Your response

Question	Your response
Do you agree that the key potential market developments over the next five to ten years are those set out in Section 5? Are there any other key developments we should consider?	We agree. In particular we expect that MNOs will need to adopt new network sharing an ownership models via neutral hosts in order to be able to deliver the scale of densification required and at the right price point. We also believe a fourth form of private network delivery is possible via a public private partnership, where private network needs drive the deployment of infrastructure, via a neutral host, which can then be further utilised by public MNOs. We believe this is a different model to those given in 5.42
Do you agree that competition among MNOs is likely to continue to play a key role in the delivery of good outcomes, as outlined in Section 6?	Yes
Do you consider that there are likely to be significant wider external benefits (externalities) from a quicker or more widespread rollout of high-quality networks than that which the market is likely to deliver, as discussed in Section 6? If so, please provide clear examples to help explain your answer.	Yes. Dense Air is in the process of creating a public-private partnership to construct and operate a 5G fixed wireless neutral-host network in an American city. Through the partnership, Dense Air would provide capital and own, deploy, operate, and maintain the neutral-host network. The public entity, which is a non-profit with board directors representing various municipal and county entities, would provide access to rights-of-way, fiber network access, rooftops, access to streetlights and poles, city plans and location data, among others ("municipal assets"). In return, Dense Air will make available to the community a dedicated portion of the network's capacity for the public sector's exclusive use, which would be used to extend the county school system's online educational resources from the classroom to high-needs, low-income student homes, and which would be a free service for those students. Simultaneously, Dense Air would also build out to certain commercial areas and seek paying internet service provider tenants to use the rest of the network capacity, which would make the network financially sustainable long-term and could subsidize the internal municipal use of the network. Dense Air itself would not offer end-user broadband internet access service, but rather would enable municipal use of the network to the county for educational

	purposes and allow ISP tenants to reach end-user subscribers over the active neutral host infrastructure. There will be significant positive externalities. It is not an exaggeration to claim that education provides a path out of poverty. In the United States, research shows that adults without a high school diploma earn 24 percent less than adults who graduate high school; and high school graduates earn 39 percent less than four-year college graduates. Providing a robust, reliable, and affordable internet connection is fundamental to success in the modern-day classroom. Students without home internet access have lower assessment scores in reading, mathematics, and science across a range of national and international assessments. This was particularly apparent during the pandemic when many American school systems reported significant declines in student proficiency as measured by end-of-grade and end-of-course testing for the 2020-21 school year. The network, in addition to providing high-needs students with the benefit of being able to access educational resources remotely, will also provide economic development benefits to the cities and their residents. It is well-documented that cities with reliable high-speed networks attract new businesses, enable existing business to develop and expand their services and customer bases, and create jobs and sometimes attract entirely new industries to their locations. An innovative shared 5G network can help attract and retain vibrant, diverse, and equitably-distributed business enterprises, and enable the City to create and preserve well-paying jobs suitable to its workforce. By constructing a neutral-host network capable of carrying multiple network providers' online traffic, the cities could attract new market entrants while encouraging local innovation and potentially spurring academic partnerships with local universities and businesses to use the network as a testbed for leading telecommunications research and development. Enabling high-speed access for small businesses, entrepreneurs, and individual residents increases their access to opportunities, from skills training to developing new technologies. Over the longer term, such activities could strengthen the cities' tax bases by increasing the value of existing properties, while also solidifying the region's position as a premier destination for business, shopping, and entertainment.
Do you agree with our views on how competition across the value chain may evolve over the next ten years, and the potential implications for the delivery of	We have no comment

good outcomes, as outlined in Section 6?	
As set out in Section 6, do you agree that quality of experience will become more important in the future? Do you agree that developing better information on quality of experience for customers will help further the delivery of good outcomes?	We agree. Do we want to say anything about P3 and DenseWare?
Do you think there is more that could be done to reduce barriers to customers receiving good indoor coverage (see Section 6)? If so, please outline what steps could be taken and what impact those steps would be likely to have.	Yes. It's notable that although JOTS NHIB has been available as a specification for 18 months now there has been little more activity than testing and piloting. Since 80% of mobile demand is generated indoors, there should be a strong focus on making indoor solutions viable, and MNOs need third parties acting as neutral hosts to front up the customer relationships and perform the implementation and management because they don't have the scale to do it themselves and they are not themselves neutral, which is the only way that multi-MNO coverage is going to be delivered effectively. Ofcom consider the case for WiFi, and it does play its part, but clearly it doesn't today support the 80% of mobile traffic that is generated indoors, so users still need and want a mobile connection. The answer lies in adopting shared spectrum solutions via MOCN, which vastly reduce the cost for the neutral host and make mass deployment viable. Through the neutral host workstream at the Small Cell Forum, several companies involved in delivering existing UK small cell in building solutions (pre-JOTS NHIB and MORAN rather than MOCN) report that the actual traffic on each carrier is typically a few % of the available bandwidth, so clearly there is sufficient capacity in one carrier to serve all four operators. A second carrier can be added where traffic demands, resulting in a cost profile that reflects the value of the deployment in satisfying demand rather than the perceived needs of the MNOs to maintain spectrum differentiation. In most of the target indoor locations there is either no coverage or very poor service on all networks, in which case this "differentiation" is null and void anyway.
Do you agree that clarifying our future regulatory approach will help encourage investment, as outlined in Section 7?	Yes
Are there any other potential barriers to the delivery of good outcomes over the next five to	We have nothing to add

ten years that we have not considered? If so, please outline what these are likely to be, with supporting examples/evidence where possible, and any suggestions for how they might be reduced.	