

Your response

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Question 1: Do you anticipate this NGSO system will pose coexistence challenges to existing NGSO systems?	We understand Ofcom is referring to nGSO systems for which UK network licences have already been issued by Ofcom, whether or not they are currently operational. Methera acknowledges the work undertaken by Kuiper and Ofcom’s initial assessment of Kuiper’s analysis. Methera’s MEO nGSO satellite constellation, for which ITU filings currently exist, will not become operational until 2025, and for this reason, Methera has not yet applied to Ofcom for a UK network licence but will do so in due course; additionally, the same applies regarding a gateway licence application. Methera has not yet begun formal coordination discussions with Kuiper, but expects to do so around the time of network/gateway licensing. Methera notes that Kuiper has requested a total of 1189MHz of uplink bandwidth for user terminals. This exceeds the downlink bandwidth of 900MHz which Kuiper has requested at the FCC and ITU for gateway use. This mismatch will increase the range of frequencies requiring coordination with FWA operators in the UK and with future nGSO operators such as Methera. Methera suggests that Kuiper be asked to justify the uplink bandwidth request for 1189MHz.
Question 2: Are the measures set out by the applicant to enable coexistence with future NGSO systems reasonable?	Methera is a UK based operator and has five filings with the ITU, submitted through Ofcom. Methera’s high altitude, inclined circular orbit, multi-plane system delivers a global capability, from which Methera intends to target specific regions in which to install networks to provide broadband services to underserved and small communities. The UK is a target market for Methera. However, because our constellation is not yet operational, we have not yet applied for a network licence. However, in the context of Ofcom’s question 2, Methera must be considered as a future nGSO operator. Although Ofcom’s initial assessment is that “Kuiper and

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	other systems should be able to co-exist”, Methera understands that this is based on a bi-lateral coordination with only one operator, Telesat, with the remainder of the assessment (five other existing licence holders) being based on modelling. In almost all cases, Kuiper’s modelling has been with other LEO systems. Methera therefore would ask that Ofcom procures more detail from Kuiper in respect of modelling co-existence with the Methera MEO system, noting that MEO transit speeds are much lower and therefore the relationship between stay-out angles and stay-out periods is materially different to that with LEO systems by at least one order of magnitude. As a general point, Methera anticipates that there will be constraints on any two negotiating operators in order to manage co-existence, not just between Methera and Kuiper.
Question 3: Do you assess that the measures put forward will allow this NGSO system to coexist with other services?	In this context, Methera understands that Ofcom’s reference to other services is to include GEO satellite systems, fixed/FWA links, and radio astronomy. Methera agrees with Ofcom’s conclusion that coexistence should be possible between Kuiper and “other systems”.
Question 4 Do you believe the NGSO system in the application would benefit or harm future competition between NGSO services in the UK? Please provide details.	Methera supports a market based on the principles of choice and competition. Nevertheless, we have a general concern about spectrum limitations and congestion. Whilst not specific to Kuiper’s application, Methera is keen that Ofcom ensures that applicants such as Kuiper (currently) and ourselves (although not before 2025) are afforded the opportunity to provide services based on a level playing field, and not one where the early adopters enjoy a more privileged position than latecomers such as ourselves and Kuiper. Ofcom’s assessment of all applications (including our own and Kuiper’s) must be thorough, and in the context of question 2, Ofcom must ensure that all existing licence holders and applicants be bound not to sterilise excessive and unfair proportions of the available spectrum for future entrants by their mere presence, and are held to account should they/we do so.

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	Additionally, whilst acknowledging that this consultation is in the context of Kuiper’s application for a network licence, Methera would note that RF emissions to and from gateways operating with nGSO systems will also be relevant in any co-existence analysis. We acknowledge that Kuiper has included some gateway information in its supporting documentation. Methera has made more comments in response to question 5
Question 5: Do you have any additional concerns or comments regarding the application?	As a general principle, Methera is concerned about spectrum sharing in ‘skies’ which are becoming increasingly ‘busy’. Many operators have already filed for the same frequency bands, and our industry accepts that coexistence requires mutually agreeable stay-out zones (based on avoidance angles). Methera raises Ofcom’s awareness to the following concerns 1. It has been possible for several decades for GEO operators to co-exist with separation angles of as little as 2 degrees. There is currently much talk of significantly greater angles being the “norm” for nGSO-nGSO coexistence – unless addressed, this will contribute to spectrum shortages and sterilised skies 2. Increasingly, operators seem keen to deploy ever smaller aperture antennas in their user terminals, resulting in broader beams with less off-axis (sidelobe) discrimination than was the case with GEO based systems; new antenna technologies (not parabolic reflector based) do not help with this. Whilst small/low-cost/easy-to-install antennas are what the end-user will need for such solutions to be compelling, compromises in performance leading to large stay-out angles cannot be permitted. 3. Whilst the premise of operation has evolved from one where C/N was the limiting factor, we, as an nGSO community accept that our new environment must instead be based on C/I, and herein lies the issue – without knowing the number of multiple entries, any software model will

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	output wide variations in avoidance angles, between best and worst case entry assumptions, and it is unclear which to use. All satellite operators acknowledge the above points, and many will execute a handover to a 'spare' satellite should an interference-creating conjunction occur (or be likely to imminently occur). This however requires 'slack' in a constellation. A fundamental business model aspect of MEO constellations is the reduced number of satellites required to achieve the coverage as result of the height. This reduces the CAPEX investment and to offset MEO satellites generally being larger and heavier than LEOs and therefore more expensive to manufacture, launch and orbit raise, is critical to economic viability. The lower number of satellites in a MEO constellation – in Methera's case, only 32 per orbit plane – results in less "slack", reducing the ability to switch to alternative satellites in the event of a conjunction.
Question 6: Do you agree with our assessment of the potential impact of our proposal on specific groups of persons?	Methera has no comment on this
Question 7: Do you agree with our assessment of the potential impact of our proposal on the Welsh language?	Methera has no comment on this

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