Vodafone's response to Ofcom's consultation

"Annual licence fees for 900 MHz and 1800 MHz spectrum – further consultation"

September 2014

Non-Confidential version

Summary and conclusions

Vodafone welcomes the opportunity to respond to this consultation on the revision of annual licence fees ("ALFs") for 900 MHz and 2.6 GHz spectrum.

Ofcom has improved its proposals by accepting some important points since the First Consultation[1]. But in giving effect to those changes, Ofcom's approach has been incoherent and inconsistent. It has not followed through or understood all the implications of these findings, and as a result, its proposals remain flawed.[2]

The principles now accepted by Ofcom are:

1. The full market value of 800 MHz spectrum should be based upon a marginal bidder analysis;

2. International benchmarks should be relied upon principally as a guide to relative rather than absolute values of different spectrum bands;

3. When Ofcom exercises judgement in interpreting the evidence, a conservative approach should be adopted:

    a. Because, given its regulatory objectives, Ofcom should be more concerned about the risk of ALFs being set too high than too low (referred to as 'asymmetry of risk'); and

    b. Because the full market value of spectrum may have fallen since the Auction[3], as more spectrum is now expected to be available sooner than was anticipated at the time of the UK and international auctions[4].

4. An appropriate discount rate should be used when converting the lump sum value into an annuity set so as to make operators indifferent between paying a lump sum or an annual charge – this rate is the cost of debt of mobile operators.

Accepting these principles does help Ofcom to address some of the problems identified in the First Consultation. However Ofcom's execution of these principles is significantly flawed in several places so that the level of annual licence fee payments proposed in this Second Consultation remains incorrectly and unreasonably high. Ofcom still fails

[1] Annual licence fees for 900 MHz and 1800 MHz spectrum, consultation, October 2013

[2] Ofcom has made it clear in this consultation ("Second Consultation) at 1.21 that it is not re-consulting upon all issues addressed in its First Consultation and that a number of issues will be dealt with in its Final Statement. Similarly, Vodafone has not attempted to replay all issues contained in its First Response by which it continues to stand. Absence of a point from this response should not be taken as acceptance by Vodafone of Ofcom's position.

[3] UK Award of the 800 MHz and 2.6 GHz spectrum 1 March 2013

[4] Second Consultation at 1.34

to adopt a coherent and internally consistent view of what constitutes the 'full market value' of the ALF spectrum. Assessing that full market value involves (as Ofcom has consistently described it over 5 consultations spanning three and a half years) seeking to establish *'the market-clearing price in a well-functioning market'.*[5]

This assessment requires taking a view about a number of critical market conditions that would apply in a 'well-functioning market' for spectrum. In particular, Ofcom cannot start its analysis by simply asserting that the acquisition by EE of 2 x 10 MHz of 900 MHz spectrum in addition to the spectrum it acquired in the Auction would be consistent with such a market. This has a profound effect on how Ofcom should approach its marginal bidder analysis.

In this response we show that:

1. Ofcom's calculation of the value of 800MHz spectrum revealed by the Auction is too high. It exceeds, by over 20%, the ceiling to this value that is imposed by the sums paid in the Auction. We agree that a marginal bidder analysis can be of value, but only in revealing whether or not the value to the marginal bidder is lower than the average sum paid – it cannot be reasonably used, in the circumstances of this case, to suggest that the value to the marginal bidder is greater than the sums paid in the Auction.

    a. As we explore in detail in section 1 below a proper view of the marginal bidder analysis shows that if, now irrelevant, drivers of value[6] are excluded, the value of 800 MHz to the marginal bidder is between £17.9m and £21.4m per MHz. This is somewhat below the level of the average prices paid in the Auction of £26.8m.

    b. Even if these drivers of value are included and Ofcom's proposed 2 x 10 MHz marginal unit is adopted, a marginal bidder analysis actually supports an 800 MHz 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.

2. Ofcom's approach to international benchmarking is more robust than in the First Consultation but it gives too much weight to outlying auctions such as Austria which do not reflect the usage value of spectrum in the UK. As a consequence the benchmarking analysis as currently constituted will produce too high a relative value of 900 MHz and 1800 MHz spectrum from whatever level of UK auction market value of 800 MHz and 2600 MHz is adopted. We suggest that 900 MHz should be between 62% and 71% of the value of 800 MHz (before any inclusion of co-existence costs) and that the equivalent 1800 MHz relative value is 30% to 44% of the distance between 800 MHz and 2600 MHz values.

[5] Further Consultation, paragraph 2.9. See also Ofcom's First Consultation at 2.8 which refers in the same terms all the way back to Ofcom's First Competition Assessment from March 2011.
[6] That is the 'contiguity premium' and/or 'strategic premium' as described by both Vodafone and Ofcom.

Adopting a conservative approach to the evidence entails adopting figures at the lower end of each of these ranges.

3. Ofcom is not in fact being conservative in its treatment of the evidence to estimate the value of ALF. In acknowledging that it is exercising considerable regulatory judgment in how it interprets the evidence before it, Ofcom:

    a. underlines the need for an impact assessment that explains how its proposals will achieve its statutory objectives instead of pre-emptively deciding that it will not undertake a full assessment;

    b. demonstrates precisely why additional sources of evidence such as cost-modelling should be used, and done properly; and

    c. does not set out a framework to judge whether or not it is being sufficiently conservative given the risks it faces and objectives it seeks to achieve or to ensure that it is carrying this through consistently.[7]

4. Ofcom, in its choice of the method used to determine the appropriate cost of debt rate for annualisation of the lump sums of 900 MHz and 1800MHz spectrum value, fails to use a methodology consistent with its objectives and as a consequence the rate provisionally determined is excessive. Ofcom recognises that, ultimately, the cost of debt rather than cost of capital is the appropriate approach to convert the lump sum into an annual fee but it chooses a high rate of 2.6%. This rate is neither intellectually coherent, directly observable nor in line with regulatory best practice:

    a. In Annex 10 of this Second Consultation, Ofcom actually considers two alternative methodologies (options A and B) and on inadequate reasoning selects Option A. Vodafone believes that a discount rate set consistently with the overall regulatory objective would require the option B approach (of drawing on current observable debt rates);

    b. Furthermore the level that Ofcom suggests for Option B, of 1.6% is very much at the high end of the reasonable range of values. Vodafone considers therefore that a discount rate of 1.6% is the ceiling that should be adopted, and that around 1% is the appropriate conservative outcome.

5. Ofcom's errors above can often be traced back to a failure to ask itself at each stage <u>why</u> (for what purpose) it is undertaking a particular step in its analysis. For instance:

[7] At 1.34 Ofcom expresses this as *'a conservative approach when interpreting the evidence'* whereas at 1.38 it is expressed as setting ALFs *'more conservatively than we did in the October 2013 consultation'* and at 1.41 the notion is unqualified: *'we propose to set ALFs conservatively'* but against which standard is completely unclear.

a. Setting ALFs to reflect full market value is not an end in itself; the Direction serves a number of express purposes, namely *'ensuring the release of additional electromagnetic spectrum for use by providers of next generation wireless mobile broadband; allowing early deployment and maximising the coverage of those services; [and] creating greater investment certainty for operators'*.[8] Ofcom does not recognise, nor expressly adopt, these objectives. As a result of its error, it fails to equip itself with a full impact assessment (as it is duty-bound to do) to ensure that its proposals not just in form, but in substance, are suited to achieve these goals;

b. Identifying the 'full market value' of 800 MHz spectrum is only an interim step to aid in assessing the value of 900 MHz spectrum and hence the ALF for 900 MHz (and similarly for the process of determining the ALF for 1800MHz spectrum). Therefore, Ofcom should be seeking to assess the value of that 800 MHz spectrum which can best be translated into a 900 MHz value. It must therefore be particularly concerned to eliminate the risk of strategic and/or contiguity value from that estimate which it does not do; and

c. In addition to the role it plays in guiding Ofcom in its consideration of 'full market value', an impact assessment is also necessary for Ofcom to consider whether and the period over which to phase in any increased ALFs. A key regulatory concern in deciding how to revise ALFs is how to avoid the negative impacts of a price shock on consumers, competition or investment. By failing to assess those impacts, Ofcom leaves itself taking a stab in the dark. These impacts, as well as other regulatory precedents all argue for a longer phasing period.

Rather 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 proposals, while less than under its First Consultation would still take £247m per year in real terms out of the UK mobile industry every year - nearly 4 times the current annual cost of this spectrum.

Ofcom needs to address these issues comprehensively in any final Statement.

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

Section 1 addresses the valuation of 800 MHz (and 2600 MHz) from the Auction. Further analysis is contained in Annex 1.

Section 2 considers the relative valuations of 900 MHz, 1800 MHz and 2600 MHz that can be applied to the Auction 800 MHz and 2600 MHz outputs to determine an

[8] Direction, section 2. Section 2 also identifies the need to give effect to the Liberalisation Directive and Decision as purposes of the Direction.

appropriate lump sum spectrum value for 900 MHz and 1800 MHz. More detailed analysis is contained in the paper from Frontier Economics entitled *"International benchmarking evidence update"* that forms Annex 2.

Section 3 considers the need for a proper framework to consider whether Ofcom is being sufficiently conservative in its treatment of the evidence, the need for a full impact assessment and other sources of evidence that we believe Ofcom should include in its analysis to consider these issues. This is supported by Annexes 3.1, *"Legal analysis of Ofcom's Second Consultation on annual licence fees"*, 3.2 *"How conservative has Ofcom been?"* and 3.3 *"Willingness to pay and future spectrum release"*.

Section 4 looks at the appropriate discount rate for annualisation of the forward-looking valuations of spectrum to convert them into annual fees. The detailed analysis is in a paper from Oxera "*What is the right cost of debt for ALF?"*– this comprises Annex 4.

Section 1: Ofcom's marginal bidder analysis to determine the value of 800 MHz spectrum is deeply flawed

1.1 Introduction and Summary

Notwithstanding its claim to recognise the need to treat uncertain evidence 'conservatively', in this Second Consultation[9] Ofcom starts its analysis of 800 MHz value from a point that is anything but conservative: indeed, the analysis is neither founded upon the prices paid in the Auction by particular MNOs nor the overall sum raised by the Auction and might reasonably be termed 'radical' rather than conservative.

At the time of the Auction, Ofcom declared:

> *"The auction has achieved Ofcom's purpose of promoting strong competition in the 4G mobile market. This is expected to lead to faster mobile broadband speeds, lower prices, greater innovation, new investment and better coverage. Almost the whole UK population will be able to receive 4G mobile services by the end of 2017 at the latest."*[10]

Now, when setting annual licence fees and aiming at fundamentally the same objectives under the Direction of promoting competition, the roll out of advanced mobile services, investment certainty and better coverage, Ofcom's position is apparently that the prices paid in the Auction significantly *understated* full market value, by over 21%.[11] This is a remarkable claim, and one which is directly contradicted by public Government statements made at the time.[12]

Vodafone's position is that in assessing the evidence to identify the marginal value of an appropriate unit of 900 MHz 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 demonstrates in Annex 1 that the marginal bidder

[9] Second Consultation at 1.34

[10] http://media.ofcom.org.uk/news/2013/winners-of-the-4g-mobile-auction/

[11] £32.63m vs. £26.85m

[12] For example, the Government has made public statements to the effect that the auction prices ought to have been market values, and that the success of the auction ought to be considered by reference to the fact that the values were, in fact, market values. Ed Vaizey, for example, explained the point in an interview in the following terms: '*Well, in terms of the European rules that frame the auction, it is not a revenue-raising exercise, **it is an exercise to auction spectrum at market value** and it was very important the auction was constructed in such a way that didn't allow people to bid up prices effectively unfairly to game the system. So certainly, it would have been entirely wrong for the auction to have been conducted in such a way that increased revenue for government. **It was designed to get a fair market price***.' (Interview: Ed Vaizey MP – part two: on BT and 4G, http://www.computerweekly.com/feature/Interview-Ed-Vaizey-MP-part-two). Emphasis added.

analysis does show a value below the prices paid, and that a properly constructed marginal value for 800 MHz 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 x 10 MHz discussed below, proper application of the marginal bidder analysis suggests the opportunity cost of 800 MHz is no greater than £25 - £26m per MHz[13] which is consistent with the proposition that prices actually paid[14] in the auction are an upper bound for market value.

Ofcom's marginal bidder analysis is faulty because it comes to the 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 does put forward on post-auction values points in the opposite direction. 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. It cannot be reasonably used here to suggest that the value to the marginal bidder is greater than the average sum paid in the Auction.

In fact Ofcom's erroneous marginal bidder analysis exhibits a series of flaws:

a. Ofcom's method does not deal with a latent problem with the Auction data. Ofcom's reliance upon one pair of EE bids for 3rd and 4th blocks of 800 MHz spectrum leads it to adopt an extreme marginal value that is likely to include a 'contiguity premium' and/or a 'strategic premium'.
    i. Given that the 900 MHz spectrum subject to a revised ALF is not contiguous with the existing holdings of the marginal bidder, Ofcom's inclusion of a contiguity premium skews the resulting ALF value upward, without objective justification - potentially leading to spectrum being relinquished even though there is no higher value user.
    ii. Similarly, in a well-functioning market, spectrum would not be traded in ways that result in a dampening of competition (and Ofcom's policy is that it seeks to prevent allocations of spectrum which dampen competition). Setting ALFs based on marginal values which potentially contain strategic premiums could result in such inefficient re-allocations. So while Ofcom is right not to fetter its discretion in relation to future auction spectrum caps or trades, potentially including a strategic premium within an ALF value would not meet Ofcom's objectives and goes further in that it implies a future failure by Ofcom to carry out its duties. This is both implausible (as a matter of fact) and, as a matter of

[13] Without co-existence costs as discussed elsewhere.
[14] In fact, this is in line with Ofcom's previously preferred LRP methodology with revenue constraints (£26.85m/MHz) and the average prices paid (£26.81m/MHz)

law and in light of Ofcom's statutory duties in setting ALFs, inappropriate.

iii. Even if Ofcom cannot be certain of the size of strategic and/or contiguity premiums within EE's bids for large packages, the risk of including such drivers of value in ALFs needs to be taken into account. Disregarding this risk is inconsistent with Ofcom's duty to act reasonably (and specifically does not achieve Ofcom's stated aim of taking a 'conservative' approach to the evidence). At the very least, Ofcom should put much less weight on these specific bids when seeking to establish a market value for 800 MHz spectrum which may be translated into a 900 MHz (and 1800 MHz) value. Vodafone explains in this submission and at Annex 1 how Ofcom can and should apply a more robust and appropriate marginal bidder analysis.

b. Failing to take the necessary steps to strip out a strategic premium from its assessment of full market value would also be inconsistent with Ofcom's positive Community duties under the Common Regulatory Framework and the Direction, which, *inter alia* require Ofcom to act to promote competition.

c. Having considered and rejected the smaller increment of 2x5MHz of 800 MHz spectrum, Ofcom ultimately chooses a 'marginal increment' of 2x10 MHz of 800 MHz spectrum – that is, it proceeds on the basis that *'[b]y maintaining their current holdings of 900 MHz spectrum, the existing licensees are denying the value to non-holders of acquiring a 2x10 MHz block'*.[15] However a realistic analysis of the scenarios under which existing holders may relinquish spectrum suggests that it is unlikely that they would (jointly or separately) relinquish such a large increment of spectrum to be reallocated. Instead, the evidence suggests that they are more likely to relinquish smaller increments of marginal spectrum …REDACTED….. Basing the ALF value on a large increment is inconsistent with the true balance of risk to ensuring optimal use of spectrum (and the impact of such risk actuating) by materially increasing the risk of fallow spectrum;[16]

d. Its failure to recognise that gaps in the bid data (Ofcom's "packing problem") arise as a result of choices Ofcom itself made in the auction rules including

[15] Further Consultation, paragraph 2.73. Ofcom's comment at 2.53 also helps illustrate this point, where Ofcom notes that '[t]he marginal bidder analysis and ASM allow us to consider a specific question that is highly relevant to the market value of the 900 MHz and 1800 MHz bands for the purpose of deriving ALF: what value did bidders in the auction express for more spectrum in addition to their post-auction spectrum holdings? This is especially relevant, because ALF should reflect opportunity cost, the value denied by the licensees of 900 MHz / 1800 MHz to the non-holders of that spectrum, i.e. the value the non-holders could obtain by adding some 900 MHz / 1800 MHz spectrum to their holdings.' Ofcom's approach implies that 'some' ALF spectrum must necessarily mean 2 x 10 MHz. There is no necessity to include this condition in its reasoning; smaller spectrum packages are not only plausible but more likely than the release by any operator (or operators in combination) of a 2 x 10MHz block.

[16] However, for the reasons set out in detail in Annex 1, Vodafone rejects Ofcom's suggestion that a 2 x 5 MHz marginal unit would support a higher value than a 2 x 5 MHz marginal unit.

setting relatively high reserve prices and applying those reserve prices on a lot by lot basis.

i. Vodafone demonstrates that setting a slightly lower reserve price around £179m for a block of 800 MHz would have solved this so called 'packing problem';

ii. Ofcom is inconsistent between its treatment of auction data for 800 MHz and 2.6 GHz. Faced with a range of linear prices where one more or one fewer of the blocks available could be sold (i.e. lower and upper bounds for a linear market clearing price), Ofcom chooses a value at the bottom of the range for 2.6 GHz but well above the range for 800 MHz;

iii. It is incoherent and certainly not conservative for Ofcom to argue that prices paid in the Auction were underestimates of market value when this argument relies primarily upon data limitations which result from its own auction decisions. Had Ofcom wished to obtain superior bidding data for ALF purposes it could have designed the Auction rules more appropriately. This concern is amplified by the fact that, due to these limitations, Ofcom goes on to base its assessment of market value on hypothetical bids that were not and could not be made in the Auction.

e. Ofcom is inconsistent in how it treats information it has gathered from bidders about their estimates of value when bidding in the Auction, most notably between co-existence costs and terminal value.

We reiterate our conclusion from our response to the First Consultation that a proper marginal bidder analysis reveals that the value of 800MHz spectrum is between £17.9m and £21.4m.

1.2 Ofcom needs to consider all of the evidence when interpreting the 4G Auction outcomes

It is worth recalling at this stage, Ofcom's previous comments in the First Consultation referring back to its July 2012 Statement on the three methods it was considering in setting ALFs (LRP, ASM and benchmarking):

> *"We recognised that we need to consider the calculations under each methodology and their outputs with care. They have limitations individually and in combination. However, by using a broad set of relevant data and by using market transaction information in particular, we believe that our approach is likely to be appropriate to the circumstances."*[17]

Vodafone believes that this remains good regulatory practice and appropriate particularly given the high cost of error in this area, which Ofcom now acknowledges. While it urged Ofcom in its First Response to consider the evidence from a marginal bidder analysis (which suggested prices paid overstate true marginal value) this was in the context of the Auction prices being clearly influenced by the reserve prices set by Ofcom. Vodafone did not mean that Ofcom should detach its analysis completely from

[17] First Consultation at 4.4

those facts as it has done. Ofcom's proposal is particularly surprising given that none of the respondents to its First Consultation suggested that the 'full market value' of 800 MHz spectrum should be above any of the prices paid in the Auction - not even BT which based its approach upon the price paid by O2.[18]

In a complex area where the risks of regulatory error are extremely high, treating prices paid in the Auction as a ceiling for 'full market value' grounds Ofcom's analysis in the reality of the Auction outcomes in the UK and is consistent with the proper legal construction of that term. Ofcom's new approach which applies the marginal bidder analysis in an unconstrained and hypothetical manner reliant upon an extremely narrow set of data points; namely a single pair of EE bids in the Auction is, Vodafone submits, inappropriate and unwarranted. Ofcom claims that it still considers a range of methods to value the 800 MHz; indeed a wider range than its First Consultation.[19] In practice, Ofcom ultimately discards all but one approach - a hypothetical one unsupported even in cross-check by any of the other approaches. This is neither conservative nor robust.[20]

Ofcom's new approach is particularly surprising given its comments in defence of the Linear Reference Pricing Methodology in its First Consultation. It said:

> *"We consider [LRP] preferable to ASM because it is directly based on the spectrum, participants and bids in the auction rather than making hypothetical changes to these variables and because, in practice, the ASM results appear highly sensitive to the underlying assumptions."*[21]

At Annex 1 Vodafone demonstrates that exactly these same criticisms can be made of Ofcom's new application of the marginal bidder analysis. We also explain how a more robust approach can and should be applied.

Prior to the Auction and, as set out by Ofcom itself in the First Consultation it said:

> *"At paragraph A13.76 (i) of the Second Competition Assessment we stated that for the purposes of revising ALF we would use "the bids made and licence fees paid in the combined award, using the linear reference price methodology described in the First Competition Assessment, provided the auction is sufficiently competitive."* [22]

Ofcom is not bound to retain the previous method it proposed if there was evidence that the Auction results were not an unbiased estimate of market value. Vodafone

[18] BT considered that Ofcom's lump sum values were 'in the right ballpark' and that £30.5m per MHz including co-existence costs (based upon O2's price paid) was a lower bound of full market value due to the coverage obligation on that licence but it did not (in the redacted version available to Vodafone) propose any figure above this. Ofcom rightly rejected inclusion of the coverage costs in its First Consultation as there is no such obligation on 900 or 1800 MHz spectrum. (4.25)

[19] Second Consultation at 2.13

[20] In any event, Vodafone demonstrates in Annex 1 (pp. 27-28) that a weaker spectrum cap on EE would have had no impact on the prices paid by other bidders for 800 MHz; it would instead have been much more likely to increase competition and prices for 2.6 GHz spectrum instead.

[21] First Consultation at 4.24

[22] A5.1 of the First Consultation

urged Ofcom to consider the implications of a marginal bidder analysis over the LRP approach which we showed (and maintain) overstates rather than understates the marginal value of 800 MHz spectrum.[23] However, it is one thing to consider whether there is good evidence that suggests marginal values are below a ceiling set by the reality of actual prices paid. It is quite another to do as Ofcom has now done and stretch that evidence to support a hypothetical value above the actual prices paid – by definition, a price unobserved anywhere in the market.

Even Ofcom's limited impact assessment recognises that setting ALFs too high creates a risk that is not mirrored by the risk of setting them too low. This weighs in favour of putting no weight on any approach that gives results well above the actual prices paid in the Auction; without this anchor in reality, Ofcom is in no position to be confident that it has avoided the error of setting the price too high, with risks to its statutory objectives of spectrum efficiency and the interests of consumers.

Moreover, in the absence of evidence that marginal values are below prices paid in competitive auctions, it is self-evident that in a well-functioning market, such prices may be taken as good indications of market values in that country. This assumption is implicit in Ofcom's use of international benchmarks and it cannot logically apply a discount factor between 800 and 900 MHz spectrum based upon prices paid (discounting those auctions where prices paid reflect reserve prices) while at the same time artificially inflating the derived 'full market value' for UK spectrum to a level well above prices paid without accounting for this inconsistency.

Therefore, we consider that Vodafone's application of the marginal bidder analysis should be preferred over Ofcom's analysis because:

a. it relies upon bids actually made by EE in the Auction;

b. it relies upon multiple bids rather than one or two pairs of bids as Ofcom does; and

c. it distinguishes between different drivers of value including contiguity premium (even numbers of blocks) and/or strategic premium (large packages approaching or hypothetically beyond EE's cap) in order to determine the most appropriate estimate for setting ALFs.

In any event, a rejection of Vodafone's marginal bidder outcome should not lead to a substitution of Ofcom's marginal bidder outcome, but to an analysis based upon sums paid in the Auction, as in the First Consultation.

1.3 Ofcom's approach to 800MHz valuation incorporates contiguity and/or strategic premiums which are inappropriate to identifying a value for 900 MHz spectrum

[23] Vodafone First Response at 2.2.1

Vodafone maintains that the value of 2x5 MHz of 800 MHz spectrum without contiguity and strategic premiums is the most appropriate starting point for valuing 900 MHz spectrum. This is because:

a. Such premiums do not apply to the value of 900 MHz spectrum today. Including them within Ofcom's estimate of the value of 800 MHz runs the risk of over-inflating the derived value of 900 MHz;
b. Including such premiums within its ALF valuations contradict the purposes and objectives of the statutory framework under which Ofcom exercises its spectrum licencing powers and the Direction;[24]
c. Including such premiumspre-suppose some form of future regulatory failure;
d. Applying a 'contiguity premium' in particular and determining the marginal unit to be 2 x 10 MHz of 900 MHz spectrum risks the inefficient allocation of spectrum and this risk is asymmetric when compared with a 2 x 5 MHz marginal unit.

1.3.1 Such premiums do not apply to the value of 900 MHz spectrum today so including them within 800 MHz values inflates the derived value Ofcom is seeking to establish

It is vital that Ofcom ask itself at each step of the ALF process: why is it undertaking this step? The full market value of 800 MHz spectrum is assessed in order to assist Ofcom to determine the full market value of 900 MHz spectrum. Therefore, it is important that Ofcom chooses the putative 800 MHz value that can be most readily converted into a usage value for 900 MHz spectrum post-Auction.

In this Second Consultation[25] and as discussed above, Ofcom recognises that it must take account of changes to the factual circumstances between the Auction and the eventual date of its Statement in setting ALFs. This recognises that Ofcom must take a decision to revise ALFs to reflect full market value based on the facts at the time, not at some point previously (and specifically, not simply at the moment that the Auction concluded). This is clear from the terms of the Direction which expressly require Ofcom to set such values <u>after</u> completion of the Auction.[26]

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[24] See Annex 3.1 of this response.
[25] Annual licence fees for 900 MHz and 1800 MHz spectrum: Further consultation 1 August 2014
[26] We note that the CC (as it then was) has previously provided guidance to Ofcom in addressing errors in Ofcom's approach to valuing spectrum rights using sources that include auction data (in relation to the question of how to include the cost of spectrum licence fees in the assessment of mobile call termination prices in the 2007 MCT price control). There, the CC noted in its decision dated 16 January 2009 at paragraph 2.5.91 that Ofcom had erred in that: *'… in an industry such as telecommunications, one would not normally expect asset values to remain constant over time, and that in this case BT put forward evidence which suggested there had been major changes in expectations and market circumstances since the 2000 auction took place. We placed particular weight on the documentary evidence of what BT Cellnet and others were expecting at the time of the auction. We recognized that Ofcom did not have that evidence before it but we thought it should have sought such evidence if it used the 2000 auction fees as a proxy for the forward-looking value of 3G spectrum. We thought that, in the light of that evidence, Ofcom's reliance on its scenario-based approach was not an adequate response. … 2.5.92 In particular,* ***we did not think that it was correct of Ofcom to use the 2000 auction***

For that purpose, the most relevant comparator is not 800 MHz spectrum in addition to that which EE won in the Auction (as Ofcom claims); instead - it is EE's first acquired block of 800 MHz spectrum which more appropriately matches the characteristics of a marginal unit of 900 MHz; namely, it is generic, first block, low frequency spectrum for which there are no contiguity or strategic benefits.

The most important reason that it is not right to allow a contiguity premium to affect the licence fee for 900 MHz spectrum is entirely practical: no such contiguity value is available to a spectrum purchaser under any realistic scenario for spectrum release. For example, imagine that EE were indeed to gain some 900 MHz spectrum today. Unlike the position in respect of the bids that Ofcom relies upon in its analysis, this acquisition would *not* be contiguous with its existing 800 MHz spectrum. EE would require additional and separate roll-out of radio equipment to exploit that spectrum. Critically, given current spectrum holdings, that acquisition would not enable EE to ensure that one or more of its competitors in the UK market were unable to obtain the benefits of sub-1 GHz spectrum for coverage and indoor penetration of LTE (as would have been the case if EE had acquired 2x20 MHz of 800 MHz spectrum).

Therefore, to use the Auction bid data to attempt to understand the full market value of the excluded user of 900 MHz spectrum today, Ofcom needs to remove any value in EE's 800 MHz bids attributable to these, now irrelevant, considerations (contiguity and strategic value). Vodafone has done this in detail at Annex 1 and demonstrates that, absent such premiums, the value of 800 MHz spectrum in the UK is between £17.9m and £21.4m per MHz.

1.3.2 Making no attempt to strip out such premiums within its ALF valuations undermines Ofcom's purposes and objectives under its statutory duties including those set by the Direction

It is striking that nowhere in the Second Consultation does Ofcom seriously grapple with the question of <u>why</u> EE's valuations for very large spectrum bids show an increasing rather than decreasing marginal value of spectrum. It is clear that Ofcom fully understands the potential for strategic bidding to influence auction outcomes as it describes this at length in relation to the international benchmarks (A.786- A.791). However, it concludes:

> *"In the absence of clear evidence, we are not in a position to take the view that alleged cases of strategic bidding behaviour did or did not occur."*[27]

Without accepting this point in relation to the international auctions[28], it is clear that Ofcom is in a privileged position in relation to the UK Auction- it has all the bid data and

***fees, even as one scenario alongside others, without carrying out some investigation as to the extent to which expectations and the market had changed over the intervening period**.' Emphasis added.*

[27] Second Consultation at A7.91

[28] See Vodafone's Benchmarking Response – contained in the Frontier paper "Critique of Ofcom's international benchmarking analysis, case study annexes, June 2014 which demonstrated clearly the case for, in particular, the occurrence of strategic bidding in the Austrian auction and the discussion of the Austrian auction outcome in Section 2 of this response below.

full knowledge of the circumstances of the auction. Ofcom had carried out a full competitive assessment prior to the Auction and had carried out detailed financial modelling to understand the impact of different auction outcomes on each of the operators. In this case, Ofcom is in a position to take a view - at least on the likelihood that there are other drivers of value in the bids that it is assessing. We set out in Annex 1 why contiguity and/or strategic drivers are extremely likely, if not certain.[29]

However, these value drivers are irrelevant to the task facing Ofcom now; namely valuing 900 MHz spectrum already in use. That means that 800 MHz bids that are most at risk of including such value should therefore be treated as the least relevant, not the most relevant evidence which Ofcom can derive from the Auction.

1.3.3 Including such premiums is incompatible with Ofcom's duties and objectives

The Direction requires Ofcom to reset annual licence fees 'to reflect full market value' but, importantly, it sets this requirement for a series of purposes; including:

a. to promote investment and create greater investment certainty for operators;

b. to maximise the coverage of next generation mobile services.

Moreover, the Direction is itself bounded by and must be read in accordance with Ofcom's overriding duties under the Wireless Telegraphy Act, the Communications Act and the EU Common Regulatory Framework. Key duties and objectives which apply here are:

a. to promote competition
b. to promote the interests of citizens
c. to secure efficiency and sustainable competition, efficient investment and innovation and the maximum benefit for the purposes of end-users.

Vodafone set out in great detail in its First Response the need for Ofcom to keep these purposes in mind when going through the steps of revising annual licence fees.[30] This has gone unanswered in Ofcom's Second Consultation.

Ofcom falls into error because it does not consider these overall purposes when going through what it still, in parts, approaches as a mechanistic exercise. It is inimical to these purposes for Ofcom to start its analysis of 800 MHz value for the ultimate purpose of carrying out its duties and revising annual licence fees, without adjusting for any strategic value within EE's (unsuccessful) bids that arose not from the promotion of competition but, indeed, from the value to EE of a possible reduction in competition. Not to correct for this effect in its analysis would cause Ofcom to 'lock in' a value in annual licence fees which is inconsistent with the performance of its own duties.

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[29] This is also consistent with the findings of the NAO, who concluded that strategic bidding did occur during the auction. Ofcom does not appear to have taken that analysis into account in formulating their ALF proposals. See NAO, *4G Radio Spectrum Auction: Lessons Learned*, at paragraphs 2.19 to 2.22.

[30] See, in particular Annex 1 to Vodafone's First Response especially Section 5.

1.3.4 Ofcom must not presume a form of future regulatory failure by locking in such values

Similarly, Ofcom's other statutory duties must always be borne in mind, and it must not take or assume that it will in the future, take any action that would be inconsistent with any of these duties (particularly, in the context of giving effect to the CRF, Ofcom's Community duties and the duties governing the exercise of its radio spectrum functions set out in section 3 of the WTA06). It would be inconsistent with that duty if Ofcom adopted a full market value for the purposes of ALF that assumes or is predicated on the idea that Ofcom would fail to exercise its duties in relation to future spectrum rights held by existing licensees.

1.3.5 Ofcom cannot simply dismiss the spectrum cap constraint upon EE when establishing marginal value

Ofcom argues that the overall spectrum cap on EE is not a forward-looking constraint meaning that while that cap supressed the price revealed in the Auction below an unconstrained market value, it would not apply this cap going forward because of the future supply of additional spectrum and so, the market value for 900 MHz spectrum (as set by EE's marginal value) has risen.

But here, Ofcom's treatment of the evidence is wholly inconsistent. The underlying case for restriction on any one player acquiring a spectrum holding that might reduce or dampen competition remains likely to be a feature of Ofcom's regulatory approach to spectrum holdings in all plausible scenarios; the ambiguity about precisely how this concern might be expressed, and the need not to fetter Ofcom's discretion in this regard is not a sufficient basis for setting these questions aside or concluding them in a 'false negative' way.

1.3.6 Ofcom may in practice not permit the acquisition of additional 900 MHz spectrum by EE

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 upon EE's current acquisition of additional 900 MHz spectrum. Ofcom's discussion of whether its spectrum policy cap is a constraint or not upon EE's future acquisition of 2.3 or 3.4 GHz spectrum is wholly irrelevant.[31]

If, absent the constraint, EE is the marginal bidder for 900 MHz then clearly the marginal value of that spectrum cannot be higher than EE's value and, depending upon the strength of the constraint, could be considerably lower (i.e. the value placed upon it by the next marginal bidder).

Ofcom is right not to fetter its discretion but Ofcom cannot possibly conclude, without undertaking a new competition assessment that there will be no policy constraint upon EE acquiring more 900 MHz spectrum. The Auction spectrum caps and rules were set as a result of many hundreds of pages of detailed analysis in two separate consultations concerning the competitive landscape and future developments in the

[31] Second Consultation at 2.58

UK[32]. For Ofcom to now dismiss this in the space of a single sentence in the Second Consultation: *"In our view, it would not be a reasonable assumption for the purpose of ALF to restrict EE only to its current overall spectrum holdings, given that more spectrum will soon be available for mobile use"*[33] is surprising to say the least.

It is clear that Ofcom's reasoning and views on competition in the mobile market expressed when setting the rules for the Auction also form part of its reasoning in relation to the setting of ALFs.[34] Unless and until it undertakes a new assessment, at the very least there must be some uncertainty over EE's ability to acquire this additional spectrum. Of course, the larger the marginal unit assessed by Ofcom the more likely this constraint is to be binding.

As noted in Annex 3.1, Ofcom does not address the fact that its duty of consistency demands that it include, and not exclude, the likely impact of any restraint on future spectrum holdings, at least as a possibility. It is not appropriate to adopt the 'modified greenfield' approach used in a market review (which is a precautionary approach designed to prevent gaps arising in regulation). A better model is the type of competition analysis undertaken by competition authorities when considering a merger; in that exercise, it is appropriate and necessary to take into account the future likely impacts of regulation. At a minimum, Ofcom should proceed on the basis that it will adequately perform its duties to prevent any harm to competition arising as a result of spectrum acquisition. As previously noted, the greater the increment of spectrum chosen in a particular analysis (or scenario), the more likely it is that this will be a relevant factor.

Therefore, Vodafone considers it safer (and a properly conservative approach to the evidence) for Ofcom to focus its marginal bidder analysis on bids actually made by EE and permitted under the Auction rules.

1.3.7 Even if EE is not prevented from acquiring more 900 MHz spectrum due to the future release of substitutional spectrum, that release itself drives marginal values for all spectrum down

Assume for a moment that EE would not be constrained by the spectrum cap from acquiring 2x10 MHz of 900 MHz spectrum because this would not dampen competition. In this case, Ofcom is in danger of relying upon the same evidence to support two diametrically opposed propositions:

a. First, that the value of 900 MHz has gone up since the Auction (or at least bids for large spectrum packages in the Auction are most relevant evidence for current values) as EE is now entitled to purchase more spectrum and so there is more competition for the available spectrum;
b. But at the same time, EE is able to do that precisely because of the greater future availability of spectrum which Ofcom itself recognises is likely to

[32] For instance, the second consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum includes a 233 page analysis of these issues in Annex 6

[33] Second Consultation at 2.58

[34] See First Consultation at 4.10.

reduce all spectrum values due to greater availability and fungibility of spectrum.[35]

This is an example of how Ofcom's proposals, based on a mechanistic approach to estimating market value, are not consistent (and consistency is one of Ofcom's statutory duties applicable in this context). Ofcom makes no attempt to reconcile or estimate the magnitude of these competing forces leaving its conclusions illogical and lacking objective justification.

1.4 Ofcom's inclusion of contiguity and/or strategic premiums in its analysis of ALFs undermines it ability to meet one of its key objectives in setting those ALFs, namely ensuring optimal use of spectrum

1.4.1 Ofcom's proposed marginal unit is too large

Ofcom considers that it is right to include a contiguity premium within the value of 900 MHz spectrum because there is demand for 2x10 MHz of 900 MHz spectrum, the value of which is being denied to a marginal bidder by Vodafone and Telefonica retaining their existing holdings:

> *"If there is a contiguity premium associated with 2x10 MHz of 900 MHz then it is relevant to the opportunity cost of the 900 MHz band (which is imposed by the current holders of 900 MHz spectrum retaining their holdings.)"*[36]

But, as described in more detail in Annex 1 Ofcom has failed to fully consider which of the potential scenarios of handback or trade is more likely, whether such re-allocation would increase or decrease efficiency and the potential magnitude of any change in efficiency. Elsewhere, Ofcom recognises that operators are likely to optimise their networks based upon their spectrum holdings (meaning they are likely to already be the highest-value user for those holdings)[37]. Having accepted this, Ofcom puts the case no higher than *"it may also be the case that some spectrum may be held by operators who are not the highest-value users of at least a proportion of their holdings in the 900 MHz or 1800 MHz bands. Furthermore, valuations of different operators can change over time in different ways."*

On this basis, the question before Ofcom is whether, on the balance of evidence, which choice of increment is most likely to lead to an overall increase in efficiency through re-allocation of spectrum? Before setting the increment at 2x10 MHz Ofcom needs to assess whether it is more likely that:

a. Vodafone and Telefonica between them will relinquish 2x10 MHz which could be used more efficiently by EE? or

b. Vodafone/Telefonica will inefficiently relinquish 2x5 MHz (or less), which cannot be used more efficiently by EE?

[35] Second Consultation at 1.34. See further Annex 3.3
[36] Second Consultation at 2.93
[37] Second Consultation at A5.10

Vodafone's submission is that b. is the more likely outcome when setting ALFs based on a larger marginal increment. Ofcom does not address this question. Failing to ground this question by reference to the evidence and balance of probabilities is a striking example of Ofcom undertaking a mechanical analysis of full market value without returning to the purpose for which it is making that analysis.

This point is even stronger when one considers the actual holdings of Vodafone and Telefonica today are 2 x 17.5 MHz of 900 MHz spectrum- an amount which cannot be divided into equal 2 x 10 MHz blocks. By setting a marginal unit of 2 x 10 MHz, Ofcom may be incentivising the inefficient hand-back of a smaller increment (e.g. at least. 2 x 7.5 MHz, 2 x 5 MHz or 2 x 2.5 MHz) which may have a value below the per MHz value Ofcom derives for 2 x 10 MHz.

Ofcom's reasons for discounting this risk are no more convincing now than they were in the First Consultation. Ofcom relies upon extrapolating private value from MNOs[38] or assuming that the same premium observed in relation to 800 MHz applies to 900 MHz. However any high private value from the existing holders only suggests that reallocation is relatively unlikely and does not in itself provide information of whether any reallocation that may take place would increase or decrease efficiency. Moreover, adopting such an approach to 900 MHz and 1800 MHz ALF setting runs the risk of distorting bidding behaviour in future auctions such as 2.3 and 3.4 GHz when operators will be are aware that the date for the implementation of annual fees for 2.1 GHz is quickly approaching.

1.4.2 Ofcom needs to consider how, in practice, spectrum would be most likely to be handed back or traded

The correct starting point is that the licence term is indefinite until revoked or 'surrendered by the licensee'. The implication is that the grant of the licence also confers the right to surrender the licence, in whole or in part.

When transferring or surrendering a part of a spectrum licence, some limits would apply (for example, it would clearly not be open to a licensee to surrender a licence with some conditions and retain others (e.g. a licensee cannot surrender the obligation to pay ALFs but hold on to their right to use, for example). But subject to this constraint, as a practical matter, any unit of spectrum that can be sufficiently well-defined to be transferred could also be surrendered.[39]

Moreover, Ofcom's trading guidelines identify relevant dimensions of geography, by frequency and over time (i.e. duration), without any additional restrictions for the PWN licences (which includes the 900 MHz spectrum) and there is no need to assume that the process is complex or difficult.[40] While the process for trading involves (by necessity) a transferor and a transferee, a matter of the legal process, surrender could

[38] A5.22

[39] Section 30(3)(d) of the Wireless Telegraphy Act 2006 ('WTA06') provides that Trading Regulations may provide for the surrender and re-issuing of a licence, which implies that the link between the two processes is a close one.

[40] The fact that the previous process was colloquially described as 'surrender and re-issue' also illustrates the relationship.

be as simple as written notification to Ofcom, describing the rights being surrendered, with immediate effect.

The key point here is that the decision on trading or hand-back fundamentally lies with the existing holder. It is for it to decide what suits it and as these licences have already been made indefinite they cannot, except in very limited circumstances, be revoked by Ofcom on ‘spectrum management grounds’. Therefore, there is nothing in practice stopping the trading or handing back of smaller blocks than Ofcom is currently using to define the marginal unit. In fact, given the technical difficulties involved in freeing spectrum in use, trading or handback of smaller marginal blocks is far more likely than trading or handback of ‘core’ spectrum. There is no basis for an assumption that in a ‘well-functioning market’ a very large holding of spectrum would be released on an ‘all or nothing’ basis – there is both technical and commercial evidence available to Ofcom to enable it to establish what smaller lots of spectrum a willing vendor and a willing buyer might agree to transfer in a variety of scenarios.

Ofcom fails to answer the question it identifies correctly as being at the heart of its definition of ‘full market value’, which is to consider what value the spectrum that is held by existing licensees might have *to another user*. Some view of the circumstances under which that other user might obtain access to that spectrum and what they might do to accrue that value is a necessary input to Ofcom’s assessment.

1.4.3 There is no good technical reason to choose such a large marginal increment

It is clear that in the short term, the technical standards for 3G and LTE both support a usable unit of spectrum of 2x5 MHz. LTE supports smaller increments[41] (2x1.25 MHz) and to the extent that the appropriate use of 900 MHz is still 2G technology (as suggested by Ofcom’s own MTR modelling) the incremental unit could be much smaller - down to 200 KHz meaning that existing users could free up spectrum in increments of 200 KHz. Equally, to the extent that LTE-A becomes the appropriate technology this allows aggregation over non-contiguous spectrum which could mean that smaller allocations, down to 2 x 1.25 MHz, have value.

Therefore, Ofcom is in danger of ‘locking in’ a contiguity premium for its value of 900 MHz (as derived from 800 MHz) at exactly the moment of technology shift when that premium is likely to reduce or disappear completely. This approach is inconsistent with Ofcom’s recognition in the Second Consultation that in the face of evidential uncertainty it needs to act conservatively.

1.4.4 Choosing a large marginal increment exacerbates Ofcom’s failure to update its competition analysis

Identifying such a large marginal unit just underlines the point above about the uncertainty surrounding EE as the true marginal bidder for 900 MHz. Is Ofcom really saying that if EE acquired 2 x 10 MHz of 900 MHz spectrum today from another UK operator, that there would be no case for detailed investigation? That seems a surprising stance to take, and to carry risks in terms of the legal reasoning (fettering

[41] Although these have not generally been deployed given the availability of large contiguous blocks.

Ofcom's discretion in future decisions) and as a matter of regulatory risk and uncertainty (since it is an abrupt departure from Ofcom's previously-stated policies in relation to spectrum holdings and competition). The risks of creating additional costs on industry – for example by triggering a false optimism amongst some operators that they can increase their relative holdings without constraint – seems very high.

Ofcom tries to have the argument both ways. Footnote 38 recognises that there will be some (as yet, unidentified) limits on spectrum acquisition but at the same time *"our marginal bidder analysis below only relies on EE not being prevented from acquiring 2 x 5 MHz or 2 x 10 MHz of spectrum in addition to its current holdings".* Of course, in fact it is actually reliant upon acquiring 2 x 10 MHz of sub 1 GHz spectrum without relinquishing any other spectrum.

1.5 To the extent that Ofcom suffers from a lack of granular evidence on the true marginal value of 800 MHz spectrum as revealed by the Auction, this is attributable to its own decisions in auction design.

We describe in Annex 1 why the 'packing issue' identified by Ofcom as understating the market value of 800 MHz spectrum occurred because it set the reserve price too high. Close examination of the bids reveals that had Ofcom set a reserve price of around £179m for one block of 800 MHz then this packing issue disappears. Vodafone made similar points in its First Response[42] which remain unanswered by Ofcom. Similarly, Ofcom claims that the Auction understates 'true market value' because in each case there was only one losing bidder and the reserve price came into play. But the point is clear- at these reserve prices there was only one losing bidder for 800 MHz. However, there were other bidders in the Auction (e.g. H3G for packages other than the 'opt in' packages, and Niche) who could have expressed a marginal value for the spectrum but did not do so because of Ofcom's reserve price.

1.5.1 Ofcom is inconsistent in its treatment of the evidence put forward by MNOs concerning their bidding within the Auction

Ofcom relies upon EE's (presumed) inclusion of DTT costs in its business case to gross up its bids.[43] However it ignores, on policy grounds, the inclusion of a terminal value in bids.[44] This is inconsistent. Either Ofcom should take the view that bidders' expectations are relevant or they are not. It cannot pick and choose. If indeed EE included a terminal value within its bidding Ofcom should scale back all of EE's bids to account for this. And this would clearly reduce the outputs of any marginal bidder analaysis.

1.5.2 Ofcom's aggressive approach to establishing a market value for 800 MHz is inconsistent with its approach to 2600 MHz

Recognising that there is not a single linear price for either 800 MHz or 2600 MHz at which, upon the Auction evidence, Ofcom could have sold exactly the blocks available Ofcom chooses to take the lower end of the range for 2600 MHz, expressly on the

[42] First Response Annex 2 at 3.3
[43] Second Consultation at A6.139 and 140.
[44] Second Consultation at 4.4

basis that this is 'conservative'[45] but in respect of 800 MHz it chooses a value above the range of values where all spectrum could be sold. This cannot be reconciled with Ofcom's claim that its proposed values for both 800 and 2600 MHz spectrum are 'conservative estimates of market values'.[46]

[45] Second Consultation at 2.81
[46] 2.98

Section 2: Ofcom needs to further refine its international benchmarking approach

2.1 Introduction and Summary

Ofcom has made a number of important changes to its treatment of international benchmarking evidence which Vodafone supports. In particular, Ofcom now proposes to:

a. Focus upon relative rather than absolute values in its benchmarking analysis, treating absolute values as a cross-check only;

b. Treat auctions where spectrum cleared at the reserve price as less relevant evidence; and

c. Consider country and auction-specific factors when assessing how reflective particular auction benchmarks are of UK market value.

Given the new focus on relative values, and the fact that as a result any absolute values of 900 MHz and 1800 MHz that will emerge are dependant in part on the UK auction values of 800 MHz and 2600 MHz (that are considered elsewhere), we consider in this section 900 MHz and 1800 MHz values purely in percentage terms (using Ofcom's approach of the relativity against 800 MHz for 900 MHz and the distance method for 1800 MHz).

Overall, Ofcom's proposed relative valuation of 900 MHz at 70% of the value of 800 MHz[47] (provided that value is properly derived) is within but at the top of the range that might be proposed. We consider that for 900 MHz the international benchmarking data suggests the possibility of a range of 62% - 71% relative value 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.[48]

Similarly, we consider a reasonable range for the relative value of 1800 MHz (on the distance method) to be 30-44%, with the appropriate value being closer to the more reliable benchmarks at the lower end of this range; that is, 30%-32%..

Vodafone sets out this analysis further in Annex 2, which updates our First Response analysis in light of Ofcom's revised methodology on relative benchmarking (and the use of the "distance method" for 1800 MHz) and additional subsequent auction data. Vodafone's key concerns with Ofcom's new analysis are that:

a. Ofcom treats some evidence, particularly the auction result from Austria in an inconsistent and biased manner; and

[47] 800 MHz value before adding in any possible cost of co-existence and without coverage obligations

[48] For consistency we have restated these figures to compare Ofcom's current proposal of 70% with the adjusted relative values (net of co-existence cost and coverage obligations) from Ireland 62% (lower bound) and Spain 71% (upper bound).

b. Ofcom uses inflated estimates of the UK 800 MHz value from the Auction.

The result of these errors is that Ofcom derives too high a level of 900 MHz and 1800 MHz forward looking value.

2.2 Ofcom should discount the Austrian auction to Third Tier evidence

2.2.1 There is good evidence of strategic bidding in the Austrian auction

In May 2014 Ofcom published "an update on European auctions since Ofcom's consultation on 900 MHz and 1800 MHz spectrum". This update identified ten auction outcomes. Ofcom noted in paragraph 5:

> *"We are considering whether this new information on further European spectrum auctions provides relevant evidence for the purposes of estimating the market value of the 900 MHz and 1800 MHz licences in the UK. If stakeholders wish to submit comments on any of this new information, including where relevant revising or adding to comments they have already submitted to us during the consultation process."*

Vodafone's response ("Benchmarking Response") considered each of the auctions in turn (except for those already evaluated in our First Response) and concluded that they provided relatively little additional relevant evidence for ALF setting purposes.[49] In particular the Austrian auction, which was CCA in format, suffered from difficulties of interpretation and Ofcom's reported LRP based outcomes had issues relating to lack of transparency and inconsistency. We also suggested that there was a strong likelihood of strategic and bidding impacting the results. The apparent results by spectrum band reported by Ofcom suggested very clearly that the Austrian auction was an outlier against the rest of the auction data. We concluded that:

> "*both the absolute and relative valuations of 900MHz and 1800MHz spectrum in Austria are unlikely to provide useful information about the market value of this spectrum in the UK. If anything, they are likely to overestimate UK market value.*[50]"

Ofcom has responded in an inadequate manner to Vodafone's analysis of the Austrian auction, and does in fact place some weight on its apparent outputs, placing the Austrian outcome in the First Tier of its analysis for both 900 MHz and 1800 MHz – although in practice the 1800MHz Austrian result is largely treated as an outlier and bears little relevance to the determination of the 1800 MHz value, while no such consideration is made in respect of the 900 MHz outcome.

Ofcom's commentary in A8.9 to A8.65 acknowledges the plausibility of strategic investment (in Vodafone's analysis by Telekom Austria and/or T-Mobile) and strategic bidding (in Vodafone's analysis, by H3G) having taken place in the auction, but argues that there are other interpretations "consistent" with the evidence (A8.49) and accordingly that there is not "clear evidence" for or against the various allegations of

[49] Frontier Economics, Critique of Ofcom's international benchmarking analysis, Case Study Annexes, June 2014, and letter from Matthew Braovac to Charles Jenne, 16th June 2014

[50] Frontier, ibid, at page 19

strategic bidding. Since there is only very limited evidence available, that is not surprising, but Ofcom is still obliged to make the best reading of the evidence it can. If strategic considerations provide the best overall explanation (as various commenters suggest, not just Vodafone), Ofcom should accept that explanation. In particular, we are surprised at the off-hand way in which the following key points are treated:

a. *The fact that a bidder exercising strategic investment would not need to exclude a third operator completely to achieve much of the strategic value*.

   Such a bidder would not need to be confident that a second bidder would join them (contrary to A8.42). A first bidder taking half the spectrum while a second operator took a third (their "fair share") and leaving only a sixth for a third operator (a significantly diminished share) would be a serious weakening of that competitor in its own right. Judged by these standards, the strategic investment likely succeeded.

b. *The fact that the vast majority of bids in the supplementary round were for packages of 60 or 61 points.*

   If bidders had been bidding to their intrinsic usage value, rather than to strategic value or to set prices, one would expect supplementary bids for a wide range of different package sizes as bidders revealed the most relevant sections of their value curves (likely from around one third of the spectrum for each bidder, rising incrementally towards half of the spectrum). The pattern of supplementary bids actually observed is very different from this, and is a clear indicator of strategic values and/or strategic bidding.

c. *The fact that prices paid were so close to the final clock round prices, despite the excess of supply at those prices in the clock rounds.*

   An alternative hypothesis of bidding to value would imply combinatorial values led to the excess supply at the final round price. But then, as noted for the UK auction in Annex 1 of this response and elsewhere, this would mean that within a certain price range for 900 MHz and 1800 MHz spectrum it would have been possible to sell fewer lots than supply, or more lots than supply, but not exactly the supply, and so there could be no linear clearing price. A second-price auction with bids close to values should in such circumstances set the prices paid somewhat below the final round price (which would be above the upper end of the non-linear price range). By contrast, strategic bidding in the supplementary round would lead to many bids being set close to the upper limits implied by the relative cap rule, rather than in accordance with true package values. This would tend to lift prices paid right up towards the final round prices.

Ofcom claims at A8.49 not to understand this point, a claim we find surprising. The comparison with H3G's behaviour in the UK auction is also instructive. The UK auction is obviously a strong evidence point that H3G is prepared to engage in strategic bidding. However, in the UK case, H3G was left bidding for 800 MHz blocks in the clock rounds after EE had dropped its demand for such blocks. If H3G did not want two 800 MHz blocks (as it seems it did not), it would have been very unsafe for H3G to use supplementary bids to try to push the 800 MHz price paid up to the final clock round prices. As a result, in the UK auction it did not do so. If, by contrast, H3G had dropped demand from 2 to 0 blocks before EE did so, it would have seen little or no risk in bidding 800 MHz prices up close to the final clock round price (a price which Vodafone, Telefonica and EE had already shown willingness to pay). This is very plausibly what may have happened in Austria, for both 800 MHz and 900 MHz. In this case the Austrian prices would simply be revealing how aggressive H3G was prepared to be in price driving, and be revealing little or nothing about its own usage value for spectrum, or about the relative value of 900 MHz versus 800 MHz.

2.2.2 Regardless of the cause, Austrian auction outcomes do not reflect UK spectrum values

No matter what Ofcom makes of the evidence above, the simple fact remains that the 900 MHz LRP in Austria was, in Ofcom's analysis, above the value for 800 MHz. But Ofcom has previously stated that in its view, 900 MHz is unlikely to be more valuable in the UK than 800 MHz[51] and therefore its value sets an upper limit for 900 MHz. Thus, Ofcom cannot treat the relative value of 900/800 spectrum from the Austrian auction as more important (first tier) evidence for deriving a UK market value while being internally consistent.

The fact that in Austria 900 MHz was substantially more valuable than 800 MHz means either (or both) that there has been strategic bidding in Austria or there is something peculiar to Austria which makes 900 MHz more valuable than 800 MHz. Ofcom downgraded Romania to third tier evidence on this basis and should do the same here.[52] Recognising that Austrian values are not representative of UK values Ofcom cannot treat them as 'More Important Evidence' when seeking, ultimately, to establish UK values.

Ofcom is also inconsistent between 900 MHz and 1800 MHz in its practical use of the Austrian data. Although Ofcom adopts in its analysis Austrian auction values for both bands as First Tier (more important) evidence, in practice with respect to its 1800 MHz evaluation it effectively discards the Austrian value, treating it as an outlier, and developing its view of the 1800 MHz relative value largely from the average of the remaining First Tier datapoints[53]. This is different from Ofcom's derivation of the 900 MHz relative value, where it is clear from paragraphs 3.55 to 3.60 that Ofcom does not

[51] First Consultation at 4.42
[52] *"The evidence indicates that the higher price of 900 mHz compared to 800 MHz was driven to a large extent by the much greater importance of 2G in Romania compared with the UK. We regard this as so different to the key drivers of the relative value of these bands in the UK that we consider Romania to be a third-tier benchmark for 900 MHz."* Second Consultation at 3.36
[53] Ireland £14.3m, Italy £13.5m – Ofcom's view at 3.79 is of £14m "*if we were solely considering first-tier benchmarks*" and retains that sum after the second and third tier evaluation

treat Austria as an outlier, and instead takes account of it to some extent in its derivation of 70% and especially in its assertion that it is being conservative in its analysis.

A reasonable range for the relative value of 1800 MHz (on the distance method) would be 30-44%, with the appropriate value being closer to the more reliable benchmarks at the lower end of this range.

2.3 Ofcom's treatment of the UK Auction is inconsistent with its international benchmarks

2.3.1 Ofcom uses inflated UK values to compare against benchmarks

As described in section 1, Vodafone considers that Ofcom's analysis of the UK auction results clearly overstates the value of 800 MHz spectrum. This problem feeds through into Ofcom's benchmarking analysis when it attempts to work out an appropriate ratio between 800 MHz and 900 MHz values. In its international benchmarking, Ofcom accepts prices paid as a good indicator of 'full market value' in those countries. Ofcom derives its discounts precisely from those prices paid (or from LRP in the case of Austria). For Ofcom to decide that the specific auction rules in the UK meant that prices paid were not the relevant 'full market value' of the auctioned spectrum is inconsistent. One solution might be for Ofcom to undertake a similar analysis of all other international auctions. Vodafone does not consider this would be a sensible or practical: conceptually, it is more likely to lead to further error (in that Ofcom's analysis of the other auctions may be flawed in the same way as its analysis of the UK auction) and practically, it is impossible based upon the information it has to hand. A better and simpler solution is to take a consistent approach, treating the amounts paid in the UK auction as an upper limit on the 'full market value' of the auctioned spectrum, just as Ofcom does for the other countries in its analysis.

Vodafone submits that Ofcom is right to use a marginal bidder analysis and look in detail at the UK auction data to get its best possible estimate of 'full market value'. It is the one auction where Ofcom has all the data (including bid data) and has a full understanding of the intricacies of the rules (as it and its external advisers designed it) and the Direction directs Ofcom to pay particular regard to it. On the other hand, Ofcom has much less comprehensive data in relation to other international benchmarks and it cannot undertake an exhaustive analysis of every other auction. Therefore it needs to recognise the data limitations it has and, as it suggests, apply a conservative view rather than applying a ratio derived from prices paid directly to any inflated starting value of UK 800 MHz.

A final concern, recurring throughout Ofcom's analysis, is the difficulty of reconciling the approach that Ofcom appears to take with its avowed intention to adopt a 'conservative' approach to interpreting the evidence. We believe that Ofcom's use of 70% as the relative value to adopt between 900 MHz and 800 MHz lies at the upper end of the possible range of values (62% - 71%), and as such cannot be seen as a conservative selection. In fact a proper review and weighting of the evidence, as Frontier has made in Annex 2 of this response, suggests that a result towards the bottom of that range is the logical outcome, before any further considerations of treating the evidence conservatively are made.

<u>Section 3: The exercise of regulatory judgment and the need for a full impact assessment and the appropriate gathering and treatment of evidence</u>

3.1 Summary and Introduction

Vodafone previously noted that Ofcom's approach to setting Annual Licence Fees was *'insufficiently grounded in the legal and regulatory framework governing it.'*[54] It continues to hold this view.

Too often, Ofcom appears to be undertaking each separate step to set ALFs in a mechanistic way without considering its overall purpose. The task before Ofcom is to revise annual licence fees for 900 and 1800 MHz spectrum to reflect full market value in a manner which best fulfils its statutory duties while satisfying the terms and objectives of the Direction (providing this is possible). It must do this based upon all the relevant evidence as at the time of its final Statement.

Further detail on the concerns we have with Ofcom's approach and the practical steps that might be taken to bring that approach into line with Ofcom's statutory duties is set out in Annex 3.1.

Ofcom begins by acknowledging, correctly, that it has areas of discretion left to it as well as matters over which it has no discretion, and that an impact assessment is a right (and necessary) exercise to guide it in the exercise of its discretion. But Ofcom immediately, and without justification, narrows the scope of that exercise:

> *"In implementing the Government Direction to revise fees to reflect full market value, we have considered the impact in those areas where we are exercising discretion and are exercising regulatory judgement in light of the evidence available to us and our statutory duties.* ***In particular, we have assessed whether there is an asymmetric risk of inefficient use of spectrum from inadvertently setting ALFs below or above market value.*** *This annex sets out in further detail our revised assessment of the asymmetry of risks to spectrum efficiency and supports Section 1. First, it covers our position in the October 2013 consultation and stakeholder responses. Then, we discuss our assessment of the risks to efficiency,* ***in particular the efficient use of spectrum from inadvertently setting ALFs below, or above, market value.'***[55]

It is undoubtedly important that Ofcom considers whether there is an asymmetric risk of inefficient use of spectrum from setting ALFs below or above market value. But that does not mean that it is the <u>only</u> assessment Ofcom should undertake, nor that it is unnecessary for Ofcom to consider the other matters that logic (and its own guidelines on impact assessments) suggests ought be considered – for example, the impact on consumers of its proposals and the impact on investment and competition.[56]

[54] First Response Annex 1 at 1.3
[55] Further Consultation at A5.1 - emphasis added by Vodafone.
[56] Ofcom deals with each of these points but in a cursory manner (for example, it considers the impact on consumers only to the extent that any increased prices might depress demand and

3.2 Ofcom continues to misinterpret the overreaching purposes of the Direction

Despite recognising that some level of regulatory judgment needs to be exercised Ofcom seeks to duck the question of whether or not, after weighing and treating the evidence appropriately, its outcomes do or do not meet the objectives of the CRF and the Direction by simply declaring *"we do not have any discretion to decide whether or not to set ALFs at full market value."*[57] This is insufficient given that there is unavoidable uncertainty in estimating the level of full market value and various possible interpretations of what 'full market value' means – there is thus a broad range of ALF payment outcomes that could conceivably satisfy the requirement to "reflect full market value".

As described in further detail in Annex 3.1 we agree that Ofcom has no discretion over the question of whether or not to revise annual licence fees. However, it does have considerable discretion as to how to give effect to the Direction (which it must exercise lawfully and for the purpose of achieving those objectives). As a result, Ofcom is obliged to explain its reasoning in relation to each material exercise of discretion by drawing on those duties; to do otherwise is likely to lead to legal and regulatory error. However, Ofcom's analysis is, as yet, gravely deficient in this regard.

There remain fundamental concerns with Ofcom's construction of the Direction:

- First, the Direction is only to set ALFs to 'reflect' full market value; this is less prescriptive than Ofcom supposes;

- Second, Ofcom is wrong in law as to the status and role of the Direction. As the Direction sits below the Common Regulatory Framework and Communications Act duties Ofcom is required to decide (and set out its reasoning) why both the target of 'full market value' and the actual levels chosen best meet those objectives;

- Third, Ofcom's position is internally illogical and inconsistent. It now claims *"we have considered the impact in those areas where we do have discretion and are exercising regulatory judgement in light of the evidence available to us and our statutory duties"*[58] citing in particular the asymmetry of risk in setting prices too high or too low. But there is no discussion in the document of what the 'impact' might be of different possible outcomes from Ofcom's estimate of the appropriate ALFs.

As set out in more detail in Annex 3.1, Vodafone considers that by failing to equip itself with an impact assessment, Ofcom commits a fundamental error of approach, the effects of which can be seen across the range of Ofcom's reasoning, from the initial consideration of the auction data through to the consideration of timing and phasing-in of its ALF proposals.

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thereby affect spectrum efficiency in an asymmetric way - see A5.25 – A5.27). We presume that it chooses a common effective date for implementing ALFs to prevent distortion of competition between MNOs but this is expressed rather more loosely as 'fairness' (1.10).

[57] Consultation at 1.43

[58] Consultation at 1.44

3.3 Ofcom needs to be <u>appropriately</u> conservative in its treatment of the evidence

The one conclusion that Ofcom draws from the limited impact assessment it does undertake is that it ought to be 'conservative' in its approach. It is striking that Ofcom sets out no frame of reference to consider this important question of treating the evidence conservatively other than reference to its prior proposals. It states:

> *"we now also recognise that, at least in principle, future spectrum releases will provide some opportunity for any inefficient allocations of spectrum to be mitigated. Therefore, taking account of stakeholder responses we now consider that in order appropriately to take account of the asymmetry of risk [of inadvertently setting ALF too high or too low], we should set ALFs more conservatively than we did in the October 2013 consultation."*[59]

But this is the wrong question. Having recognised *"inherent uncertainty in deriving ALFs"* from indirect evidence[60] Ofcom should be considering the question of conservatism by reference to the likelihood and costs of error- not as against its previous (flawed) proposals. Put simply, how can Ofcom decide if it truly is setting rates conservatively (or, more precisely, conservatively enough given the risks and policy objectives involved) if it does not carry out an impact assessment on the different potential outcomes?

Ofcom does not define what it means by 'conservative', but as a term of art in economics, it is used to indicate an estimate that is purposefully low for the sake of caution.[61] That approach is well-established in competition law and regulatory analysis as being a way to avoid regulatory error, particularly when undertaking complex or multi-part calculations where the compounded effects of adventurous assumptions or choices of method can quickly snowball into a significant and harmful mistake.[62] It is instructive to see the straightforward and obvious application of that principle in other contexts:

> *"A variety of measures of the switching cost were available — standard charges, average charges to those who paid such a charge, or charges averaged across all customers who switched.* ***Of these three measures, the third tends to be the most conservative—i.e. giving the lowest measure of switching costs—and this is the measure we have used in the following calculations.*** *…."*[63]

Applying the same approach in the context of ALF implies that a consistent application of this principle would have Ofcom opting for the *lowest reasonable* alternative of the

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[59] Second Consultation at 1.38
[60] Second Consultation at 1.24
[61] In some contexts, a value may be chosen that is purposefully high for the sake of caution – see, for example, the Competition Commission's approach to setting the market share threshold for the competition test in supermarkets (subsequently criticised on appeal) – Tesco v Competition Commission [2009] CAT 6 at 112.
[62] See, for example, the LPG gas decision at Appendix G
[63] Competition Commission, LPG decision, Annex 1 of Appendix G at paragraph 2.

choices available to it at each stage of its reasoning. This seems to Vodafone to be a prudent and appropriate conclusion to draw from the reasoning in Annex 5 of the Further Consultation.

However, Ofcom does not do this consistently. For example, it chooses an approach to interpreting the Auction data that produces estimates of full market value that are above the levels of prices paid (and in some cases, bids made) in the auction. The result of combining such an aggressive approach with conservative values in other parts of the analysis cannot be considered to be conservative. Such an approach is inconsistent (which is sufficient critique in itself, given Ofcom's statutory duty to be consistent) and also a failure by Ofcom to correctly apply the lessons of its own inadequate impact assessment).

Vodafone previously criticised Ofcom's assertion in its First Consultation that:

> *"We considered whether it would be helpful as part of this process to have an intermediate step of deriving a range for each band within which we considered it likely that full market value fell, before going on to arrive at our best estimate (i.e. a single figure within the range). However, in light of the nature of the evidence on which we propose to rely, and the spread and distribution of the evidence points for each band, we consider that this intermediate step (deriving a range) would not assist us in arriving at our estimate of full market value.*[64]

Vodafone noted in its response that the correct question is not only would such an intermediate step help Ofcom arrive at an appropriate figure, but also, increases the transparency of the process for stakeholders such as Vodafone.

Ofcom does not appear to have addressed this issue.

Therefore, there is a potential conflict between the uncertain outputs of its analysis and Ofcom's statutory duties with which Ofcom needs to grapple. Ofcom recognises this principle in its discussion of asymmetry of risk and recognises that it must grapple with it. Similarly, Ofcom recognises the risk that (now somewhat aged) evidence from previous auctions- including the UK auction itself - may overstate the value of spectrum given greater certainty over release. Ofcom states:

> *"We recognise the possibility that market values may have changed since the time of the UK 4G auction early in 2013. It is possible that there have been changes which could have increased the value of spectrum in the ALF bands,"*

However Vodafone notes that in reality Ofcom does not advance any reasons why this might have occurred. Ofcom continues:

> *"But there are also developments which may have reduced their value."*[65]

Here Ofcom does provide some evidence:

[64] First Consultation at 2.11
[65]Consultation at 1.39

"To take account of the possibility of greater certainty of availability since the 4G auction of spectrum bands that may be substitutes for the ALF bands, we propose to set ALFs conservatively."[66]

But Ofcom's treatment of this downward pressure on values is far too weak - it presents the 'possibility' of a change in value either up or down in the same terms: 'it may'. But as noted above it presents no evidence of increasing value while there is considerable evidence of reducing value, most particularly, the greater spectrum certainty Ofcom describes. Simply following the logical consequences of evidence which points to lower values while presenting no evidence for higher values does not amount to treating the evidence conservatively; rather it is nothing more than a straightforward logical deduction.

Ofcom has previously been guided in the need to supplement a conservative approach with further checks and not to assume that a conservative approach alone, even if one could be made out in this case, is a sufficient methodological choice to guard against error:

"The Tribunal does not consider that the adoption of purportedly conservative assumptions and inputs at the outset of the CBA removes the desirability of performing sensitivity analysis in order to test the results obtained. This would not be, as OFCOM describe, an "empty exercise" but rather a necessary means of checking the accuracy and reliability of the results obtained in the first stage of the CBA. …"[67]

In any event, on the facts of this matter, closer analysis of Ofcom's spectrum policy position demonstrates that it has committed itself not only to the release of considerable quantities of additional "mobile broadband" spectrum in the short to medium term (2.3 GHz, 3.4 GHz, 1452-1492 MHz and 700 MHz) but also to release further spectrum as and when it is required for mobile services.[68]

The effect of this statement of policy must have the impact of reducing forward-looking spectrum values (compared to the time before this statement was made). In Annex 3.3 we go through in greater detail the various statements that Ofcom has made concerning its plans for spectrum release (and the increasing certainty of such release since the Auction), the implications of those plans on forward looking spectrum value and the need for Ofcom to be 'conservative' in its analysis of the evidence now.

This is particularly the case when consumers' willingness to pay for additional data services is uncertain but very evidently not linear to volume. The potential for large increases in data demand effectively meant that spectrum in the Auction had considerable option value as, in the absence of additional spectrum it could be used to meet demand shocks and hence generate additional profitability. Ofcom is now not

[66] Consultation at 1.41
[67] Vodafone v Ofcom [2008] CAT 22 (MNP) at 90.
[68] See, for example, Ofcom's Spectrum Management Strategy Statement and the Mobile Data Strategy Statement, May 2014, which builds (as in table 1) on the established "current priority" (or in progress) spectrum of 2.3 GHz, 3.4 GHz and 700 MHz and then identifies further suitable spectrum release as a significant Ofcom priority activity over the next 10 years.

only committed to releasing more spectrum in the 2.3GHz, 3.4GHz and 700MHz but also preparing itself to be able to release substantial additional spectrum to meet demand if that demand is higher than expected, reducing the option value associated with existing spectrum. In the alternative, if demand or willingness to pay is lower than expected, the value of incremental spectrum will be lower. Either way the forward-looking value of spectrum will be and has been depressed compared to its value in the auction. Therefore, suggesting there is evidence on both sides- i.e. for higher or lower values and that it is being 'conservative' by assuming that values could fall is not a proper representation of the evidence. These points are also discussed further in Annex 3.3.

3.4 Overall, has Ofcom, in fact, been conservative in its analysis of the evidence?

Vodafone noted in its prior submission to Ofcom that when setting AIP, Ofcom would do so on its best estimate of cost and then discount that rate by 50%[69]. This is one way of demonstrating conservatism in treatment of the evidence. We do not say that Ofcom necessarily needs to take this approach in the present context but it does have the advantage of being transparent in the application of a conservative approach. Instead when we look in detail at what Ofcom has done in the Second Consultation it is difficult to determine the impact of its avowed conservatism on the ALF outcome. It plays no explicit role in Ofcom's 'framework for deriving an appropriate level of ALF' illustrated in Figure 1.1 of the Second Consultation. On the other hand, Ofcom is willing to explicitly downgrade evidence based upon market changes which, in its view have increased the value of a particular band.[70]

Ofcom states in its Second Consultation:

> *"taking account of stakeholder responses we now consider that in order appropriately to take account of the asymmetry of risk we should set ALF's more conservatively than we did in the October 2013 consultation. The reasons for our revised view are set out in greater detail in Annex 5."*[71]

We have already commented above on (i) the lack of a framework to determine whether these new proposals really are based on a 'conservative enough' treatment of the evidence; (ii) the lack of conservatism in Ofcom's treatment of 800 MHz value; (iii) Ofcom's mechanistic rather than overtly conservative approach to its benchmarking exercise; and we will discuss later that having accepted the principle of adopting a debt rate for annualisation, the less than conservative manner in which this has been applied.

[69] First Response Annex 11 Section 4.2 and Footnote 23

[70] Second Consultation at 3.44. Ofcom downgrades the German auction to second-tier evidence on the basis that *'interest in 1800 MHz for LTE has increased in recent years'* so *"For auctions of 1800 MHz before 2011, we consider that the extent and scale of the risk of understatement are of sufficient importance that we should take it into account in our judgment on the relevant tier for the benchmark (as discussed above for Germany)."*

[71] Second Consultation at 1.38

We set out each of these points in Annex 3.2 in order to consider the overall question of just how conservative has Ofcom really been? Viewed correctly it is clear that Ofcom has not been conservative overall. It has, admittedly, come out with proposals that are lower than the figure it first considered appropriate but that is not the same thing at all – the change in the proposed level of ALF primarily relates to decisions on the appropriate discount rate to adopt and on the use of relative rather than absolute international benchmarking that were logically derived rather than a conservative assessment of equally weighted alternatives.

3.5 Recognising the high cost of error, Ofcom needs to include other sources of information to inform its views including cost modelling

Ofcom has briefly considered in Annex 9 of the Second Consultation the possibility of using cost modelling to provide an alternative source of forward looking spectrum value, but has rejected it on the grounds that such modelling will produce a wide range of possible valuations, in particular given the uncertainty of modelling assumptions, especially of data traffic volumes over the next 20 years. It supports this with a rough and ready adaptation of the 700 MHz model, which as Ofcom notes was developed for a rather different purpose. We understand this general point, but consider that there are two relevant factors that Ofcom has not taken into account.

- Ofcom's stated policy of positioning itself to release additional spectrum beyond the currently planned 2.3 GHz, 3.4 GHz and 700 MHz effectively takes off the modelling table all scenarios of high data growth with no additional spectrum release. It is these scenarios that produce the highest spectrum values – therefore Ofcom's stated policy provides a powerful cap to the level of spectrum value.

- Ofcom's tentative cost modelling is based around the possible cost of the alternative of spectrum, i.e. the incremental network investment that is necessary to support the incremental traffic demand in the absence of additional spectrum. However it says nothing as to whether such investment will actually occur – i.e. whether the incremental revenue that may arise from the incremental capacity increase can be expected to be greater than the level of investment.

  Or to put it another way, any forecast of future data traffic growth must take into account whether it is actually possible to supply that level of potential demand at a price consumers are willing to pay.

One of Ofcom's major objectives in spectrum management is to maximise consumer benefit from mobile data usage, but given that customer willingness to pay for additional data traffic is clearly not linear to demand, then it follows that other things being equal, benefit will be maximised by enabling operators to maximise capacity via additional spectrum availability, to the limit of profitable provision of such capacity. The alternative would be to risk spectrum being unused and potential demand unsatisfied. This factor should also be seen as a downward influence on the forward looking value of spectrum to mobile operators.

These factors together suggest that, properly developed, cost modelling will yield a relatively narrow range and a low level of long-run values for 900 MHz spectrum. These points are considered in more detail in Annex 3.3.

3.6 The exercise of regulatory judgement in Ofcom's approach to the implementation of ALF

Vodafone welcomes Ofcom's proposal to phase in the increase to ALFs as well as the adoption of a common actual payment date and agrees that this would simplify both implementation of the Regulations and their ongoing operation.[72] It also ensures fairness between operators who may otherwise have different measures of inflation applied to their ALFs.

However this phasing is limited to a one year transition. In the language of wholesale price controls, this is equivalent to a one year glidepath, on a CPI+X basis, in that the expected charge for the first year of ALF is proposed to be halfway between the existing level of spectrum fees and the new level. Vodafone believes that there is a compelling case for a longer and additional period of phasing given:

a. Relevant precedents set or proposed in respect of other spectrum users, most notably the introduction of AIP to broadcast spectrum;

b. The size of the proposed increase in fees in both relative and absolute terms;

c. Low levels of return on capital across UK operators reducing their ability to absorb such a large increase without a detrimental impact on investment and network roll-out (explicit objectives of the Direction);

In section 6 of Annex 3.1 we consider in more detail both the need for a more detailed analysis by Ofcom of the duration of the phasing in, and the relevant regulatory precedents. In relation to regulatory precedents, in the first place Ofcom's long established intention to implement spectrum fees for DTT in due course has been reiterated regularly since an Ofcom statement in 2007, culminating in a decision in 2013 that AIP based spectrum fees will be implemented in "around 2020". Ofcom's current hypothesis is that it will introduce these fees "*gradually over five years from around 2020*".[73]

Ofcom goes on to say in paragraph 3.73 of the AIP statement:

> *"However, we do not consider the phased introduction of fees to be a default method of implementation. Rather, as set out in the SRSP, we balance the considerations and manage the risks case by case. At the point that AIP-level fees are introduced, it will be necessary for us to reach a view on the case for and against phasing the introduction of these fees. In view of this, we do not consider it necessary or appropriate to reach a firm position at this time as to whether we would phase in AIP-level fees."*

[72] Further consultation at 6.10
[73] Spectrum pricing for terrestrial broadcasting, Statement July 2013

We consider that a very similar approach needs to be taken in the present circumstances – there is a need for a detailed evaluation by Ofcom of the length of any phasing in of ALF, based on the specific considerations and risks relevant to the mobile industry, and the impact of different options[74]. This evaluation has not as yet happened in the consultation process. We discuss this in more detail in section 6 of Annex 3.1.

In the second place, it is normal in charge control based wholesale regulation for Ofcom to employ a glidepath. Ofcom has regularly stated that it has a strong preference for glide paths, in particular because they provide stronger cost reduction incentives than immediate adjustments. For example in the leased lines statement in 2009 Ofcom said:

> *"3.103 However, we would note that when re-setting charge controls, Ofcom has, as a general principle, sought to bring prices down to cost over the duration of the charge control by means of a glide path. We have given high weight to the need to preserve efficiency incentives and we have taken into account the fact that regulating prices down to costs by means of one-off adjustments might undermine these incentives (particularly if efficiency savings rely on longer-term investments). Therefore, our preferred approach in this review has been to focus any starting charge adjustments only where there are particular regulatory concerns that might outweigh the benefits of the glide path approach."*

Glidepaths are normally imposed as a balance between the interests of consumers and operators. Here too an evaluation on the length of the glidepath is a normal feature of each consultation. Where it is anticipated that charges are falling, an immediate implementation may maximise short-term consumer benefit – where charges need to rise, a slower implementation allows consumers to adjust. Reciprocal considerations apply to operators. The main reason for having a glide path in for example MCT, where the direction of travel is downwards, is to allow time for operators to adjust their commercial operations to reflect the new rates (for example by rebalancing tariffs) and to increase operating efficiency. ALFs are similar[75] – a glide path would allow operators time to adjust by increasing the efficiency of their use of spectrum, and if need be by returning spectrum. However, as Ofcom appears to accept for DTT, such adjustment in respect of spectrum can only be achieved over a longer duration.

Or in the alternative Ofcom might consider that mobile operators might attempt to compensate for the significant increase in spectrum costs by raising retail prices. It would be necessary however for Ofcom to evaluate the speed at which this may prove to be possible – the regulatory precedent of the three year glidepaths in wholesale charge controls and the limitations on the ability to increase prices imposed by GC9 would be relevant factors for Ofcom to consider.

Where ALFs are different from wholesale charge controls is that any necessary balancing is not between the opposing interests of producers and consumers of mobile

[74] A key point for consideration is the speed at which any higher level of spectrum fees can achieve the goal of improved spectrum efficiency.
[75] A downward change in MCT, like an upward change in spectrum fees results in a reduction in mobile industry margins.

services – instead, similar to the implementation of AIP for DTT the interests of producers and consumers of mobile services are aligned in that an increase in the overall industry costs has the potential to adversely affect either or both producers and consumers, whilst the improvement of spectrum efficiency resulting from raised spectrum fees will take a considerable period to feed through. As discussed above, it falls to Ofcom to determine how the implementation of the revision to annual licence fees as required by the Direction can be best managed to reflect a proper balance of its duties, within an overall conservative approach.

While Vodafone naturally welcomes the fact that Ofcom's proposed annual licence fees are lower under its Second Consultation than they were in its First Consultation, there is no getting away from the fact that the proposals still represent a 3.8 times increase over current levels at total industry level (and a 4.2 times increase for Vodafone and Telefonica) and will take nearly £250m (in March 2013 real terms[76]) out of the mobile industry every year after the currently proposed short implementation period. This remains an unprecedented and very unwelcome increase in the operating costs of UK MNOs in the face of the ongoing declining mobile revenues identified by Ofcom[77].

Vodafone commented at length in its response to the First Consultation in Annex 7 "assessing Ofcom's conclusion of whether there are asymmetric risks in setting the appropriate level of ALF" that Ofcom could not safely consider the risk of hand-back of spectrum by comparing annual fees with operator revenues. A comparison between annual fees and profit (measured by EBIT) is a more appropriate analysis.

However if Ofcom were to undertake this work it would quickly find that MNO profitability is already very low and that the imposition of a more than £180m annual incremental cost to the industry would further reduce industry profits and cash flow, at a time where operators are attempting to deploy 4G services across the country.

Of course, this low level of profit coupled with difficulties in raising retail revenue greatly affects the MNOs' ability to absorb profit shocks such as this increase without negatively impacting other areas such as network investment. Like all UK MNOs, Vodafone UK is competing for capital within an international group and now is a particularly sensitive time in the investment cycle as we go through the transition from 3G to 4G.

These considerations suggest that a glidepath longer than that normally allowed in wholesale charge controls might be the logical starting point for design of any implementation of ALF – the five year period suggested by Ofcom for DTT AIP implementation appears to be a reasonable first approximation.

[76] We note that in practice Ofcom is setting a view of 900 MHz and 1800MHz spectrum as at the Auction date, calculating the ALF payments, and then uplifting them by CPI inflation up to the common effective date – this is not a conservative approach to setting the future level of payments

[77] Ofcom's 2014 Communications Market Report, August 2014 on page 12 reveals a 2% year on year fall in retail mobile revenues (page 12)

Section 4: Annualisation of the lump-sum value to create annual licence fees

4.1 Introduction and Summary

In the second Consultation Ofcom now proposes to use a discount rate to convert lump sum values into annual fees of 2.6% post-tax in real terms linked to CPI. This is Ofcom's view of an appropriate debt rate and it represents a significant change from Ofcom's original proposal to use a cost of capital (i.e. a mixture of debt and equity rates) in its First Consultation. We support the switch to the use of the cost of debt as the discount rate to apply in the annualisation of the spectrum lump sum.

However we disagree with Ofcom in two specific areas, the selection of the appropriate method to determine the cost of debt, and the calculation of resulting discount rate. Ofcom's provisional proposal for a 2.6% cost of debt rate is not conservative – using the appropriate method the correct rate is no more than 1.0% to 1.6%, with a conservative approach to the evidence suggesting a value towards the bottom of this range.

We discuss this in more detail below and in Annex 4, which is a paper from Oxera Consulting entitled *"What is the right cost of debt for ALF?"*

4.2 The cost of debt vs. WACC

Vodafone entirely agrees that a debt rate is the appropriate approach. Ofcom claims to be acting 'conservatively' by applying a debt rate when certain factors suggest a rate closer to WACC could be appropriate. These are:

a. The option for MNOs to handback spectrum without defaulting on other debts; and

b. The possibility of the revision of fees either up or down to reflect changes to 'full market value'.

Vodafone does not accept this analysis.

First, as we noted in our First Response[78] for an operator to hand back spectrum rather than trade it to another operator presupposes that there is no buyer at all willing to take it on with the associated ALF. At this point, Ofcom's policy has failed and it would necessarily have to revise fees downwards to reflect the new market value of spectrum. Therefore, the first operator 'benefit' disappears and is subsumed in the second.

As for the second so-called benefit, Ofcom claims that "it is reasonable to assume a symmetric probability of revisions up or down."[79] But does this bear up?

- For all of the reasons set out above regarding the release of future spectrum, the evidence of falling mobile prices, greater fungibility of spectrum and Ofcom's lack of evidence to support any kind of increase to marginal spectrum

[78] In sections 5 and 6
[79] Second Consultation at footnote 67.

values it must be accepted that on the evidence today a reduction in spectrum value is more likely than an increase;

- There will always be a lag between a fall in values and the accumulation of sufficient evidence to demonstrate that fall;

- Ofcom continues to grant itself considerable discretion stating it would only review ALFs if *"there were grounds to believe that a material misalignment had arisen between the level of those fees and the value of the spectrum"*[80] and mobile operators have no defined means of requiring Ofcom to review ALFs.

Therefore there is good reason to think that the 'cards are stacked' against mobile operators benefiting from reductions in ALFs but unlike spectrum acquired at auction and financed by debt they continue to bear some risk for ALFs rising.

Instead, Ofcom concludes that the symmetric risk of ALFs rising or falling means that:

> *"the Government could in practice be left sharing the underlying risks of the business for which the spectrum is employed. The discount rate which should be applied to calculate the ALF should therefore reflect the extent to which the Government is sharing the risk."*[81]

But Ofcom has ignored the particular asset upon which these payments are secured- one which is central to the operation of the MNOs' underlying business. Therefore, the Government retains a privileged position - the equity investors who should be compensated for their greater risk by the WACC 'get what is left' after the payment for spectrum is made. Therefore, the Government is not truly sharing the underlying risks of the business.

Faced with two options, the cost of debt and the cost of capital, there are clear policy and evidential reasons to choose the cost of debt as the appropriate means of annualising any lump sum value. Ofcom then creates a set of potential weightings based upon 'Government share of risk' from 10% to 100% and the appropriate discount rate that each would imply. But it recognises that it has no sound basis for choosing any particular level. Instead, Ofcom claims to be exercising conservatism in choosing the debt rate instead of some 'share of risk' hybrid rate. But this is not conservatism. As described above, conservatism in regulatory terms means deliberately choosing lower values when faced with evidential choices that would otherwise be equivalent. What Ofcom is doing is seeking to ascribe a benefit to the MNOs from the fact that between the cost of capital and the cost of debt it has chosen the most appropriate benchmark in the cost of debt.

4.3 *The cost of debt rate to use in the ALF calculation*

Whilst agreeing with Ofcom's conclusion that a cost of debt is the correct discount rate to use, Vodafone considers that Ofcom seriously overstates the rate that should actually be adopted. This is because:

[80] Second Consultation at 4.21
[81] Second Consultation at 4.22

- Ofcom chooses an inappropriate benchmark rate/methodology in its use of the MCT WACC approach; considering its overall purpose of making operators 'indifferent' between a lump sum and annual payments it fails to consider if a lump sum were payable just how such a payment would, in fact, be financed which means that the current risk-free spot rate is the more appropriate starting point. As a result, the option B method briefly considered by Ofcom in Annex 10 of the present consultation needs to be adopted instead of Ofcom's preferred option A method which is derived from Ofcom's general WACC methodology used for short range cost orientated wholesale charge controls;

- Ofcom's option A approach is also inconsistent with recent regulatory best-practice for the calculation of a cost of debt, with no explanation by Ofcom why it takes a different approach;

- Ofcom proposes that the calculation of the cost of debt rate should be based upon a comparator 20 year bond when, in fact, an appropriate mix of bond durations which would more accurately match actual payments should be used, significantly reducing the average duration (and therefore the relevant interest rate);

- Ofcom calculates the cost of debt using a real RPI-adjusted rate and then converts that to a CPI adjustment. This is unnecessarily cumbersome and compounds the risk of forecast error.

Ofcom estimated that the option A rate (on a post-tax real basis) to be 2.6%, and option B to be 1.6%. In fact a more realistic expression of option B is closer to 1% as is discussed in section 3 of Annex 4. Vodafone (with our external consultants Oxera) continues to consider Ofcom's adoption of 2.6% to be some distance above the upper bound of what might be considered reasonable. We see there is a need for a two-step analysis – firstly that option B is logically preferable to option A, and secondly that a conservative view of option B is more realistically 1% than 1.6%. We believe that Ofcom's provisional conclusion on the discount rate percentage is in direct conflict with Ofcom's new recognition in the Second Consultation that it should exercise regulatory judgment to treat the evidence conservatively when considering how to set ALFs in a manner best designed to meet its regulatory duties and objectives.

Further detail on all of these issues is included within Annex 4.

Vodafone Limited
September 2014