



BT Response to the Ofcom Consultation:

**Application of spectrum liberalisation and trading to the  
mobile sector – a further consultation**

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Executive Summary.....	3
1. Introduction .....	5
2. Addressing the issues in a wider context .....	5
3. Comments on Ofcom’s assumptions and analyses.....	6
4. Views on Ofcom’s identified options and proposals .....	7
5. Our suggestions to move forward.....	9
6. Conclusions .....	10

## BT Response to the Ofcom Consultation: **Application of spectrum liberalisation and trading to the mobile sector – a further consultation**

### Executive Summary

1. BT supports spectrum liberalisation as a general principle and we note that draft European legislation is likely to require Ofcom to allow new technologies to be used in the 900 MHz band and, if necessary, to re-assign frequencies to deal with competition concerns that may arise. We recognize that Ofcom has taken an in-depth approach to its analysis and agree that it is important to ensure that the regulatory regime for any retained spectrum, including ongoing spectrum pricing, is properly addressed as part of this process. We feel though that there are other issues which could usefully have formed part of that analysis as indicated below.
2. Whilst we acknowledge the very extensive analyses that Ofcom has undertaken, in our view this analysis has focused only on the interests of, and effects upon, the existing five mobile network operators. Ofcom's recent research and market reviews amply demonstrate that the fixed and mobile sectors now compete for the same customers and Ofcom therefore falls short of its duty to act in the interests of those UK consumers and citizens if it fails to take account of the effect of its spectrum policy-making on all sectors of the market. We therefore urge Ofcom to examine the issue more broadly, both in terms of all likely interests in the future communications market and in the wider context of other relevant items in the Government's proposed "Spectrum Modernisation Plan" set out in Lord Carter's interim report on Digital Britain.
3. BT believes that the liberalisation of the 900 / 1800 MHz spectrum will provide significant increased value to the licensees. We agree with Ofcom that this value needs to be properly reflected in the administrative incentive pricing (AIP) applied to any retained spectrum and that it would be appropriate for this to happen as soon as it is liberalised when it should reflect "full economic value" as Ofcom has indicated. It is therefore important that Ofcom provides a clear definition of this term, and quantifies it as soon as possible. It is reasonable that this quantification is consistent with the information already published in the Annexes to the consultation.
4. We do acknowledge that partial release of spectrum could be required and agree that in this case it should be auctioned in a technology neutral manner, as Ofcom proposes.
5. BT has examined the various Options that Ofcom has presented, including full or partial release of spectrum and regulated access. Although the supporting technical analysis is very extensive, it offers depth rather than breadth and yet even with this somewhat partial analysis, it is clear that no single option is revealed clearly as the best solution. A further consideration of the effects of technological developments, such as femtocells on the capacity analyses, together with a broader consideration of competition effects beyond the five MNOs, might identify a different and more definitive optimum solution.
6. We have serious concerns that Ofcom has not analysed the potential impact of femtocells both in terms of the MNOs future infrastructure costs to efficiently deliver increased capacity in certain scenarios as well as the positive impact these can potentially have on competitive provision of mobile broadband by additional players. In this regard we believe Ofcom should study the potential for wider access to the bands under consideration for accommodating low power femtocells.
7. A combination of spectrum release and mandated roaming should be examined, including consideration of requirements beyond the existing five MNOs. Market developments indicate a likely significant consolidation of UK mobile network infrastructure and even sharing of frequencies. Taking this and the benefits of facilitating increased competition into account, BT

believes that it is even more critical to apply such regulated access to mobile networks (as is currently considered necessary for fixed access networks). This issue should be addressed as part of the decision regarding licensing of the retained spectrum, to ensure clarity of both rights and obligations to the spectrum owners.

8. We note Ofcom's intention to address details of trading and liberalisation of 2.1GHz spectrum separately, and the issue of 3G licence duration at a future date. We support this approach and timing and believe that due consideration of these matters will only be possible after the issues that are the subject of this consultation have been fully resolved and greater transparency and clarity brought to the impact which they may have in this market. Once that has been achieved we believe that the issues they raise may be of significant interest to a wider audience.

## **BT Response to the Ofcom Consultation: Application of spectrum liberalisation and trading to the mobile sector – a further consultation**

### **1. Introduction**

BT welcomes Ofcom's further consultation on the application of spectrum liberalisation and trading to the mobile sector, in particular since this subject has also been addressed by the Government in its proposed Spectrum Management Modernisation Plan set out in Lord Carter's interim report on Digital Britain. Indeed, as is clear from the Digital Britain report, there are a number of other important policy issues and developments in relation to spectrum for mobile networks as well as technical and commercial issues concerning how these networks may evolve. These developments should be considered together in order to understand how they may affect the competitive landscape in the longer term, and in this sense the issue of GSM spectrum liberalisation cannot be viewed completely in isolation. We expand on our views on this issue in Section 2.

If more spectrum is being released in new bands with aims that include facilitating the possibility for innovation and greater competition, any assessment of the re-distribution of existing spectrum holdings between the five existing mobile network operators needs to look wider than merely the effects on and between these five players and their requirements. Further, it should look beyond their existing technologies and network topographies to consider new technologies such as femtocells that could have significant impact on network economics and on how capacity can be delivered. We comment in Section 3 on this and on the assumptions made and the analyses that Ofcom has provided.

The initial and ongoing price of the 2G spectrum used by the existing players cannot logically be viewed in isolation from the cost that may be faced by other operators that might use other bands, and possibly other technologies, to deliver mobile broadband services. With the announced plans to consolidate mobile infrastructure and the possibilities that the existing network operators will share radio frequencies in future, it will be important to consider what regulatory obligations are appropriate, not just in terms of the requirements of the existing five network operators, but also for possible additional operators and the plethora of service providers in the UK in order to ensure that adequate competition is maintained.

It is with the above wider considerations in mind that we have approached this Ofcom consultation. We have no desire to interfere in relation to what is the appropriate re-distribution of spectrum between the existing five players. Nor do we have any issue with the principle of spectrum liberalisation and trading – indeed BT has consistently supported these broad policies and market based spectrum management principles. We provide in Section 4 our views on the options and proposals that Ofcom has presented.

Finally, in Section 5 we give our views on how we believe the issues could best be taken forward in view of the need to find a pragmatic solution that is compatible with emerging European legislation, the policy objectives of Ofcom and the additional matters that BT would wish to see taken into account.

### **2. Addressing the issues in a wider context**

The publication of this further Ofcom consultation on mobile spectrum liberalisation and trading coincides with the work of Lord Carter's team on the Digital Britain initiative and addresses one specific issue within the Spectrum Management Modernisation Programme contained in Lord Carter's interim report. As is apparent from that report, there are other important issues in relation to spectrum for mobile networks being considered; including 3G licence duration, as well as industry developments in which greater sharing of mobile network infrastructure and use of radio frequencies.

Award of new spectrum should also be considered as potentially supporting the introduction of innovative services and possibly additional network operators.

Ofcom's analysis in relation to the 2G spectrum re-farming appears to be focussed exclusively on the requirements of, and effects that decisions would have on competition between the existing five network operators. Section 4.62 states that "we have had an extensive dialogue with all the UK operators", but we note that this only includes the five MNOs. We contend that 2G spectrum re-farming and liberalisation needs to be looked at much more widely. It should take into account additional factors in relation to the effects on, and requirements of, other potential new network operators and existing and potentially new service providers in the UK. But even more importantly, it should assess the impact of spectrum policy decisions on the whole communications market place, not solely on the mobile sector. Ofcom's recent market assessments show not only the significant size of the mobile sector (it is said to earn more revenue than the fixed, corporate data and broadband sectors combined, with mobile calls set to outnumber fixed calls within a year<sup>1</sup>), but also its direct competitive impact on operators in the fixed sector<sup>2</sup>. Any analysis and decision-making that fails to recognise the closeness of the fixed and mobile sectors risks damaging the competitive nature of the converged market of the immediate future.

In view of how these developments can affect competition, the recent industry trends and announcements concerning sharing of network infrastructure and possibly radio frequencies, further underlines the importance of taking a much wider view, when deciding on the future regulatory regime for the spectrum bands currently used for 2G mobile technologies and services.

### **3. Comments on Ofcom's assumptions and analyses**

Ofcom's stated goal, in paragraph 1.2 of the Consultation, is "to ensure that UK consumers and citizens continue to enjoy the greatest possible benefit from the use of these and other frequency bands, as demand, technology and the services offered, continue to develop and evolve." The assumption implicit in this goal is that consumers and citizens already enjoy the greatest possible benefit from the way spectrum is deployed by the five mobile network operators.

However, the mobile sector is a sector characterized by very high barriers to entry (spectrum being one of them of course, but by no means the only one). Ofcom itself recognised this in its recent Mobile Sector Assessment (MSA), concluding that the scope for entry at all levels across the value chain was at best uncertain and at worst severely limited<sup>3</sup>, with the mobile operators retaining most of the value. The consequence is that the mobile sector is an oligopoly operating in a market in which it is far from certain that consumers and citizens are gaining the maximum benefit. Indeed, recent moves among all the operators to consolidate their networks (at a minimum at the physical level) will raise entry barriers further implying as it does that scale within the sector can only be reached by combining at least two networks) and entrench the power of the MNOs.

Ofcom's central and fundamental argument for its proposed way forward hinges on the analysis of the difference in costs/quality of a 900 MHz operator compared to 2100 MHz operator for mobile broadband, and how these disparities will affect competition. The costs and benefits of regulated access or assigning various amounts of spectrum are analysed along with consideration of how these would vary if market based solutions had occurred instead. The analysis centres solely on the existing 5 MNOs and fails to consider possible new entrants either in the 2.6 GHz or other spectrum bands, who would contribute to the mobile broadband market and may also need access to the lower frequency bands in order to develop sustainable competition. This is a major omission and if a wider assessment of competition and the prospects for new entry were addressed then it could lead to a different solution and one which provides greater benefits to UK consumers and citizens.

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<sup>1</sup> Paragraph 2.3 in "Mobile Citizens, mobile consumers" Ofcom August 2008 (<http://www.ofcom.org.uk/consult/condocs/msa08/>)

<sup>2</sup> For example "...it is clear that competition from mobile operators acts as a constraint on the fixed markets and has strongly influenced the nature of the service packages provided." Paragraph 3.10 in "Fixed Narrowband Retail Services Markets"

<sup>3</sup> "Mobile Citizens, mobile consumers" (<http://www.ofcom.org.uk/consult/condocs/msa08/>) paragraphs 3.53 – 3.64.

BT's particular concern is that spectrum acquired at no initial cost and priced at levels below a market valuation as indicated by auctions, would represent a huge barrier to a new competitive network provision by a new entrant in another band. The ability of existing incumbent operators to network share further raises this barrier. Pricing at full economic value goes some way to leveling the playing field, and hence we support that for the retained spectrum, but it is insufficient without additional regulatory provisions to address wider competition considerations where a lack of access to appropriate alternative spectrum already provides an entry barrier.

BT notes that mandated roaming and partial spectrum release are considered as mutually exclusive options in Ofcom's analysis of the existing 5 mobile operator scenario. However as previously stated, BT is of the view that the interests of other operators and MVNOs / service providers need to be considered in the analysis of competition costs and benefits. Although the existing analysis may be useful in determining solutions relevant to the existing five operators, we would urge Ofcom to consider additional provisions specifically to address the interests of other parties that could contribute positively to Ofcom's objectives of facilitating innovation and competition. As an example we note that Annex 9 para 9.44 indicates that the benefit of 6 operators over 5 could be an NPV £190m over a 20 year period commencing in 2015. We believe it is important to consider the additional competition benefits that would arise if other players had access to the 900 MHz band so that Ofcom should not confine its analyses to the five existing MNOs alone. We do not consider that the regulated access requirements of other operators (beyond the five MNOs) should be considered separately from this exercise because Ofcom should make the regulatory obligations clear at the time the 900/1800 MHz licences are liberalised. Our suggestions to address this issue are provided in Section 5.

BT also would point out that the future use of indoor femtocells for deeper coverage and capacity provision is highly relevant to the scenarios that Ofcom is evaluating, but is not factored in to the Ofcom analysis of mobile broadband competition. Furthermore, this technological development is relevant to Ofcom's assessment of the spectrum requirements and costs of existing operators. BT is of the view that if Ofcom were to perform an economic analysis of the advantages to MNOs of using femtocells to improve their coverage and to offload traffic from macrocellular networks, this would reveal significant cost advantages to the MNOs that result from the regulatory regime for fixed access networks.

The role of femtocells is also relevant in the context of potential additional operators licensed in other bands, or MVNOs who may require access to 900 and/or 1800 MHz to extend coverage and bring additional innovation and competition in wider geographical areas. Such femtocell technology may be a credible option to both existing and new players thanks to the widespread availability of fixed broadband access networks in the UK for which the regulatory regime is markedly different to that of mobile broadband access networks. We make specific proposals in relation to this issue in section 5.

A final observation, relating to Ofcom's cost assumptions, is that BT notes recent trends for

- falling equipment costs through discounting
- the availability of "grey market" equipment, and
- the availability of GSM base station equipment which can be software upgraded to support 3G or LTE in the same frequency band.

The above factors combined with exploiting the synergy between migrating to 3G may reduce some of the costs expected to be incurred by the MNOs to support these regulatory changes and this may affect Ofcom's financial analyses.

#### **4. Views on Ofcom's identified options and proposals**

##### **Comments on the main options**

BT does not oppose the liberalisation of the use of the 2G spectrum per se, indeed as a general principle BT has been a long standing advocate of more technology neutral licensing as well as service neutrality. We also recognize that imminent EU legislation in relation to 900MHz would require Ofcom to allow this in any case (along with the possibility to reassign spectrum to address competition concerns).

**Option A (for 900MHz and 1800 MHz)**

For reasons Ofcom has given we agree with Ofcom's conclusion that simply liberalising the spectrum in the hands of the existing licensees is not a suitable option.

**Option D (900MHz and 1800MHz)**

We accept Ofcom's proposal that the spectrum need not all be re-auctioned. (Again for the reasons Ofcom has given).

**Option C (Partial release of 900 MHz)**

BT takes no particular position on how much spectrum should be released, particularly given the huge complexity of Ofcom's analysis and the wide range of assumptions and error bounds.

If a solution of partial release of spectrum is selected we believe it is essential to include other elements in the solution including, in particular, the AIP at full economic value for retained spectrum. Furthermore, BT does not support such a solution without appropriate additional decisions in relation to mandated access to mobile broadband networks in the retained spectrum and shared access to the spectrum in limited situations involving low-power femtocells, as we explain in Section 5 below. We suggest that this is appropriate based on Ofcom's analyses of the benefits of increased competition.

**Option B (Mandated Roaming)**

BT notes that the Option B solution of mandated access to 900 MHz networks for the three other MNOs comes a close second to Ofcom's preferred solution of releasing one spectrum block of 900 MHz spectrum. BT believes that when the benefits of other operators, beyond the existing 5 MNOs, having access to 900 MHz is considered, a variant of Option B may be more attractive; it is only when presented as a solution in relation to the existing MNOs only, that the benefits are more limited. Looking beyond the incumbent MNOs the absence of a more fundamental requirement on them to open up access, on fair and reasonable terms to the bottlenecks they control is not addressed at all by a partial release of spectrum.

We expand on our views concerning regulated access to 900 MHz (and 1800 MHz) spectrum in Section 5.

**AIP for the retained spectrum**

BT notes Ofcom's intention to price retained spectrum at "Full Economic Value" (FEV).<sup>4</sup> We are, however, concerned that Ofcom has neither attempted to define what exactly it means by this term, nor how it intends to go about estimating it. Describing value as the "opportunity cost" of the spectrum does not really provide stakeholders with much practical transparency on this issue. For example, BT is unclear whether this means that the FEV is to be based only on network cost savings (as opposed to other means of service delivery) or also to include lost producers' surplus as a result of increasing the level of competition.<sup>5</sup>

BT does agree with the practical steps Ofcom indicates (in paragraph 8.34) that it will take to estimate FEV, these being the results of modelling, the costs of delivering mobile and other services, and the results of relevant spectrum auctions.

We also note from Annex 16 (Tables 1 and 2) that there is a large difference between the value of spectrum blocks and that, for example, the first block to be released has a lower value than others. This suggests some caution in using the 900 MHz auction result from one block only to indicate value of retained spectrum. Given the usefulness in isolation of the limited amount of spectrum released; the effect of excluding two powerful MNOs; and the possibility of the remaining 3 bidding tactically could, taken together, lead to a poor indication of market value.

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<sup>4</sup> Paragraph 1.8(d) of the Further Consultation

<sup>5</sup> See for example Figures 2 and 3 on pages 7 and 8 of Annex 9, "Competition and Delay to Liberalisation Modelling".



#### *Using Ofcom's modelling work*

Another way of determining the value of the retained spectrum, reflecting the increased benefits of liberalisation, could be in terms of the extensive work done by Ofcom in the consultation. Annex 16 to the consultation seems highly relevant to this question and BT notes that the costs of completely releasing the 900 MHz and 1800 MHz bands have already been calculated by Ofcom on the basis of the costs of accommodating all the 2G traffic in the 2100MHz 3G spectrum. These costs are shown in Table 6 of Annex 16 and indicate that for 900 MHz the overall cost of full clearance and release is between £1,900m and £3,100m; whilst for 1800 MHz the costs are between £2,200m and £3,550m.<sup>6</sup>

BT would certainly expect that the revised AIPs are generally consistent with the quantifications of cost and benefits of spectrum liberalisation as set out in the Further Consultation and the added value following liberalisation. It would not be right to make regulatory decisions aimed at maximising consumer and citizen benefits from spectrum based on one set of quantifications and then not to use the same quantifications in setting AIPs, given that AIPs are designed to encourage efficient spectrum use and hence also benefit consumers and citizens. This is not to say there might not be some differences between the two exercises, but that there should not be large disparities.

## **5. Our suggestions to move forward**

If the spectrum allocated for 2G mobile services is not all to be re-auctioned (for the reasons Ofcom has given) we believe it is essential to include other elements in the solution including, in particular, the AIP at full economic value for retained spectrum. Partial spectrum release as proposed by Ofcom could be a solution, but we believe this alone would be insufficient without other regulatory elements included.

The delay in awarding new spectrum bands (e.g. 2.0 GHz, 2.6 GHz) which could enable the possibility for additional innovation and/or competition in the provision of mobile broadband in the UK has brought the issue of re-farming of spectrum used for 2G mobile services in to a similar time frame to the expected availability of such new spectrum bands. Therefore BT believes that it is essential that the new regulatory conditions for the new uses of the bands used for 2G mobile systems are set in a way that takes into account the interests of potential new operators that may enter the market. The competition analyses undertaken in relation to decisions on 2G spectrum re-farming, and the resulting regulatory obligations on the holders of the retained spectrum, should not be limited to a narrow consideration of the interplay between the five existing operators.

BT therefore recommends that Ofcom takes the opportunity to address and clarify how competition effects between potential new licensees in the 2.0 GHz, 2.6GHz and other relevant bands are taken into account in reaching decisions on the spectrum bands currently used for 2G mobile systems. Specifically, we believe that Ofcom's proposal to price retained spectrum at full economic value is by itself an insufficient measure to maximize consumer and citizen benefits and that mandated access to mobile broadband networks by other operators is necessary. A full and proper consideration of this matter is particularly appropriate if network infrastructure and spectrum sharing is implemented at 900/1800 MHz. It appears to us to be right that Ofcom should clarify the "obligations" that may be associated with the retained and auctioned licenses at the same time that it clarifies the new "rights" that these licences convey.

Technological developments in mobile equipment and standards clearly make infrastructure (and also spectrum) sharing a realistic commercial venture, as evidenced by the recent announcements and reports regarding the UK's mobile network operators and their plans for consolidating their mobile networks. We are also aware of standards to support this and some evidence of technical feasibility in Australia. The MNOs concerned will probably have to calculate the relative costs and investments of their respective network assets and service provider arms in order to reach a sustainable commercial arrangement. The costs and potentially the commercial arrangements could form the initial input for a determination on the nature, cost and price of any future regulated, wholesaled mobile access components should such a requirement be confirmed.

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<sup>6</sup> Annex 16, Table 6: "Overall cost of full clearance and release"

BT contends that there is a strong technical case for enabling regulated shared access to re-farmed 2G spectrum by other operators for 3G/4G femtocells on the basis that these devices would have minor impact on the utility of the spectrum for the MNOs and significant benefits to consumers. We propose that Ofcom examines this further with a view to including this requirement as part of a complete regulatory solution.

We have noted that the details of trading and liberalisation of 2.1GHz spectrum will be addressed separately by Ofcom and so we will provide our views, if any, on that matter at the appropriate time. Similarly, we note that Ofcom intends to leave for later consideration the issue of 3G licence duration and agree that this is better left undecided for now. We believe though that when this issue is addressed it may raise significant issues and generate wide interest.

## **6. Conclusions**

In conclusion, while we support the requirement for liberalisation of the 900 / 1800 MHz spectrum, we are disappointed that Ofcom has approached this without considering the wider implications for the market as a whole. If Ofcom proceeds with its preferred solution we agree that the technology neutral auction of released spectrum and use of administrative incentive pricing of retained spectrum at full economic value is appropriate. Additionally, we believe that regulated access to the mobile networks, and in certain technical scenarios shared access to the retained spectrum itself, by other players beyond the existing five MNOs, should be mandated by Ofcom as part of the overall solution.

We would of course be happy to further clarify any points should Ofcom consider that helpful.

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