Your response

Question	Your response
Question 1: Do you have any comments on our proposals to gather additional antenna parameters, and would you prefer Ofcom to specify a small number of antenna pattern 'envelopes' or for users to provide details of the specific antenna parameters in use for Ofcom to assess? Please provide reasons for your views.	Confidential? – No We welcome Ofcom's proposals to gather additional antenna parameters, as we believe that this will significantly increase the potential for greater overall utilization of spectrum. If Ofcom were to specify four or five 'standard' antenna patterns for applicants to choose from, this, we believe, would be easier for many applicants and would be sufficiently accurate and realistic in the vast majority of cases. For more unusual cases which may require more accurate antenna information, Ofcom could consider allowing applicants to submit antenna details, but we would recommend that a standardized format be specified for this, in order to achieve consistency across applications and to make it easier for Ofcom to process the data.
Question 2: Do you have comments on the suggested approach to enable user-led coordination in certain circumstances?	User-led coordination seems well-intentioned and may work well in some circumstances. However, we believe that there could be some potential issues with such an approach. For example, with regard to the provision of a new coordination 'override' process, it is possible that not all potentially impacted licensees will have the technical knowledge and expertise required to properly assess the risk of interference, and some might therefore be persuaded by an applicant to accept the risk without fully understanding the implications. We expect that there will be mechanisms to deal with this, but this feels a bit like 'fixing a problem after it materialises' rather than 'avoiding the problem by design so that it never materialises'. In some situations, such as very short-duration pop-up networks, for example, there may not be sufficient time to fix the

	problem within the short life-time of the network's operation. On the other side of the coin, it is possible that some potentially impacted existing licensees would simply adopt a default stance of refusing to agree to tolerate the risk of interference because there is no perceived benefit for them in accepting such risk, and, indeed, it could even turn out to be detrimental to them if they were to accept the risk. In such cases, the applicant would be refused a licence simply because the incumbent licensees are refusing to 'be reasonable'. We have long been of the opinion that the first-come-first-served nature of Shared Access licensing has the potential to actually hinder genuine sharing, and that there may be situations where existing licensees' licence terms may need to be amended to allow for new licensees to operate in the area. We recognize that this could be quite a contentious issue, but if, for example, an existing licensee could still operate effectively with a slightly reduced power level or by adopting an antenna with a different radiation pattern, and these changes would allow a new applicant to be granted a licence, then this would be far more in the spirit of 'sharing' of spectrum. But it is likely that such issues would need to be managed and communicated by Ofcom; we do not believe that a user-led approach would work effectively in such situations. Finally, we note that a motivation for Ofcom considering a user-led coordination approach is that some stakeholders can access more advanced commercial planning tools. We would like to think that Ofcom, as our national spectrum regulator, ought to have access to state-of-the-art planning tools that are at least as advanced as what anyone else has, and that Ofcom's interference assessments should therefore be considered 'second to none'. The user-led approach could perhaps be viewed as a secondary mechanism, but we believe that the primary goal should be based on the aim of making coordination decisions that are reliable and 'right first time' rather than fixing interference issues after they appear.

Question 3: Do you have any comments on our proposal to increase the power level of our Low Power product by 3dBm in the 3.8-4.2 GHz band?	We welcome the proposal to increase the power level of the Low Power product by 3dBm in the 3.8-4.2 GHz band, and we agree that this should have little to no impact on spectrum availability once the terrain and clutter maps in Ofcom's coordination tools have been updated. However, we also believe that applicants should be encouraged to use the minimum transmission power that is needed to achieve the performance aims of their networks, and not to routinely apply for the maximum transmission power permitted for a given licence type. (See also our response to Question 9.)
Question 4 Do you have any comments on our proposal to remove the requirement for licensees holding a Low Power 3.8-4.2 GHz licence to keep a record of the address at which mobile terminals connected to an indoor base station will be used?	We agree with the proposal to remove the requirement for licensees holding a Low Power 3.8-4.2 GHz licence to keep a record of the address at which mobile terminals connected to an indoor base station will be used, subject to the explanations given in Paragraph 3.38 (and Footnote 42) of the consultation document.
Question 5: Do you agree with our proposals to assume synchronisation between users, and coordinate base station to terminal instead of base station to base station in the 3.8-4.2GHz band? If no, please explain how other measures could increase sharing of the band.	In general, we agree with the proposal to assume synchronisation between users, and to coordinate base station to terminal, as we believe that this will reduce separation distances, thereby increasing the overall availability of spectrum. We note that there will still be options to take measures to combat harmful interference, as per Paragraph 4.19 of the consultation document, and we believe that this is crucially important, since there will undoubtedly be situations in which the assumed synchronisation is not feasible. In such situations, we believe that it is important that Ofcom retains the ability to model and predict interference for systems that are not synchronised. Furthermore, we believe that it would be useful if applicants could obtain information on frame structures of existing surrounding networks prior to submitting a licence application, as this could help with efforts to mitigate any issues at an early stage in the design rather than waiting to find out if interference is experienced post-deployment.

Question 6. Please indicate whether you support our preferred option of coordination at -88 dBm/20 MHz (based on I/N of + 3dB, at 1.5m) or a more conservative alternative of -91 dBm/20 MHz (based on I/N of 0dB at 3m), with reasons for your view.	We are cautiously supportive of the proposal to modify the protection thresholds, but we believe that more extensive field testing is required in order to verify the assertion that equipment is indeed more tolerant to interference than Ofcom had previously assumed, and to characterise the degree to which this assumption may or may not hold true in different circumstances. This is something that we believe could be investigated as part of a Spectrum Sandbox project, for example.
Question 7: Do you agree with our proposals for an increase in BEL in 3.8-4.2GHz? If no, are there alternatives which you consider could better achieve similar results?	We support the proposal to review and update BEL according to the frequency band being used and the latest trends in building design. However, we have no specific expertise in this area which would allow us to express a view on whether the 'right' figure is 12dB or 14dB. Having said that, we consider that Ofcom's approach based on an analysis of ONS data seems reasonable.
Question 8: Do you agree with our proposal that adjacent band protection for Shared Access users is in future limited to considering only the first 5 MHz above and below UK Broadband assignments?	Yes, we believe that this proposal makes sense, noting that if users were to be impacted, there would be options to mitigate this.
Question 9: Do you agree with our assessment that, in circumstances where localised shortages of spectrum have occurred, pricing can be used to influence requested spectrum amounts?	We agree that licence applicants should be encouraged not to routinely apply for the maximum amount of spectrum (or transmission power for that matter) if their use cases don't genuinely require it. And while we recognize that pricing is a relatively easy method of influencing such behavioural trends, we nevertheless urge caution against relying on pricing as a lever for influencing spectrum requests. Our main concern here is that it is entirely possible that some applications and business models will require large amounts of spectrum and will deliver genuine benefits while not necessarily being particularly profitable from a financial point of view, while other applications and business models may be reasonably profitable but do not genuinely require as much spectrum. There is potential, therefore, for a situation to arise in which users who can afford to waste spectrum will happily do so, while users who genuinely require larger amounts of spectrum but can't tolerate too much cost,

	despite delivering genuine benefits that may not necessarily be financial, are effectively prohibited by cost from deploying the required networks.
Question 10: Do you agree that we should take measures to reflect the impact of bandwidth, power levels and urban/rural location in our pricing approach for the 3.8-4.2 GHz band? Do you think there are other factors we should be taking into account?	Please see our response to Question 9.
Question 11: How do you consider the illustrative prices would impact your spectrum requirements and future deployment plans in the 3.8-4.2 GHz band? Please provide evidence in support of your view.	This very much depends on particular situations on a case-by-case basis. In some cases, the illustrative new prices might have relatively little material impact on the overall business case when compared to using the current prices. In other cases, particularly those which are new use cases in which the business models are still evolving, it may have a material impact and could potentially affect the viability of the business model. We are observing that some use cases require transmission power levels that are slightly greater than those permitted by a Low Power licence, and in urban areas, this would require the submission of a request for an urban Medium Power licence as an exception. The cost of this under the new pricing proposals would, in most cases, make the business model unviable, even though the network deployment would not necessarily need a transmission power that is anywhere near the upper limit of the Medium Power licence. Some granularity in the pricing structure for different transmission power levels would potentially help to alleviate such issues. (We believe that Footnote 89 in the consultation document might perhaps allude to something along these lines?)
Question 12: Do you have any comments on our proposals to clarify the circumstances in which exceptions are available, the tests we will apply, and how this supports user flexibility outside our overarching rules?	The proposals to clarify the circumstances in which exceptions are available seem reasonable.
Question 13: Do you agree with our overall approach based around refining our existing coordination framework for Shared Access, whilst monitoring future opportunities for more user led and outcomes led coordination	We agree with the overall approach in principle, and user-led coordination in conjunction with outcome-led adjustments could be useful. However, we would urge caution in relying too heavily on using such an

where evidence suggests it would be of benefit?	approach as the primary mechanism for coordinating access to spectrum. (See our response to Question 2.) We believe that the issues that are presented in Paragraph 6.29 of the consultation document are relevant here. Nevertheless, we also believe that it makes sense to monitor future opportunities for more focus on such approaches where evidence suggests that it would be of benefit, and certain aspects of this could potentially be investigated as part of a Spectrum Sandbox project, for example.
Question 14: Do you agree with our assessment of the potential impact on specific groups of persons?	We believe that the impact assessments described in Paragraphs 7.5 – 7.15 seem reasonable, subject to our responses to Questions 1-13.
Question 15: Do you agree with our assessment of the potential impact of our proposal on the Welsh language? Do you think our proposal could be formulated or revised to ensure, or increase, positive effects, or reduce/eliminate any negative effects, on opportunities to use the Welsh language and treating the Welsh language no less favourably than English?	We have no specific view on this.
Question 16: Do you have any other comments on the proposals set out in this document?	Overall, we believe that the proposals outlined in the consultation document represent a positive step forward in spectrum management and spectrum sharing, and although we have highlighted some specific reservations in our responses, we are nevertheless supportive of the overall endeavour to increase access to spectrum. We believe that further testing and investigation will be useful for capturing the necessary evidence that will help with the eventual decision-making process.

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