Consultation title	Fixed wireless spectrum strategy: Consultation on proposed next steps to enable future uses of fixed wireless links
Organisation name	Cambridge Broadband Networks Ltd. (CBNL)

Response

Question 1: Do you agree that we have identified the key drivers likely to have a significant impact on the spectrum demand for fixed wireless links? If not, please provide further detail and evidence to support your answer. **Do you have other comments to make/points to raise with us on these issues?**	Confidential? – N Yes.
Question 2: Do you agree with our conclusions on spectrum implications and our proposed strategy/next steps for each band? **Are there any other considerations of significance that you feel we should have included or do you have other comments to make/points to raise with us on these issues?** **Please provide as much detail as possible to support your answer.**	Confidential? – N Yes, we agree with the strategy but please see further specific comments below.
Question 3: Do you agree with the items we have identified for further consideration? Are there any other significant areas that you believe should be included? If so, please include all necessary evidence to support your view.	Confidential? – N Yes.
Question 4: Do you agree with our proposal to change the authorisation regime in the 64 – 66 GHz band to licence exempt to create a common authorisation approach across the 57 – 66 GHz band for fixed outdoor installation use and that this would be a benefit to UK citizens and consumers?	Confidential? – N Yes.
Question 5: **a) Do you agree with the proposed new technical conditions in Table 6 to facilitate equipment intended for fixed outdoor installation in the 57 – 66 GHz band? Please provide evidenced views /alternatives if you disagree with our proposal. Do you consider any additional conditions should be mandated as part of a licence exemption to manage the**	Confidential? – N a) We agree in principle, however it is our view that the minimum antenna gain of 20dBi is still somewhat high when allowing for the efficiency losses of real antennas or antenna systems. Commercially available products [redacted] have 60GHz antenna gain specified as nominal 18dBi, and we would suggest 18dBi as the new minimum antenna gain.

interference environment? **b) Do you agree with our assessment that the proposed changes in technical conditions will have minimal impact on existing use and are appropriate to manage the future outdoor interference environment?** **c) Are there likely to be any fixed outdoor installation use cases that will require operation at eirp levels above 55 dBm? If so, please provide evidence of how the coexistence with the different outdoor users could be ensured?**	b) Yes, we agree. Arguably altering the gain (by means of changing the directivity) of the antenna simply alters the shape of the volume of space which is subject to potential interference, rather than altering the absolute size of that volume. c) We would envision any such use cases as being better served by alternate bands.
Question 6: **a) What are the use cases and technical parameters envisaged for the 66 - 71 GHz band? Are they likely to be similar to those in the 57 – 66 GHz band? If so, what are your views on extending the same or similar technical conditions as described above for the 57 - 66 GHz band (both existing wideband data transmission (SRD) and new fixed outdoor technical conditions) to the 66 – 71 GHz band to facilitate both fixed and mobile use cases.** **b) Please provide your view on whether the technical parameters of wideband data transmission (SRD) as shown in Figure 4 are suitable to facilitate mobile/portable equipment including use outdoor? If you do not consider they are suitable, what alternative technical parameters do you think should be considered?** **Please provide as much detail to your answer as possible and your considerations on the co-existence aspects.**	Confidential? – N No comment on this question.
Question 7: Do you agree that there is a continued need for future low capacity fixed link applications? **If so, please provide information to support your view and what alternatives you would consider appropriate should the upper 1.4 GHz band no longer be available.** **Please provide clear evidence to support the reasons for your views.**	Confidential? – N No comment on this question.
Question 8:	Confidential? – N

Do you consider there is merit in considering making the bands 52 GHz and 55 GHz available under alternative authorisation approach(es) such as block assignment? If so, what would you consider to be the best approach(es)? Please provide detailed views to support your response.	Yes, we believe that the 52 and 55GHz bands should be made available via block assignment, on a technology-neutral basis (so allowing both point-to-multipoint and point-to-point usage). We believe that the preferential use of block-assigned spectrum by licensees (referred to at ¶1.20) makes this a logical choice. In addition, the possible introduction of 5G mobile services into some existing block-assigned bands appears to make it desirable to introduce new block-assigned bands to accommodate possibly displaced fixed service requirements.
Question 9: **Do you think we should review our authorisation approach to any other band used for fixed wireless links?**	Confidential? – N Yes, we believe that the 31GHz band (31.0–31.3 / 31.5–31.8GHz) should be made available via block assignment on a technology-neutral basis. Our reasoning is as above for the 52 and 55GHz bands, noting that the 31GHz band is smaller and suitable for serving more moderate capacity applications. This may limit its appeal for mobile backhaul, but be attractive to smaller service providers for FWA, for example.
Question 10: **a) How do you envisage W band and D band will be used for mobile backhaul provision and the likely timescales? Please provide as much detail as possible on deployment scenarios and whether this would include indoor use. Are there any other types of applications (other than mobile backhaul) that could be suited for these bands?** **b) What are your views on the most appropriate authorisation approach for the W and D bands? Please provide as much detail and technical evidence as possible in your answer.**	Confidential? – N a) CBNL envisage that these bands will come into use once 70/80GHz becomes saturated and the underlying device technology matures - probably not before 2025 in any volume. These bands could also be suited to middle mile transport for FWA networks. Indoor use seems improbable within this timeframe. b) We believe that the most appropriate approach is block assignment on a technology neutral basis. In particular, we note the trend for frequency bands that were historically only for point-to-point fixed links to now support a wider variety of technologies. (For example, the current proposed changes to V-band technical conditions, and also the proposed introduction of 5G mobile access in a variety of microwave bands). Therefore we would suggest that such flexibility in choice of technology should become the norm for all bands.

Question 11: Which capacity enhancing technique(s) are you using or planning to use? Please provide detail / evidence and clearly explain why and how each technique is planned to be used and if you consider there are any other aspects that should be considered.	[redacted]