to these arguments. EE explained that it did not engage in strategic bidding:*

*“... we can confirm that all of EE's bids made in the auction were within our valuation for the relevant*

*spectrum, i.e. within what Ofcom refers to as “intrinsic value”. Furthermore, our valuations did not incorporate any elements relating to the value of depriving other parties usage of the spectrum concerned (e.g. by weakening a competitor) nor to increasing the costs of our competitors”*

42. Rather than simply asking EE whether it had engaged in strategic bidding, it was open to Ofcom to require EE to provide it with information (including contemporaneous documents and other evidence) using its statutory information-gathering powers.<sup>46</sup> Doing so would have given Ofcom the opportunity to assess for itself the veracity of EE’s account. Vodafone does not suggest that EE would consciously make a statement to Ofcom it did not consider to be correct. But it is inevitable that a second-hand or high-level summary of an issue or event is not the best available evidence in this instance. Equally, and again without suggesting an impropriety on EE’s part, any *description* of what EE did will reflect the point of view of the party providing that description, as compared to evidence as to how and why EE actually bid what it did. Given those facts, this is not material on which Ofcom ought to rely, when an alternative, primary form of evidence is available. By failing to exercise its information-gathering powers to obtain this evidence, Ofcom fails to fulfil its duty to equip itself with relevant evidence to enable it to take a robust decision.
43. Vodafone recognises that there are inherent sensitivities involved in seeking information from bidders, even on a backward-looking basis, that could reveal information about their bidding strategies or approach to auctions. There is a risk that such action, if undertaken overzealously or in cases other than where it was necessary to do so, might affect the effectiveness of future auctions. But the circumstances of this case, specifically in relation to the concern about EE’s strategic bidding, are highly specific and highly unusual, and the evidence is very significant, and so any caution in this regard ought not to prevent Ofcom from acting.

### **Future spectrum availability and spectrum caps**

44. A further concern is whether Ofcom has properly equipped itself with evidence and an appropriately reasoned approach in relation to future spectrum availability. As Ofcom notes:

*2.42 Second, there are the implications for forward-looking opportunity cost of changes in circumstances since the 4G auction:*

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<sup>46</sup> Section 32A, WTA06.

- a) *We consider that the overall spectrum cap of 210 MHz which applied in the 4G auction should be treated as non-binding on a forward-looking basis. This is because of the upcoming availability of additional mobile spectrum, including the 1.4 GHz, 2.3 GHz and 3.4 GHz bands. In our recent consultation on the forthcoming award of 2.3 GHz and 3.4 GHz bands we have also proposed an overall spectrum cap, but at the much higher level of 310 MHz. There is a significant implication for the market value of 800 MHz for the purpose of ALF, because the auction prices and opportunity costs of 800 MHz in the auction were affected by the bids of EE whose winning package was at the overall cap. This meant that the opportunity costs in the auction of 800 MHz were reduced, compared to the forward-looking opportunity cost, by EE's value for additional spectrum, reflecting a trade-off between more 800 MHz spectrum and less 2.6 GHz spectrum.*
- b) *We also take account of the possibility that forward-looking market values today are lower than at the time of the 4G auction in 2013 due to greater certainty of availability of mobile spectrum in the future, compared to expectations at the time of the auction. We take this into account as one of the possible reasons for our choice of the level of ALFs to be conservative when interpreting the evidence (see Section 1).*

45. In its reasoning, Ofcom advances a view about the future availability and market value of spectrum that is not based on evidence that is relevant to, and for the purposes of, ALF – for example, the sort of evidence that it might derive from its impact assessment (or a wider assessment of market conditions, such as the competition assessment that Ofcom undertakes in the PSSR consultation).

**Ofcom appears to have decided to treat the PSSR consultation as determinative**

46. The effect is that Ofcom, to the extent that it draws on evidence concerning future market conditions at all, draws on evidence that has been compiled for other purposes. For example, Ofcom's use of the competition assessment that informs the PSSR awards affects its view of

ALF, and yet Ofcom neither consults on, nor turns its mind to, the question of whether that is an appropriate thing to do. The 310 MHz cap that Ofcom proposes to treat as having a ‘significant implication’ for ALF has not been assessed in light of the ALF proposals, and cannot simply be imported in the way that Ofcom appear to do. Ofcom’s case appears to be not that a competition assessment is unnecessary – it is necessary, in order to reach a view on the question of whether the spectrum cap is binding – but that Ofcom should not undertake that assessment as part of this project, but instead borrow it from somewhere else:

*2.121 Some respondents disagreed with our approach to the overall cap. For example, Vodafone argued that it pre-judged a competition analysis if EE were to acquire 900 MHz spectrum, and that in any case we had not set out any competition analysis to support our view.*

*2.122 However, as noted above, since the August 2014 consultation we have published the PSSR award consultation, in which we set out a competition analysis to support our proposal for an overall cap of 310 MHz....*

47. This is an error of law; the fact that Ofcom has undertaken a competition assessment in the PSSR award consultation is not relevant to Vodafone’s criticism that there is no competition assessment in the ALF consultation (except, perhaps, to underscore that Ofcom has the capability to produce such assessments when it wishes to do so). Regarding analysis done in one context for one purpose as being equivalent to assessing a similar question for a wholly different purpose is unnecessary (since Ofcom could easily produce the equivalent analysis for ALF as it has for PSSR) and unsafe (since it carries increased risk of error). This unorthodox approach is at odds with what Ofcom has done in other projects, where similar analysis has been set out separately in relation to individual decisions, so that each separately affected group of stakeholders can respond effectively, even if that means duplicating some elements of analysis.<sup>47</sup>

**Even a PSSR *decision* would not be appropriate for ALF spectrum without further evidence**

48. It is clear from the PSSR consultation that Ofcom has ‘undertaken a competition assessment to consider the potential for an asymmetric

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<sup>47</sup> For example, Ofcom’s consultations on market reviews conducted under the European Framework begins with an analysis of the relevant market afresh and does not simply cross-refer to analysis already laid out in other parallel market reviews, despite there being much closer relationships between those markets (wholesale local access and wholesale line rental, for example) than between the various spectrum bands.

distribution of mobile spectrum to arise as a result of the auction' but that this competition assessment is not constructed with a view to considering the position with respect to the ALF spectrum – it considers 'the potential effects on competition arising from the upcoming award of spectrum at 2.3 GHz and 3.4 GHz'.<sup>48</sup>

49. Ofcom's assessment in the PSSR consultation identifies precisely the same concern it identified in the competition assessment leading up to the 4G auction – the need to ensure four national wholesalers – as being of enduring significance. It proposes a higher cap for spectrum, but does so in the context of further spectrum availability that is not comparable to the ALF spectrum.
50. The relevant competition assessment in relation to the ALF spectrum is the competition assessment in the 4G auction – which Ofcom made clear in its earlier consultations. To adopt the PSSR cap in relation to ALF spectrum necessarily and implicitly adopts a view that the ALF spectrum is functionally equivalent in some sense to the spectrum considered in the competition assessment in the PSSR consultation. Ofcom have proposed to reach a view that the ALF spectrum is relevant for the competition assessment that it takes in relation to the PSSR spectrum – that is, that it ought to take into account the effects of the available ALF spectrum in deciding whether to impose limits on spectrum holdings acquired in that auction. This is not equivalent (as a matter of legal analysis, or policy logic) to the inverse proposition, that the greater availability of PSSR spectrum affects the spectrum cap applied in the 4G auction.<sup>49</sup>
51. Such a proposition would be a material conclusion for Ofcom to reach, given the very significant differences that Ofcom itself recognises between the ALF spectrum and the PSSR spectrum.
52. No reasoning or evidence is offered by Ofcom that could support such a conclusion. Ofcom has never previously consulted on the proposition that it ought to adopt a competition assessment from another proceeding and use that as the basis for ALF. It does not do so now, despite having adopting that view in its 'provisional decision'.
53. A far simpler, and better, approach would be to produce a competition assessment for the purposes of ALF, and allow that to be subject to consultation alongside the other elements of Ofcom's ALF proposals. (This might reasonably draw heavily on the PSSR competition assessment and share many common elements, for example – but there may also be material differences).

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<sup>48</sup> PSSR consultation, at paragraphs 1.11 and 7.1.

<sup>49</sup> PSSR consultation, at paragraphs

**Treating consultation proposals as equivalent to final decisions is an error of law**

54. In any event, and irrespective of whether the PSSR proposals are Ofcom's, or those of another decision-maker, it is an error for Ofcom to treat consultation proposals in the same way that it might treat a decision (that is, an assessment that had been subject to the scrutiny of a public consultation).
55. Vodafone does not consider that consultation analyses must always be discounted altogether, but such material is, at best, evidence that ought to be properly contextualised in order to use it without introducing a further risk of error. If for no other reason, those proposals may change, perhaps materially, as a result of further deliberations, leaving Ofcom's assessment of ALF exposed as being based on preliminary and not final thinking.
56. In the relationship between the setting of a spectrum cap for the purpose of the PSSR award, and the assessment of the position with respect to ALF, Ofcom is in some ways in a similar situation to the position that it found itself in [2008] with respect to the 2.6 GHz auction and the 800 MHz band, where it had two different decisions to take that rested on a common body of thinking about future competitive market conditions. In that event, the tension was resolved through the Direction, which required Ofcom to conduct those two proceedings together, avoiding issues flowing from problematic sequencing.
57. It would be open to Ofcom to take the same approach here, publishing a competition assessment that it proposes to take into account in setting ALFs, and then aligning those processes so that the PSSR awards and the setting of ALFs might be concluded together, drawing (if Ofcom saw it as necessary to do so) on a common view of future competitive conditions and, therefore, a single view of the forward-looking spectrum cap.
58. In any event, none of these issues or considerations are subjects about which it is appropriate for Ofcom to simply decide, and then to implement, without consultation.
59. As a result of these flaws in Ofcom's approach, any decision that Ofcom takes based on the adoption of the PSSR consultation spectrum cap proposals as applicable to a decision about the relevant market conditions in ALF will be ultra vires.

## Use of international benchmarking

60. As between the second and February 2015 publications, Ofcom changes its view on the relationship between 800 MHz and 900 MHz spectrum market values.

61. Ofcom characterises its assessment as being:

*consistent with the approach in our August 2014 consultation, although it differs in some detailed respects, reflecting consultation responses and some new evidence.*

62. As noted above, Ofcom does not consult on these differences, including the new evidence upon which it now relies.

63. Ofcom describes the changes in the following terms:

*3.37 The main changes to the analysis set out in our August 2014 consultation are as follows:*

- a) We have revised some of our benchmark data, as set out in paragraph 3.41 below;*
- b) We have moved the Sweden 1800 MHz benchmark from Tier 2 to Tier 1, as set out in paragraph 3.65;*
- c) We have revised our view of the risk of understatement or overstatement attached to some benchmarks, as set out in paragraphs 3.54 and 3.65;*

64. It is clear from the provisional decision that Ofcom has introduced a range of new evidence and varied its approach, in ways that Vodafone has had no opportunity to comment on:

*3.41 There are a number of changes to the data in Table 3.2 from our August 2014 consultation as follows:*

- a) Licences awarded in Portugal and Spain are subject to annual licence fees, in addition to the price paid at auction. The absolute values used in our August 2014 consultation excluded these fees. We have recalculated these values so that they now include (the present value of) these fees.*
- b) In some cases lot prices differed within bands in the same award. In our August 2014 consultation, we presented prices which were a simple average of lot prices. We have recalculated these prices as*

*weighted averages, using lot size and population covered as weights, as proposed by respondents.*

- c) *We use discount rates when we adjust for differences in licence duration or delayed availability of spectrum or to include the present value of annual fees. We now use country-specific discount rates rather than UK discount rates (for Tier 1 and Tier 2 countries), as described in Annex 7, paragraphs A7.26 to A7.55.*
- d) *We now use revenue-constrained LRPs (rather than LRPs without revenue constraint) to derive the prices of different frequency bands in the Austrian auction of October 2013 (as explained in Annex 7, paragraphs A7.178 and A7.180).*
- e) *We have added auction values for 800 MHz and 2.6 GHz from the auction in Greece which took place in October 2014 (i.e. after our August 2014 consultation).*

65. The paper by Frontier addresses Vodafone's concerns about the international benchmarking in more detail.

66. From a legal perspective, Vodafone's specific concerns with this approach include that:

- (a) The fact that, in the case of arrangements in Spain and Portugal, something as straightforward as the presence of annual licence fees (of all things) might be missed by Ofcom in its assessment, and as late in the process as the August 2014 proposals, illustrates the importance of consulting in relation to new evidence and reasoning, to avoid falling into error; and
- (b) Ofcom maintain that they wish to apply a 'conservative approach' and yet Ofcom does not adopt the obvious and simple way to do so – taking the lowest reasonable benchmark.
- (c) When all is said and done, Ofcom's approach to international benchmarking boils down to: pick two comparators, and split the difference (twice) between them, to derive a figure:

*3.55 We have two benchmarks (Austria and Ireland) in Tier 1, of which the higher is almost double that of the lower. There is a risk that the Austria benchmark overstates UK market value, but we cannot be sure of the likelihood or scale of this possible overstatement. The average of these benchmarks is £28.0m per MHz.*

3.56 *In light of (a) the risk that one of the two benchmarks (Austria) overstates UK market value, and (b) our view that we should take a conservative approach to interpreting the evidence, we consider that in looking at the benchmarks in Tier 1 alone an appropriate estimate of UK market value would be below the average – and would be between the average and the lower of these two benchmarks, i.e. between around £18m and £28m per MHz. A figure of £23m, which is halfway between these two points (or a quarter of the way from the lower benchmark to the upper benchmark), could be appropriate, looking solely at first-tier benchmarks.*

This simply underscores the nature of Ofcom's deliberations as being an exercise that is not a mechanical or technocratic assessment in which (as Ofcom puts it) "we have no discretion", the role played by regulatory judgment and the need for that judgment to be informed by evidence, not guesswork.

- (d) This approach is also inconsistent as between 900 MHz and 1800 MHz in a number of respects:
- (1) For both bands, Ofcom calculates its starting point for the UK value to be half way between the lowest tier 1 value and the average of the Tier 1 values. This produces a value of £23m for 900 MHz and £14.6m for 1800 MHz. However, Ofcom then reduces its 1800 MHz value by 11% to £13m based on its view that the UK equivalent value in one country (Ireland) – of the four in Tier 1 – may be an overestimate.<sup>50</sup> The resultant figure for 1800 MHz may be influenced by the proximity of the final figure to the figure from Greece (£13.3m to £13m per MHz) – which if it is the case, is a further factor arising subsequently to the previous consultation (the Greek auction took place in October 2014) and on which Ofcom has not consulted.
  - (2) Ofcom has significantly reduced its estimate of 1800MHz value, but has not changes its estimate of 900MHz value, despite the evidence changing in a similar way. Since its August 2014 consultation, Ofcom has reduced its estimate of the value of 800MHz spectrum in the UK from £36m to £33m. This means that the UK equivalent value of 900MHz and 1800MHz spectrum in all the benchmark countries has fallen. As a result, Ofcom has reduced its estimate of the UK value of 1800MHz spectrum from £14m to £13m. However, it has not changed its estimate of the UK value of 900MHz spectrum from £23m,

<sup>50</sup> Third consultation, paragraph 3.65 and 3.69.

despite the fact that the UK equivalent value has fallen in all the benchmark countries.

- (e) This also leaves Ofcom's assessment that the various changes as between the August 2014 consultation and the provisional decision that those changes can be ignored because they 'tend to balance each other out' looking somewhat glib.<sup>51</sup>

### **Adopting a materially different value for 1800 MHz spectrum**

67. As a result of the reasoning outlined above, Ofcom adopts a materially different value for 1800 MHz spectrum (as compared to the approach in the second consultation). As noted above, there is no corresponding change to the value of the 900 MHz spectrum to reflect the same factors.
68. Ofcom does not consult on this change. This inconsistency is an error in Ofcom's reasoning and is irrational.
69. The very significant role played by regulatory judgement in weighing up the relative values of the different international benchmarks makes it more important, not less important, that Ofcom is coherent and consistent with respect to those changes that are linked to specific evidence.

### **Annualisation**

70. The final stage of Ofcom's reasoning in relating to setting ALFs is to establish an annual licence fee based on the assessment of a value that reflects full market value.
71. As a preliminary point, it is important to appreciate that the annualisation is not, of itself, an element in the assessment of the *value* of the ALF spectrum: it is an independent exercise, to take a given level of 'full market value' and turn it into an annual payment that reflects that value (keeping Ofcom's view of that value constant).
72. It follows that, to the extent that Ofcom's argument that it has 'no discretion' arises in relation to the requirement under the Direction to revise ALFs so that they 'reflect full market value', that constraint need not apply to Ofcom's assessment of the most appropriate approach to annualisation. It follows that even if Ofcom's arguments for failing to undertake an impact assessment (and otherwise take into account its other duties) were correct in relation to the assessment of the value of

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<sup>51</sup> Third consultation, paragraph 3.61.

spectrum, those arguments are not relevant to Ofcom's approach to annualisation.

73. This is not an abstract concern; the differences in approach to annualisation have a material impact on the prices that would be paid by spectrum licensees, and hence, on consumers. For example, Vodafone's estimate of the difference in terms of licence fees paid by industry (and hence, by consumers) between the top and bottom ranges depending on different approaches to annualisation alone is roughly £100m. To impose incremental costs of £100m on consumers via a regulatory decision without any impact assessment whatsoever is, as far as Vodafone is aware, entirely unprecedented. Such a significant impact is very likely to have an effect in terms of investment and, consequently, the availability of services.
74. In any event, in the February 2015 publication, Ofcom adopts a substantially different approach to establishing the appropriate rate for annualisation, which it characterises as 'revised analysis'.
75. This revised analysis includes some reasoning which might fairly be characterised as documenting matters about which it has already consulted (for example, responding to the points made by BT and H3G as to why it was unpersuaded to adopt an upper bound above WACC) – in those cases, where Ofcom is explaining why it has considered and rejected submissions responding to the previous consultation.
76. But Ofcom also advances a substantially new piece of analysis, concerning the lower bound for its assessment (broadly, the cost of debt). Ofcom notes that:

*Lower polar case –the most appropriate cost of debt estimate*

*4.37 We have set out in Annex 10 the factors we consider in determining the appropriate cost of debt for ALF. On the basis of the analysis set out in Annex 10, we consider the appropriate lower polar rate is 3.0% (post-tax, nominal). This reflects the observed yield to maturity (YTM) on 10-year MNO debt, which represents a change in our view, taking account of stakeholder responses to the August 2014 consultation. It also reflects an adjustment for inflation risk premium in ALF, as discussed in Annex 10.*

77. In the relevant Annex, it is clear that elements of Ofcom's reasoning go beyond that on which it previously consulted.<sup>52</sup> Indeed, the novel elements

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<sup>52</sup> See, paragraph 10.9, for example (although in that case, the shift in position cited there in relation to WACC does not lead to a material change in outcome).

of Ofcom's analysis involve an entire new branch of thinking – the 'risk-sharing scenarios' set out in Annex 10 (and summarised in section 4):

*Risk sharing scenarios*

A10.57 *We refer in Section 4 to stylised scenarios of risk sharing we have modelled. This section sets out these scenarios. Our interpretation and the inferences we draw are set out in Section 4.*

*Stylised example: Single review after 10 years*

A10.58 *One way of approaching this issue is to consider a simplified scenario where there is one review in a 20 year period, set in advance to take place in year 10.*

A10.59 *In constructing this scenario, we assume risk is shared only by the periodic resetting of ALF. The ALF period is 20 years and the ALF is reset once after 10 years. We assume the resetting will be symmetric, with the probability of an increase equal to the probability of an equivalent decrease in the ALF. <sup>83</sup> Where the ALF is fixed, it reflects the same risk as other debt and so should be discounted at the cost of debt. The value which determines the reset should be discounted at the same rate as the risky operating cash flow that occurs in year 10. We ignore the effect of taxes.*

A10.60 *Under this scenario, for the first ten years, the ALF payments will not be reset and so should be discounted at the debt rate. After 10 years the ALF will be reset to reflect the value of the asset at that date. Once it is reset, given the assumption of a single review, it will again have no risk from that point onwards (other than the risk normally associated with debt). Therefore, for years 11-20 the payments should also be discounted at the debt rate, when viewed from the end of year 10....*

78. It bears emphasising that this analysis is entirely new; risk sharing was dealt with in brief terms in the August 2014 document:

*4.24 This suggests that using the debt rate could understate the discount rate it would be appropriate to use if the review regime were significantly to transfer risk from the licensees to the Government. However, there is*

*considerable difficulty in estimating the extent of such a transfer of risk, as this is influenced by the exact mechanism through which fee reviews are instigated,<sup>68</sup> the extent to which a change in value is completely captured by resetting the ALF (particularly given the inherent uncertainty in determining the underlying value) and the symmetry of revisions.*

*4.25 For the reasons set out above, we recognise that it is possible that the appropriate discount rate lies above the cost of debt. However, for the reasons set out in Section 1 we consider it appropriate to take a conservative approach when interpreting the evidence to derive ALFs. We therefore propose to use the cost of debt rate for the purposes of deriving ALFs, and so use a discount rate of 2.6% (real, after-tax) in deriving annual fees from our lump-sum value.*

79. In that document, Ofcom reached the position (which, in principle, Vodafone supports) that it was appropriate to adopt a conservative approach and to use a discount rate set to the cost of debt (although as noted in Vodafone's submission, there are grounds for concern that Ofcom are not being conservative enough in calculating what that rate might be).
80. Ofcom's new analysis seeks to compound hypothetical scenarios in a way that vividly illustrates a recurring theme in Vodafone's concerns with Ofcom's approach: the lack of evidence (such as the material that might be gathered in an impact assessment) resulting from Ofcom's decisions not to consider a wider pool of evidence as to future market conditions limits Ofcom's thinking to the abstract and conjectural. But that does not mean that Ofcom can escape the need for such evidence. As a result, Ofcom is left guessing where it ought to be drawing on the same sort of material that it uses to inform other policy proceedings.
81. As noted above, Ofcom does not consult on this new analysis.
82. Ofcom's assessment of a number of the points made about risk-sharing look, in substance, like attempts to grapple with the possible impacts of different policy options:

*Varying the timing and number of reviews*

*A10.66 In practice, ALF reviews are not set events which take place at pre-arranged points in time regardless of circumstances. Instead, as set out in Section 7, our policy is that we would be likely to review ALFs only if there were grounds to believe that a material misalignment had arisen between the level of these*

*fees and the value of the spectrum. In our view, it is reasonable to assume that these fee rates are likely to be reviewed at some stage during a 20-year period, although we cannot predict with any certainty at what point any such review (or reviews) might occur. For example, we recognise that it is possible there could be grounds for a review following an award of the 700 MHz spectrum and/or the review that we will need to undertake of the fees for the 2.1 GHz licences, though this would still depend on there being evidence of a material misalignment between ALF and market value around these times.*

*A10.67 The actual review regime is therefore more flexible than the stylised example set out above. In practice, reviews may occur earlier or later than the 10-year point modelled above. In addition, reviews may occur more or less often than once in 20 years. A10.68 These points have differing implications:*

- a) A single review during the 20-year period which is fixed for some year other than year 10 would reduce the extent to which risk is transferred from the licensee to Government (in effect, reducing the Government's risk share), all else equal. This is because having a review earlier or later leaves a longer period during which the ALF is fixed (due to the assumption that there is only one review).*
- b) A regime with a greater number of equally spaced reviews (e.g. two reviews every 6.67 years; three reviews every five years etc.) can significantly increase the transfer of risk from the licensee to Government (in effect, increasing Government's share of risk) compared to a regime with one review, as the period for which the ALF is 'fixed' and the licensee is exposed to risk (of changes in market value) is commensurately shorter.*

*A10.69 We note that these two factors could both be present in that, if a review occurs early (e.g. after five years), the assumption that there is only one*

*review looks less likely (as it would imply there would then be a 15-year period during which there was no review). A scenario with an earlier or later review may therefore be more likely to be associated with a scenario where there is more than one review within a 20 year period.*

83. Precisely what is missing from this exercise is any evidence as to the future market conditions that might prevail in the hypothesized 'well-functioning market' that might inform this reasoning, which as a result is built entirely on assumptions, rather than judgments informed by evidence.
84. However, because Ofcom does not undertake a proper impact assessment, this exercise is flawed and incomplete, rendering the analysis unreliable.
85. Ofcom should start by setting out, following the approach in the IA guidelines, an assessment of the impact of the policy, and then use that assessment to inform this reasoning.

## **Part 2: Ofcom's analysis of the coverage obligation**

86. In the February 2015 publication, Ofcom sets out its view that the coverage obligation is unlikely to affect the 'full market value' of the ALF spectrum. We understand Ofcom to be consulting stakeholders on their views on this analysis.
87. Ofcom's approach to valuation in general terms is that:
  - 6.7 *We recognise that the MNOs may incur incremental costs to meet the geographic coverage obligation which could, therefore, reduce the overall value that they attach to their current spectrum holdings. However, for the impact on the market value of 900 MHz and 1800 MHz, in our view this is not the relevant consideration. We consider that the impact on market value depends on the value to the marginal operator of acquiring additional ALF spectrum.*
88. As noted elsewhere in our submission, Vodafone does not consider that Ofcom has approached the issue of the coverage obligation from a sufficiently wide viewpoint.
89. There are as a minimum three specific concerns that arise that Ofcom ought to correct before it can be confident that any decision will be consistent with its duties:

- (a) Some of Ofcom's logic seems unclear and based on an impossible premise as to the relationship between the acquisition of spectrum and the acceptance of a coverage obligation;
- (b) Separate from the case for an impact assessment and the application of Ofcom's duties in relation to the wider ALF project, there is a distinct question about whether Ofcom is undertaking the consideration of the coverage obligation as a matter of discretion or because it is obliged to do so:
  - (1) If it is a matter of discretion, then Ofcom should be approaching that task consistent with the statutory framework and policy guidance – for example, including an impact assessment;
  - (2) If it is not a matter of discretion (because the letter is a binding instruction or itself a Direction under section 5 WTA06) then that new Direction is no longer applicable because it was not laid before Parliament.
- (c) Ofcom treat the coverage obligation as being 'unattached' to any particular spectrum (because there is no obligation with respect to the spectrum used to fulfil that obligation). But in the case of Vodafone at least, that obligation is 'attached' to a specific lot of spectrum – the ALF spectrum, in fact.

90. Each of these concerns is discussed in more detail below.

### **Ofcom's approach is unclear and could benefit from more explanation**

91. In relation to the 900 MHz band specifically, Ofcom notes that:

*6.25 The available evidence from bids for sub-1 GHz spectrum (at 800 MHz) in the 4G auction suggests that the marginal operator for additional 900 MHz spectrum may be EE. However, similar points as discussed below would also be relevant if the marginal operator were H3G.*

*6.26 First, we consider the difference in the marginal operator's incremental cost of meeting its own geographic coverage obligation. EE's holdings include 2x5 MHz of 800 MHz spectrum plus large holdings in the 1800 MHz and other higher-frequency bands. The relevant question is whether EE's cost of meeting the coverage obligation would be lower with additional sub-1 GHz spectrum at 900 MHz, compared to with its existing spectrum holdings.*

*6.27 We do not consider it likely that EE's (or H3G's) cost of meeting the geographic coverage obligation would be*

*materially lower with acquisition of 900 MHz spectrum. The obligation relates to voice coverage, which does not have the same bandwidth requirements as data services. EE and H3G each hold only 2x5 MHz of 800 MHz spectrum. But this limited bandwidth of sub-1 GHz spectrum may still be sufficient to deliver sufficiently wide coverage to assist in meeting the obligation for voice services, without the need for additional sub-1 GHz spectrum (and, as noted at paragraph 6.2 above, we consider it reasonable to assume that voice over LTE will become a viable option for providing voice services by the end of 2017).*

6.28 *Second, there is the potential for an effect on the market value of 900 MHz arising from the existence of the geographic coverage obligation on other MNOs, e.g. if there is a change in voice coverage competition arising from the geographic coverage obligation (see paragraph 6.21 above). Whether or not this is the case, and the scale of any effect, depends on the sources of value of additional 900 MHz spectrum to the marginal operator. For example, part of the value of additional 900 MHz spectrum to EE in the absence of the geographic coverage obligation could have been an extension of its voice coverage to gain a competitive advantage in voice coverage over its competitors. If so, then this value could be reduced if the existence of the geographic coverage obligation required other operators to extend their own voice coverage beyond the levels that they would otherwise have reached.*

6.29 *However, it seems unlikely to us that the marginal operator's competitive position in voice coverage would be a significant factor in its value for additional 900 MHz spectrum for the same reasons as given above (i.e. it is unlikely that 900 MHz would confer a material capability that it could not obtain using its existing 800 MHz spectrum holding).*

92. Ofcom's approach seems to be logically inconsistent, in that Ofcom appears to be to assume a set of facts that is the opposite of what has, in fact, happened. Rather than having a coverage obligation, and then *deciding* whether or not additional spectrum would make that cheaper to deliver, the operators have purchased spectrum and subsequently faced a decision whether or not to *agree* to a coverage obligation. Ofcom seem to see no difficulty in taking their starting point the outcome of the auction

process (i.e. the bid evidence) and then to consider the effect of a subsequent coverage obligation as if it had predated that evidence. It is not clear that this approach is robust, and Ofcom's reasoning does not provide sufficient detail to enable Vodafone to respond properly to the question of whether it might be appropriate.

**The lack of an impact assessment exposes Ofcom's reasoning on coverage**

93. There is an additional concern raised by Ofcom's approach to the coverage obligation.
94. All of Vodafone's concerns about the way in which Ofcom has approached its implementation of the Direction apply equally to the additional discretionary stage of the ALF review that Ofcom undertake in relation to the coverage obligation. The points that Vodafone has made previously about the need to consider the statutory purpose and objective, and so on, apply equally here (and for brevity, are not repeated).
95. Ofcom's exchange of letters with the Secretary of State makes it clear that the assessment of the coverage obligation is intended to take into account of the investments being made by mobile operators.
96. The Direction already includes reference to the purpose of the Direction encompassing issues of investment but (as noted in Vodafone's previous submissions), Ofcom has opted to ignore that purpose and not, for example, to conduct an impact assessment to help it determine whether its ALF proposals will achieve those that purpose.
97. Ofcom now has a new factor to take into account – the coverage obligation. The Direction as construed by Ofcom gives Ofcom insufficient steer to deal with this situation.
98. To the extent that Ofcom's argument that 'it has no discretion' were to be accepted in relation to the rest of the ALF revision, it is not applicable to this additional, discretionary stage of the review.
99. In deciding to widen the review of ALF, Ofcom's duty under section 7 CA03 is engaged, and it should undertake an impact assessment to consider the ways in which its approach to valuing the coverage obligation might affect the performance of Ofcom's various statutory duties and achievement of its statutory objectives.
100. This is not simply an abstract point; it is clear that the deal between the Government and operators is intended to trigger benefits to consumers flowing from specific investments (see the SoS's letter and press release). The impact on investment of treating ALFs in the way that Ofcom do is

therefore a relevant and necessary input to Ofcom's thinking. For example, Ofcom's decision that it would not be appropriate to take into account private value in some fashion might usefully be informed by the question of whether, if it did so, the outcomes for consumers might be materially different.

101. Ofcom has not undertaken even a basic impact assessment to consider the different options, leaving its reasoning insufficient for it to take a decision based on robust logic and evidence.

### **The Minister's letter illustrates how Ofcom cannot 'have no discretion'**

102. The letter dated 17 December 2014 from the Secretary of State to Ofcom asks Ofcom to take certain actions – some things, expressly (to extend the timetable of its ALF proceeding, and to provide an opportunity to comment on the effect of the coverage obligation) and some things, by implication (for example, that Ofcom have regard to the material it receives responding to the consultation). Despite the occasionally imperative tone, it is clear that the Minister recognises that these are steps that can only be undertaken if and to the extent that Ofcom *decides* to take them. Those steps involve a material extension of the scope and duration of the ALF revision:

I am writing to inform you that I have today reached agreement with the MNOs on the introduction of a new binding coverage commitment. This will result in a significant improvement in mobile phone coverage and will require an incremental increase in investment from MNOs to meet the new commitment.

I am sure you will agree with me that in these circumstances it must be right to extend your current work to revise annual licence fees in accordance with previous Government directions to Ofcom.

I would expect the process to afford all interested parties a reasonable opportunity to comment on whether they consider this new commitment, taking account of the associated incremental costs incurred by the MNOs, should impact on future ALFs. I am sure you would agree with this.

I understand that the consequences of you adopting this approach would be to delay the introduction of a full new ALF regime, which I believe you consider could be in the order of 4 to 7 months from February.

I would be grateful if you could write to confirm our understanding of the position and also if you could confirm that you are content for this exchange of letters to be shared with the MNOs.

103. It is clear that this letter is not intended to be a Direction issued under section 5 WTA06 (and it could not be, since the process for setting its terms did not follow the procedure laid out in section 6 WTA06).<sup>53</sup>
104. Compared to the position when the Direction was set, the facts have now changed; no one could have predicted the outcome that Government and the mobile operators would reach the agreement that they did, but it is necessary for Ofcom to take those changed facts into account. In so doing, it necessarily exercises discretion.
105. Most obviously, the steps that Ofcom is now taking (including the February 2015 publication itself) in order to reflect these changed facts are discretionary steps. They require Ofcom to weigh up the balance of interests for consumers (for example, the balance between the value to consumers in reach a faster decision on ALFs that does not take into account the agreement between Government and the operators on the one hand, and the interest in reaching a more comprehensive view that includes submissions made in response to the February 2015 publication on the other).
106. Ofcom does not argue that the Direction, for example, prevents Ofcom from complying with the request of the Secretary of State to add an additional step to their process, and it would be wrong in law to do so (although it would be open to Ofcom to say 'no', if they felt that they ought to do so, in light of their duties). It is clear (and appears to be accepted by Ofcom) that the Direction provides Ofcom with considerable discretion as to how to control its own process and, at least to an extent, the substantive issues surrounding the question of what constitutes an ALF that reflects full market value. To treat the letter in any other way puts at risk Ofcom's independence, which it is required to secure as a matter of duty.
107. What this illustrates is that Ofcom's view that it has 'no discretion' in relation to the carrying out of section 6 of the Direction is simply wrong; it has discretion in important respects in the way that it gives effect to the Direction and it has shown itself capable of exercising considerable discretionary control over the process, throughout each stage of its consultation.

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<sup>53</sup> Section 6 WTA06 is titled 'Procedure for Directions' and provides that, amongst other things, that if a Direction is made that has not previously been laid in draft form before Parliament and approved by a resolution of each House. Section 6(6) provides that '*[w]here under subsection (5) the Secretary of State makes an order under section 5 without a draft of the order having been approved, the order ceases to have effect at the end of the period of forty days beginning with the day on which it was made unless, before the end of that period, it has been approved by a resolution of each House of Parliament.*' It is clear that the letter has not been so laid before Parliament at any point.

108. Accordingly, Ofcom's argument that it could not, and will not, take steps such as taking into account its wider duties and conduct an impact assessment because the Direction prevents it from doing so (by leaving Ofcom with 'no discretion') is an error of law:
- (a) Generally, in the sense already pointed out by Vodafone in relation to the core ALF assessment that Ofcom has undertaken; and
  - (b) Additionally, in relation to the consideration of the coverage obligation. Even if Ofcom were right that it ought not to consider its wider duties and conduct an impact assessment previously, that restriction does not apply to this new, discretionary phase of the ALF revision. Ofcom is therefore now obliged to undertake an IA at least to the extent it is necessary to inform Ofcom's views as to the coverage obligation. This would encompass, for example, the question of how the different approaches to valuing the coverage obligation might affect outcomes for consumers, competition and investment. Ofcom does not undertake any such assessment.

#### **Ofcom misunderstands the nature of the coverage obligation**

109. In footnote 183 (paragraph 6.13), Ofcom notes that its approach to valuing the impact of the coverage obligation on the ALF spectrum depends on Ofcom's view that:

*The 800 MHz coverage obligation does not fit neatly into the approach set out in Table 7.1. **This is because the obligation was attached to a specific lot of 2x10 MHz of 800 MHz spectrum in the 4G auction**, so that there was not a meaningful distinction between acquiring this additional spectrum and having the 800 MHz coverage obligation – they came as a package (whereas the geographic coverage obligation applies to each MNO regardless of whether or not it acquires additional ALF spectrum)...<sup>54</sup>*

110. In the case of Vodafone specifically, it is wrong in law to distinguish the 800 MHz coverage obligation (that 'was attached to a specific lot of 2x10 800 MHz spectrum' and the new coverage obligation in this way. Vodafone's coverage obligation does not apply *in general* to Vodafone; it is '*attached to a specific lot*', as that obligation is a condition of Vodafone's 900 MHz licence and not the other spectrum licences held by Vodafone.<sup>55</sup>

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<sup>54</sup> From the text at footnote 183.

<sup>55</sup> The coverage obligation was given effect by Ofcom by inserting paragraph 7 to Schedule 1 of Licence No. 0249664. There is no coverage licence condition in Vodafone's other spectrum

111. This is particularly relevant as the 900 MHz spectrum is, of course, the ALF spectrum, and so there is a specific link between the spectrum being the subject of the ALF revision and the coverage obligation as it applies to Vodafone.

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licences in the 2100 MHz band (Licence No. 0207131) and the 800 MHz/2.6 GHz band (Licence No. 0943538).

## **APPENDIX: Executive summaries of previous submissions**

- Vodafone's submission responding to Ofcom's ALF consultation (Executive summary only)
- Vodafone's submission responding to Ofcom's ALF further consultation (Executive summary only)

These are attached to our response as a separate pdf file.

**Vodafone Limited**  
**April 2015**