Your response

Question	Your response
Question 1: Hybrid sharing could mean that the upper 6 GHz band will be used for mobile outdoors and Wi-Fi indoors. What are your views on the priorities for each of these two services, assuming that suitable coexistence mechanisms are developed?	*Is this response confidential? – N* In current and developing markets, a gap between mobile and wireless coverage is emerging. Mobile technologies have been designed largely to serve wide areas outdoors with limited capacity levels. In contrast, other wireless technologies such as WiFi and Fixed Wireless Access (FWA) have been designed to provide broadband connectivity up to or above Gigabit capable speeds. In line with industry-leading developments around 6G, we see the development of 'layers' of wireless coverage and quality in line with market needs and sensible industry economics. Consequently, we see a higher priority for use of the band for WiFi technology supporting indoor and local area services where Gigabit capable service is required.
Question 2(a): Hybrid sharing could mean that the upper 6 GHz band will be used for mobile in some locations, and Wi-Fi in others. We would like feedback on the priorities for each of these two services, assuming that suitable coexistence mechanisms are developed. From the point of view of mobile, is the upper 6 GHz band most useful to provide outdoor coverage, or indoor coverage? Is it most useful in urban areas, or in those base stations that are currently carrying more traffic, or some other split?	*Is this response confidential? – N* As above. We see a higher priority for use of the band to support Gigabit capable broadband services. The pioneer bands for 5G mobile services are already well-established internationally at 700 MHz, 3.4-3.8 GHz, and 26-28 GHz (noting that the latter is still not yet licensed in the UK). These are established in addition to the existing cellular bands. For 6G, the 7-15 GHz bands are being favoured (in addition to refarming on lower bands). From the simple perspective of radio propagation physics and associated mobile industry economics, the middle and higher bands are not well suited for wide area outdoor mobile coverage. In line with industry-leading developments around 6G, we do not see a sustainable or viable economic case for Gigabit-capable mobile services with high coverage levels. Instead, layered quality levels are required to

	meet national wide area mobile coverage needs, urban needs, and indoor / local area needs. Consequently, we do not see a need for use of the 6 GHz band to support mobile services. With developing markets supporting Gigabit-capable fibre and local wireless access connections, mobile services are most applicable to mobile user situations, such as the outdoor transport corridors (i.e. road and rail, although with effective backhaul solutions, WiFi on trains could be seen as a more effective solution).
Question 2(b): Similarly, what are the priorities from the point of view of Wi-Fi deployments?	*Is this response confidential? – N* As above, WiFi is a Gigabit-capable technology, capable of providing Gigabit and higher connections indoors and at the local level. With the important ongoing development of Gigabit FTTP and FWA in the UK, in line with Government policies, we see an important need for Gigabit-capable wireless connectivity at the local level. There is little point in industry and Government spending £billions to roll out Gigabit networks if the last wireless connection indoors or locally is not able to provide commesurate quality of service. Such connectivity could be supported either with licence-exempt (e.g. WiFi 6E) or licensed band use (e.g. Gigabit-capable FWA), to ensure service quality resilience.
Question 3: What are your views on a modified AFC or SAS-type approach to enable hybrid sharing? What additional work do you think would be required?	*Is this response confidential? – N* We see greater merit in a SAS-type priority-based approach, giving preference to users which accords with higher socio-economic usage of the spectrum. We agree that use of geolocation methods with devices located indoors is likely to be practically difficult.
Question 4: How could existing access protocols and sensing mechanisms be leveraged (i.e., those in Wi-Fi or 5G NR-U) to enable hybrid sharing?	*Is this response confidential? – N* We have no comments on this question.

Question 5: What mechanisms could potentially enable device-to-device connectivity?	*Is this response confidential? – N* We have no comments on this question.
Question 6: If hybrid sharing is eventually adopted, and requires licensed mobile to operate at medium power, in what way would mobile networks use the upper 6 GHz band?	*Is this response confidential? – N* As above, we see no need for mobile networks to use the band.
Question 7: How would you suggest that the mechanisms presented here can be used, enhanced, or combined to enable hybrid sharing or are there any other mechanisms that would be suitable that we have not addressed?	*Is this response confidential? – N* We have no comments on this question.
Question 8(a): Assuming the future of the band includes indoor use for Wi-Fi and outdoors use for mobile: How could this be achieved without creating or suffering interference?	*Is this response confidential? – N* We have no comments on this question.
Question 8(b): Could there be a combination of technical adjustments such as power limits and other mechanisms (including databases or sensing mechanisms)?	*Is this response confidential? – N* We have no comments on this question.
Question 9(a): We are interested in input about the importance of the upper 6 GHz band for its incumbent users, and on the potential impact of hybrid sharing of the band. What evidence do you have on whether incumbents are likely to coexist with hybrid sharing of the band with mobile and Wi-Fi? Are there unique advantages of the upper 6 GHz band for these uses?	*Is this response confidential? – N* Current usage of the 6 GHz band in the UK includes several hundred fixed links (i.e. point to point wireless), with highly directional antennas. We agree that interference is generally only caused if devices are in or near the main beam. Nevertheless, we request that Ofcom considers that incumbent users must not be unduly impacted with any new uses with the band.
Question 9(b): What are your views on the initial analysis we have conducted around hybrid sharing and coexistence with incumbents?	*Is this response confidential? – N* We have no comments on this question.

Question 9(c): For any incumbent uses that you view as unlikely to be able to coexist, what alternatives are there? What are the barriers that might prevent those alternatives?	*Is this response confidential? – N* In line with comments above, we prefer a situation where usage of the band is constrained to indoor and local areas only, i.e. in line with low power regulation (e.g. EIRP to 250mW).
Question 10: Do you have any other thoughts that you would like to share about hybrid sharing in the upper 6 GHz band, or about hybrid sharing more generally and its potential for applications in other bands?	*Is this response confidential? – N* We have no comments on this question.
Question 11: Do you have any other comments to make on these proposals or on the future use of the upper 6 GHz band?	*Is this response confidential? – N* We have no comments on this question.

Please complete this form in full and return to Hybridupper6ghz@ofcom.org.uk.