



Public Sector Spectrum Release: 2.3 GHz and 3.4 GHz spectrum bands

EE's response to Ofcom's further
consultation

June 2015

Non-confidential version - Confidential redactions are marked with
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1. Introduction and executive summary

This document contains EE Limited's ("EE's") response to the consultation questions included in Ofcom's statement and further consultation on the Public Sector Spectrum Release: Award of the 2.3GHz and 3.4 GHz spectrum bands published on 26 May 2015 (the "Further Consultation").

In addition, this document includes at Annex 3, EE's further comments on Ofcom's proposed non-technical licence conditions set out in section 8 of the Further Consultation. Whilst this aspect of Ofcom's proposals is not subject to formal consultation, we would respectfully urge Ofcom to take EE's comments on these conditions into account, particularly as they relate to new concerns we have identified with Ofcom's latest proposals.

This response should be read in conjunction with EE's response to Ofcom's November 2014 consultation on the Public Sector Spectrum Release: 2.3GHz and 3.4 GHz bands (the "November 2014 Consultation").

In the Further Consultation, Ofcom sets out its proposal to (in spite of the fundamental market changes that have been announced since Ofcom's original auction timetable was proposed) award "at least" the bulk of the available 2.3 and 3.4 GHz frequencies "as [originally] planned" – i.e. in late 2015 or early 2016. This proposal would result in the auction taking place at a time of significant uncertainty in the market as the Competition and Markets Authority ("CMA") and European Commission ("EC") complete their respective inquiries into British Telecommunications plc's ("BT's") proposed acquisition of EE (the "BT/EE transaction") and Hutchison Whampoa's proposed acquisition of Telefonica UK Limited ("O2") (the "H3G/O2 transaction").

Ofcom's purported justification for proposing to award the bulk of the available spectrum at this time is that:

- Ofcom's stakeholder engagement to date has suggested that there is demand for spectrum, although Ofcom admits that the current uncertainty regarding the BT/EE and H3G/O2 transactions may increase the difficulty for potential bidders to value the spectrum;
- Ofcom expects that an auction held after the proposed BT/EE and H3G/O2 transactions are determined could lead to a delay of a year or more to the award – potentially suggesting what Ofcom terms "an effective delay of up to two years" before the frequencies are actually used – and considers that this would represent an inefficient use of spectrum, as presently available spectrum will remain unused in the meantime;
- There may never be a 'perfect time' to award the spectrum and the market environment could still be uncertain after the conclusion of any EC (or CMA) inquiry.

EE agrees that there is likely to be demand for the available spectrum in the coming years. [REDACTED].

[REDACTED]. In summary, EE considers that:

- [REDACTED].
- [REDACTED].

- [REDACTED]:
 - [REDACTED]. Obviously, there will be a delay between the auction award and actual deployment of the spectrum allocated. However, as this will be true under all of the scenarios being considered by Ofcom, we do not consider it to be relevant to the consideration of any particular option.
 - [REDACTED]:
 - [REDACTED].
 - [REDACTED].
 - [REDACTED].
 - [REDACTED].
- EE accepts Ofcom’s comment that, in a dynamic market environment there may never be a ‘perfect time’ for Ofcom to hold the auction. [REDACTED].
- Ofcom’s vague proposal to give itself the option of withholding some of the available spectrum from the auction until an unspecified “later date”, and thereby conduct a sequential award of the available spectrum, in order to give Ofcom “flexibility to address potential competition concerns”, does attempt to factor in the potential competition impact of these transactions. However, EE is firmly of the view that this is entirely the wrong way for Ofcom to go about matters. In particular, EE is concerned that Ofcom has failed to heed its own warnings in the November 2014 Consultation that “we need to balance our competition concerns with the potential risk of doing more harm than good by intervening”¹ and that “The likelihood and scale of any detrimental consequences are related to the degree of intervention. The greater the intervention, the greater the likelihood and scale of unintended detrimental effects on consumers”.²
- Breaking the 2.3 and 3.4 GHz auction up into sequential auctions by reserving some of the spectrum would be a highly interventionist approach (the most interventionist of the four options originally considered and hence rejected by Ofcom in the November 2014 Consultation) and one which is likely to significantly increase both complexity and the risk of inefficient auction outcomes.³ Ofcom has previously acknowledged that the sequential award of substitutable spectrum increases aggregation and substitution risk for bidders, which in turn increases the risk of an inefficient allocation of spectrum. Sequential auctions also increase the risk of fragmented allocations of spectrum which may result in inefficient use of spectrum and lead to consumer harm. In particular it may be noted that a two stage award of spectrum limits potential bidders’ ability to acquire contiguous spectrum allocations, which increases the risk of an inefficient allocation of spectrum and consumer harm. [REDACTED].

¹ Ofcom, November 2014 Consultation, Para 7.135.

² Ofcom, November 2014 Consultation, Para 7.136.

³ Ofcom, November 2014 Consultation, Paras 7.146 and 7.148.

- The fundamental conceptual flaws in the proposal are already manifest. Prima facie, it is impossible to design an effective and proportionate competition remedy in the absence of clarity regarding the competition concern that the remedy is designed to address. [§<]. Any “flexible” remedy implemented now in that situation of uncertainty will be apt only to be either disproportionate and overly restrictive and interventionist, or insufficient and/or targeted to be effective.
- Moreover, due to their present lack of detail (regarding, inter alia, the timing of the auctions, the amounts and frequencies of spectrum that would be allocated to each auction and the actual competition concerns the withheld spectrum might be designed to address), Ofcom’s proposals enable neither Ofcom nor stakeholders to robustly assess their likely costs and benefits and thus the full extent of the harm that they might cause.
- Accordingly, EE considers that it would be impossible for Ofcom to reach an objectively justifiable conclusion that any such phased auction process was a proportionate way to best achieve its statutory objectives – firstly due to the conceptual flaws with the proposals and secondly due to their present lack of specification and justification.

[§<].

Please note that this response includes confidential information of the highest level of commercial and competitive sensitivity. EE’s confidential information has been provided to be used solely in connection with Ofcom’s Further Consultation. It would be extremely damaging to EE’s commercial interests, as well as the efficient outcome of an upcoming auction for this information to be disclosed to any third party. EE expressly objects to its confidential information being disclosed or used for any other purpose without EE’s express consent.

2. Ofcom's statutory duties

When considering the auctioning of spectrum rights, as a matter of national law Ofcom must have regard both to its general statutory duties in section 3 of CA 03, and its duties under section 3 of WTA 06. It must also have regard to the EU regulatory objectives set out in Articles 8 and 9 of the Framework Directive and comply with the procedures and principles set out in Articles 5 to 7 of the Authorisation Directive.

Clearly, these duties apply to the current spectrum auction decisions that Ofcom will need to make following its review of responses to this Further Consultation – namely (i) whether to auction all of the 2.3 and 3.4 GHz spectrum in a single auction or in stages, (ii) when to conduct that auction or auctions and (iii) if the auction is to be conducted in stages, which bands and quantities should be allocated in each stage.

Ofcom's principal duties under s.3 of CA 03 are “to further the interests of citizens in relation to communications matters” and “to further the interests of consumers in relevant markets, where appropriate by promoting competition”. In fulfilling this duty, EE considers that a number of Ofcom's other statutory duties are particularly relevant to the present decisions it is required to make in connection with the Public Sector Spectrum Release in the 2.3GHz and 3.4 GHz bands. In particular under S.3(2) of CA 03 Ofcom is required to secure “the optimal use for wireless telegraphy of the electro-magnetic spectrum” and under S. 3(2) of WTA 06 Ofcom has a duty to have particular regard to the desirability of promoting both the efficient management and use of spectrum and competition in the provision of electronic communications services. Further, under s.3(1) of WTA 06, in carrying out its radio spectrum functions, Ofcom must have regard to both present and future demand for the use of the spectrum for wireless telegraphy.

These national law duties correspond with Ofcom's duties under Articles 8 and 9 of the Framework Directive to:

- ensure that “users...derive maximum benefit in terms of choice, price, and quality” (Art 8(2)(a));
- ensure that “there is no distortion or restriction of competition in the electronic communications sector” (Art 8(2)(b));
- encourage “efficient use and ensure the effective management of radio frequencies and numbering resources” (Art. 8(2)(d));
- “ensure the effective management of radio frequencies for electronic communication services in their territory in accordance with Articles 8 and 8a [of the Framework Directive]” and “ensure that spectrum allocation used for electronic communications services [is] based on objective, transparent, non-discriminatory and proportionate criteria” (Art 9(1)).

Further, Ofcom is obliged to apply objective, transparent, non-discriminatory and proportionate regulatory principles: see Article 8(5) Framework Directive and ss.3(3) CA 03. The principle of proportionality requires that regulatory actions are necessary and well-suited to the pursuit of the statutory objectives, are not more onerous than is necessary and reasonably balance the competing

interests involved. The principle of equal treatment requires both that parties who are in a similar position should be treated similarly, but also that where there are relevant differences between the parties' positions, they should be treated in a manner which takes proper account of those differences.

Taken together, it is clear that Ofcom's relevant statutory duties require Ofcom to ensure that the decisions it takes in relation to the auction of the 2.3 and 3.4 GHz spectrum following this Further Consultation promote both allocative and productive efficiency in the use of spectrum. In turn, together with the principle of proportionality, this requires that the design of the auction and the terms on which it is held be well suited to accurately discovering present and future real demand for the use of spectrum for mobile services. Furthermore, Ofcom is required to promote competition in the provision of electronic communications services.

[REDACTED].

[REDACTED].

[REDACTED].

[REDACTED].

[REDACTED]. However first we explain why Ofcom's latest proposals lack the necessary detail to allow Ofcom to properly assess the true likely costs and benefits of its own proposals, or to allow stakeholders to respond meaningfully to all aspects of the Further Consultation – this in itself causing Ofcom to violate its statutory duties of transparency, proportionality and objective justification.

3. Ofcom's proposals are insufficiently clear to be justifiable

Ofcom describes the proposal on which it is consulting in the Further Consultation in a single line as follows: "Our proposal is to give ourselves the additional *option* of withholding some of the 2.3 and/or 3.4 GHz from the auction – and award it instead at a later date".⁴

Ofcom's proposal leaves almost entirely unspecified:

- How much spectrum would be withheld (other than to state that Ofcom "might wish to consider holding back around 60 MHz"⁵);
- Which spectrum bands, and frequencies within those spectrum bands, would be auctioned first/second (other than by its use of the "and/or" option to indicate that Ofcom is still undecided);
- When exactly it is proposed that the first auction would be held (other than that it is still anticipated that this would be "in the 2015/16 financial year"⁶, even though Ofcom acknowledges that this could involve the auction being conducted at the same time as "the market (and consequently spectrum holdings) may change"⁷ as a result of the simultaneous progress of the current but yet to be concluded merger clearance processes; and
- When it is anticipated that the second auction would be held, and whether this timing would be conditional on any external factors (other than its statement that it will "award any withheld frequencies at a later date, in light of market conditions").⁸

It is patently impossible for Ofcom to have reached an objectively justifiable conclusion that its proposals are the best available means of promoting the interests of consumers, competition and spectrum efficiency in a proportionate manner in line with its statutory duties, without having settled on any of the above details. By way of just one example, while it is clear that any form of sequential auction process is likely to have a material negative impact on spectrum efficiency to the detriment of consumers (as we set out in section 4 of this response), the extent of the harm caused is likely to vary widely depending on which frequencies Ofcom is proposing to withhold. Assessment of any potential countervailing benefit of (i) releasing some of the spectrum earlier in order to promote its earlier use and/or (ii) withholding the spectrum as a "regulatory tool" will also depend on this. In turn, such an assessment will require Ofcom to provide clarity regarding exactly what earlier use it expects to facilitate and what competition concern (if any) it is that this "tool" is designed to address.

Reserving a specified amount of spectrum in a specified band(s) as an optional "regulatory tool" represents a highly interventionist regulatory approach, with

⁴ Ofcom, Further Consultation, Para 3.10.

⁵ Ofcom, Further Consultation, Para 3.14.

⁶ Ofcom, Further Consultation, Para 3.19.

⁷ Ofcom, Further Consultation, Para 3.12.

⁸ Ofcom, Further Consultation, Para 1.8.

the potential for a very significant negative impact on spectrum efficiency and fair competition between communications providers to the detriment of consumers. Any intervention of this nature could be made only where justified on the basis of a robust assessment of the costs and benefits. However, Ofcom proposes it in order to be able to potentially address competition concerns which are unspecified and potentially non-existent. The current lack of specificity regarding both Ofcom's proposals and the concerns they are intended to address makes any robust assessment impossible. In terms of potential competition concerns, all that Ofcom vaguely mentions is the potential for "overly concentrated holdings".⁹ EE considers that neither Ofcom nor any stakeholder can robustly and credibly answer Ofcom's consultation question as to whether the withholding of any specified amount of 2.3 and/or 3.4 GHz spectrum, whether it be 60 MHz or otherwise, would or wouldn't give Ofcom "sufficient flexibility" to proportionately address its competition concerns, in the absence of further clarity behind what those concerns are and what is driving them.

Stakeholders' ability to comment meaningfully on all other aspects of Ofcom's consultation proposals and questions, is equally severely impaired by a lack of detail, [REDACTED] EE considers it imperative that Ofcom issues a properly detailed supplementary consultation clearly setting out what the exact proposals are and its proposed justification for these proposals for further stakeholder comment.

[REDACTED].

⁹ Ofcom, Further Consultation, Para 3.11.

4. Risks to Ofcom's statutory objectives of its current proposals

EE has serious concerns that Ofcom's current proposals would cause it to violate its statutory duties. We elaborate on our main concerns below, noting our comments in section 3 that further stakeholder analysis and comment would be essential following Ofcom's disclosure of the necessary details of its plans in the event that Ofcom were minded to proceed with any of these proposals.

4.1 [REDACTED]

[REDACTED].

[REDACTED].

[REDACTED].

[REDACTED].

[REDACTED].

[REDACTED].

[REDACTED].

4.2 [REDACTED]

[REDACTED].

[REDACTED].

[REDACTED].

4.3 Sequential auctions risk serious inefficiencies

Ofcom's proposals in the Further Consultation would result in a sequential award of 2.3 GHz and/or 3.4 GHz spectrum. This is in contrast to Ofcom's proposals in the November 2014 Consultation to conduct a simultaneous award of the available spectrum, which has traditionally been Ofcom's preferred approach. In the Further Consultation Ofcom fails to consider the disadvantages and potential risks of consumer harm associated with a sequential award of spectrum, particularly where the spectrum being auctioned is likely to be substitutable and/or complementary. There are number of reasons we consider that a sequential auction would be less efficient and/or lead to consumer harm.

Firstly, sequential auctions have the potential to significantly increase substitution and aggregation risks for bidders in the auction, where the spectrum being auction is considered to be substitutable and/or complementary. This in turn is likely to increase the risk of an inefficient outcome from the auction, in particular the risk of an inefficient allocation of spectrum. In Ofcom's March 2011 consultation on the assessment of future

mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues (“March 2011 consultation”) Ofcom stated that:

“If there is substitutability and/or complementarity between the available lots, a sequential auction would introduce significant substitution risks (as participants must bid for one or more lots without knowing what the price of other substitute lots will be) and aggregation risks (bidders do not know whether they will be successful in winning complementary lots).”¹⁰

Whilst 2.3 GHz and 3.4 GHz spectrum are not likely to be perfect substitutes, Ofcom acknowledged in the November 2014 Consultation that “we [Ofcom] believe they may to some extent be substitutable at some prices”.¹¹ In response to the consultation, EE stated that we expected spectrum in the bands to be substitutable [§<].¹² Further, in Telefonica’s non-confidential response to the same consultation, they indicated that they considered the spectrum bands being awarded to be both substitutes and complements.¹³

Ofcom’s proposal to withhold some spectrum from the auction and thereby run a sequential auction is therefore likely to significantly increase substitution and aggregation risk for bidders, and the risk of an inefficient outcome. In the November 2014 Consultation Ofcom identified aggregation and substitution risks as one of the six key risks to be mindful of when assessing which auction format to adopt for the auction.¹⁴ Following this consultation, Ofcom has in the Further Consultation Ofcom proposed a number of auction rules (e.g. setting a minimum requirement in the 3.4 GHz band intended to reduce the risk that bidders win less spectrum than their minimum requirement) for the auction, designed specifically with the intention of mitigating the aggregation and substitution risk associated with its preferred Simultaneous Multiple-Round Auction (“SMRA”) format.¹⁵ It is inconsistent both with Ofcom’s theoretical approach and with the auction rules that it has designed, for Ofcom to be now contemplating a fundamental change to the auction design that it acknowledges is likely to increase aggregation and substitution risk.

Secondly, there is a weight of evidence which suggests that, largely as a result of bidders being unable to understand the price of all substitutable spectrum, sequential auctions tend to lead to inefficient allocations of spectrum. A paper by Cramton stated that “A disadvantage of sequential auctions is that they limit information available to bidders and limit how the bidders can respond to information...A sequential auction also eliminates many strategies. A bidder cannot switch back to an earlier license if prices go too high in a later auction.”¹⁶

Cramton explains with reference to case studies that sequential auctions result in bidders having to “guess what prices will be in future auctions when determining bids in the current auction...The guesswork about future auction

¹⁰ Ofcom, consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues (“March 2011 consultation”), March 2011, para 9.12.

¹¹ Ofcom, November 2014 consultation, para 4.34.

¹² EE’s non-confidential response to Ofcom’s November 2014 consultation, Page 9.

¹³ Telefonica’s response to Ofcom’s November 2014 consultation, Para 141.

¹⁴ Ofcom, November 2014 consultation, Para 6.104 – 6.105.

¹⁵ Ofcom, Further Consultation, Para A4.56.

¹⁶ Cramton, “Spectrum Auction”, February 2001, Page 6.

outcomes makes strategies in sequential auctions complex, and the outcomes less efficient...Incorrect guesses may result in an inefficient assignment when license values are interdependent.¹⁷

In contrast, Cramton argues that *“In a simultaneous auction, a large collection of related licenses is up for auction at the same time. Hence, the bidders get information about prices on all the licenses as the auction proceeds. Bidders can switch among licenses based on this information”*.

This is supported by a paper by Sørensen which stated that *“While the presence of complementarities in itself may lead to inefficiencies, the sequential nature of the problem does not make things better.”*¹⁸

Thirdly, a two stage award of spectrum limits potential bidders' ability to acquire contiguous spectrum allocations, which increases the risk of an inefficient allocation of spectrum and consumer harm. In the Further Consultation Ofcom note that contiguous spectrum is beneficial to the delivery of LTE.¹⁹ A two stage award of the available spectrum increases the risk of fragmentation of the available spectrum bands, which limits potential bidders' ability to acquire sufficiently large contiguous spectrum allocations. In particular if part of the 2.3 GHz spectrum is withheld from the auction this could significantly reduce the scope for a 20 MHz carrier deployment, which is the most cost-efficient carrier size. However a split assignment is also likely to significantly reduce potential bidders' ability to exploit the wider bandwidths that the 3.4 GHz band could deliver. In both instances there is an increased risk of an inefficient allocation of spectrum frequencies from the award which could lead to consumer harm.

[§].

Lastly, sequential auctions are less cost-effective than combined auctions. In fact Ofcom justified its decision to award 2.3 GHz and 3.4 GHz spectrum through a combined auction on the basis that it is more cost-effective for both bidders and Ofcom. In the November 2014 Consultation Ofcom stated that:

*“Holding a combined auction makes sense from a bidder’s point of view. It is also administratively convenient and cost-effective to have an auction at the same time.”*²⁰

EE agrees that any proposal to have two separate auctions is likely to be far less cost-effective than a combined auction. Bidders' costs of valuing spectrum and participating in the auction are likely to be doubled by Ofcom's proposed split auction. We would expect Ofcom's costs of administering the auctions to also be substantially higher if there are two auctions rather than one.

[§].

Given Ofcom's statutory duties to encourage efficient use and ensure the effective management of radio frequencies, we consider the above to be strong reasons for Ofcom to keep to its original proposal to conduct a single auction of all available 2.3 and 3.4 GHz spectrum. [§].

¹⁷ Ibid, page 6.

¹⁸ Søren Tang Sørensen, “Optimal Sequential Auctions for Complements”, January 2003, Page 3.

¹⁹ Ofcom, Further Consultation, Para 4.19.

²⁰ Ofcom, November 2014 Consultation, Para 4.34

5. [X]

[X].

6. Annex 1: [REDACTED]

[REDACTED].

7. Annex 2: Response to consultation questions

Question 1: What are your views on our proposal to introduce the option of holding back some of the spectrum from the auction?

Please see the details provided in the body of this response and in particular in section 5 and section 7.

Question 2: Do you have any views on an appropriate amount of spectrum to hold back to allow sufficient flexibility to address potential competition concerns? Please explain your reasoning.

Please see the details provided in the body of this response and in particular in section 5 and section 7.

8. Annex 3: EE's further comments on Ofcom's proposed technical licence conditions

As noted in section 1 of this response, EE continues to have a number of concerns with aspects of Ofcom's proposed technical licence conditions set out in the Further Consultation. We appreciate that these proposals are not subject to formal consultation, however we would respectfully urge Ofcom to take EE's comments on these licence conditions into account, particularly as they relate to new concerns we have identified with Ofcom's latest proposals. We set out our additional comments below. These comments should be read in conjunction with our response to Ofcom's November 2014 Consultation.

EE retains concerns over the limitations of restricted mask to non-synchronised high power 3.4GHz base stations. This fails to consider the impact of interference into restricted mask systems from permissive mask systems in any time slots where restricted mask uplink and permissive mask downlink transmission clash. It is not clear from Ofcom's proposals how this issue will be managed or any impacts from any evolution of the mandated frame ratio of synchronised systems away from 3:1. EE retains its preference for restricted mask to be mandated, except in the case of specific inter operator agreement. Restrictive mask operation, with minimum 5 MHz guard bands, should be mandated in the auction as the default implementation standard to prevent excessive interference between neighbouring systems. Masks, wherever possible, should be harmonised at European level to ensure maximum equipment economies of scale are achieved.

Furthermore, whilst EE welcomes Ofcom's decision to relax the 3.4GHz Band OOB below 3390 MHz to the -50dBm / MHz,²¹ we suggest that further consideration should be given to small cells where a limit of -20 dBm / 5 MHz would be desirable.

Separately, EE welcomes Ofcom's decision not to require the inter-operator synchronisation of indoor systems.

Please note that, for the avoidance of doubt, EE still retains concerns in relation to other aspects of Ofcom's proposals in the Further Consultation, which are not subject to consultation. This includes Ofcom's proposed auction format for the PSSR award. However these concerns are largely set out in our response to the November 2014 consultation, and we therefore have not elaborated on them further in this response.

²¹ This reflects Case B in table 18 of CEPT report 49, page 30.