Your response

- OneWeb welcomes Ofcom's consultation on its proposals to extend spectrum access for satellite services within the 14.25-14.5 GHz band under a Satellite (Earth Station Network) License.
- OneWeb is the world's second biggest satellite operator. As a global communications company powered from Low Earth Orbit (and therefore a non-geostationary orbit, or "NGSO"), OneWeb is building an advanced satellite constellation to connect businesses, telecom, and governments with high speed, low-latency, internet connectivity.
- OneWeb brings secure, resilient connectivity, through a network of distribution partners, from pole to pole, across oceans and continents. OneWeb is committed to the responsible use of Space and sustainable practices on Earth, to bridge the digital divide and to serve communities currently denied schooling, health, and online government services.

Question	Your response
Question 1: Have you identified an alternative use for the 14.25-14.5 GHz band which could lead to greater benefits for consumers and citizens than our proposal to extend satellite ESN authorisations? Please provide evidence to support your comments.	*Is this response confidential? –N* No. OneWeb agrees with Ofcom that this band only be authorised for satellite services. As Ofcom note, spectrum holdings for MNOs are more than sufficient to meet current and future demand. This will be increasingly so as the mobile industry moves to upgrade its network technology and implements more efficient utilisation of its existing spectrum allocations.
Question 2: Do you agree with our proposal to extend access in the 14.25-14.5 GHz band for satellite connectivity, for future broadband, air, sea, energy and transport uses? Please provide evidence to support your comments.	*Is this response confidential? – N* Yes. OneWeb agrees with Ofcom's proposal to extend access in the 14.25-14.5 GHz band for satellite connectivity. The current UK requirement for satellite user terminals to coordinate with a limited number of fixed service links in the 14.25-14.5GHz band places a significant constraint on the provision of domestic satellite services. Having access to just 14.0-14.25GHz as is the case now, only enables UK consumers to only use 50% of uplink capacity compared to many other European countries who have implemented the full ECC decision on this band. The time frames associated with site-by-site coordination simply do not allow the efficient deployment of services to customers. As a result, most satellite operators focus their offerings in the UK to the 14.0–14.25 GHz band. This results in congestion that prevents the optimal deployment of satellite services in the UK (such as OneWeb, which has the capability to provide capacity throughout the whole 14.0–14.5 GHz band). Extending access to 14.25-14.5 GHz to satellite ESN licensees will enable NGSO satellite operators (such as OneWeb) to increase the capacity of services in the UK to enable the true benefit of satellite broadband services to UK consumers and

	businesses, and to ensure adequate competition in the satellite market in the UK. In particular: providing services to those areas with no/poor connectivity, increasing the resilience of existing communication networks, meeting the increasing demand for broadband connectivity from the aviation and maritime markets, and encouraging the development of innovative satellite solutions and services. To maximise the provision of connectivity across the country, the deployment of satellite user terminals for the whole 14.0-14.5 GHz should be on an uncoordinated and ubiquitous basis.
Question 3: Do you agree with our proposed protection requirements for a) radio astronomy users of 14.47-14.5 GHz; b) remaining fixed link users (at specified frequencies and locations) and c) Crown users?	Radio Astronomy The protection of radio astronomy is a key element of OneWeb's responsible space initiative. OneWeb recognises space is a shared resource, and our GEN 1 satellites already accommodate the radio astronomy community. OneWeb is also in discussions with the National Science Foundation, which commits to projecting radio astronomy sites to find mutually acceptable and creative solutions for all parties to effectively use the available spectrum resource. OneWeb does not believe it is necessary to have a blanket restriction on the use of aeronautical ESIMs between 14.47-14.5 GHz when in UK airspace (Para 5.13 to 5.14) - noting that in the US, the radius of protection zones for astronomical observatories is a maximum of 160km, with the majority only requiring 50km. Ofcom should consider in more depth whether it is possible to determine specific technical/geographic conditions for the operation of aeronautical ESIMs (similar to those proposed for land and maritime ESIMs, i.e. beyond a simple blanket restriction) that would ensure the protection of RAS, whilst enabling satellite systems to maximise utilisation of the very limited uplink spectrum in the Ku band – and so allow access to spectrum to be optimally balanced. Remaining Fixed Link Users OneWeb notes that only 30 pairs of fixed links are currently active in the UK and that the majority of these will be retired by the end of 2022 (Paras 3.20 to 3.21). OneWeb requests that once Ofcom have identified those fixed links that will remain temporarily beyond 2022, that the locations of the links and timelines for their planned removal are communicated to ESN license holders at the earliest opportunity. Regarding Ofcom's proposal for restricting aeronautical terminals from exceeding the specified PDF limit (Paras 5.23 to 5.24): OneWeb notes that ITU-R recommendation M.1643 was developed in 2002-2003 specifically for AES terminals operating to GSO networks operating in the secondary MSS allocation. As such the compatibility assumption used for the AES **might not be applicable to NGSO Earth Stations Terminals** installed on

	aircraft for Ku-band systems operating under the co-primary **FSS** allocation. CEPT conducted studies done between 2016 to 2018 which considered ITU Fixed Service parameters (ITU-R Recommendation F.758-6) and ITU compatibility methodologies (ITU-R Recommendation SF.1650), thus developed a PFD mask to protect FS microwave links in ECC report 271: **PFD mask for NGSO terminals installed on <u>Aircraft</u> to protect Fixed Service receivers:** ○ –122 dB(W/(m² · MHz)) for θ ≤ 5°; ○ –127 + θ dB(W/(m² · MHz)) for 5° < θ ≤40°; ○ –87 dB(W/(m² · MHz)) for 40° < θ ≤90° With θ being the elevation angle above the horizontal plane at a point in the Earth. OneWeb would like Ofcom to reconsider adopting a 20-year-old ITU Recommendation that assumed a secondary allocation and offered more protection to Fixed Services than is necessary in this situation, especially if the Fixed Service requiring protection is scheduled to end beyond 2022. Instead, OneWeb recommend Ofcom adopt the PFD mask from the more recent ECC report 271 as this would lead to more efficient usage of spectrum for ESN licensees. <u>Crown Users</u> OneWeb agrees with Ofcom's proposal to extend the existing protection of the two Crown sites (as specified in the current ESN license) to apply between 14-14.5 GHz.
Question 4: Do you agree with our proposed authorisation approach and draft licence conditions for a) ESN licences, and b) other licensees wishing to take advantage of enhanced satellite connectivity (i.e. aircraft, ships, unmanned aircraft systems).	*Is this response confidential? – N* OneWeb agrees with OfCom's proposed authorisation approach and draft license conditions. OneWeb agrees that, since restrictions for fixed links remaining in the 14.25-14.5 GHz band are bespoke and temporary, the requirement to comply with the associated exclusion zones should be included in a separate notice as opposed to within the ESN licence itself. OneWeb notes – as an existing ESN license holder – that if changes are made to the radio astronomy sites making observations at 14.47-14.5 GHz after Ofcom publishes its Statement (i.e. moving across to the e-MERLIN network array) - then our license conditions may be subject to future variation, and that the exclusion zones for the resultant six radio astronomy sites are expected to be greatly reduced.
Question 5: Do you have any other comments on our proposals?	*Is this response confidential? – N* N/A