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Draft Five Year Spectrum Outlook 2022 - 2026  
Radio Spectrum Management Policy and Planning  
Ministry of Business, Innovation and Employment  
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**Viasat's submission to the Draft Five Year Spectrum Outlook 2022-2026**

Dear colleagues at RSM,

Viasat thanks RSM for providing industry with the opportunity to comment on the Ministry's Draft Five Year Spectrum Outlook for 2022-2026 (FYSO). This is an important document as it outlines the Ministry's priorities over the next five years. For Viasat, this is particularly important as we are looking to bring connectivity options to many New Zealanders across land, sea, and air.

We provide affordable and reliable broadband satellite services around the world, including the unconnected and underserved individuals, businesses in hard-to-serve locations, passengers on the move in buses, aircraft and ships, and to healthcare, education, logistics and public safety institutions, wherever they may be located.

Viasat is proud of the work we do in Australia from offices in Canberra, Melbourne and Sydney. Our Australian business works with NBN to connect regional Australia to the internet via their Sky Muster satellites, and with Telstra to provide reliable USO voice satellite telephone services to the most remote residents in the outback. And we have partnered with indigenous Australians, via the Centre for Appropriate Technology, for a state-of-the-art satellite station in Alice Springs for Earth observation. We deliver gate-to-gate in-flight broadband satellite Wi-Fi on Qantas, as well as space networks and ground stations for the Australian Defence Force. Moreover, **Viasat and Telstra** have recently commenced a massive 16.5-year infrastructure partnership worth billions in investments that will augment Australia's capabilities in the new frontier of telecommunications being built in

space<sup>1</sup>. These capabilities are also set to benefit New Zealand: this means much higher speeds, and more bandwidth, at lower costs for consumers, on land, gate-to-gate for services in the air, and pier-to-pier for broadband connectivity at sea.

Viasat is progressing well towards launching a new generation of Ultra-High Throughput Satellites (UHTS) that will cover all of APAC, including Australia and New Zealand: ViaSat-3 and ViaSat-4. Viasat's UHTS networks are uniquely designed and built to serve the region with unprecedented end-user speeds of up to 1 Gbp/s and throughputs of over 1 Tbp/s per satellite, providing the most cost-efficient solution available in the market. Billions have already been invested in this leading-edge satellite solution that will serve well the ubiquitous broadband needs for fixed premises as well as mobile (ESIM) users.

Spectrum access directly affects satellite capacity, and thus the ability to serve New Zealand in a cost-effective manner.

The goal of the FYSO is to enable wireless digital connectivity, contributing to New Zealand's economic growth and competitiveness. Viasat will be offering broadband services available to a wide variety of customers in all areas of New Zealand. To provide these services we require access to the Ka-Band in the frequency bands 17.7 to 20.2 GHz and 27.5 to 30 GHz. In mid-June 2021, the Ministry undertook a consultation process in relation to the wider 24 to 30 GHz band. To date, decisions have not yet been taken, and this is challenging to satellite operators in terms of being able to plan and offer long-term services to customers.

In its approach to satellite issues in section 2, the Ministry considers satellite technologies generally, including broadband, but does not look at satellite's ability to provide ESIM connectivity for aviation (gate-to-gate) and maritime (pier-to-pier), IoT, private networks and land-based ESIM. Viasat would note that, in addition to broadband users, services are offered for IoT operation, as well as any other services that customers may require. In addition, we routinely offer services to private network and industry verticals as a matter of course. This is simply an ongoing part of our business.

When looking at licensing issues in section 3, the Ministry does not consider general user licensing as spectrum management aspects related to satellite operation. These views, then are expressed in Table 2 of the FYSO. Further, we would expect that most consumers using satellite broadband in the Ka-Band and ESIM would be covered by a national blanket General User Radio Licence (GURL) for their operation. New Zealand has already implemented the GURL regime for VSATs.

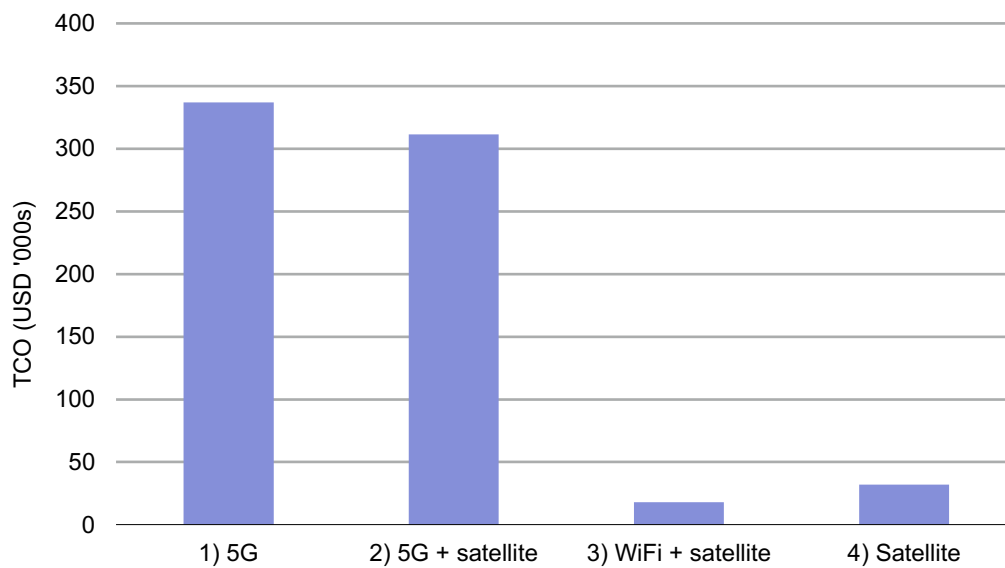
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<sup>1</sup> Telstra News, *Our role connecting millions of Australians from space* (2 February 2022), <https://exchange.telstra.com.au/our-role-connecting-millions-of-australians-from-space/>.

Table 2 should be updated to acknowledge that satellite services also provide:

- Massive IoT
- Private networks and industry verticals
- Implement coexistence measures between FSS and FS
- General user licensing

Viasat notes that there is some consideration in the FYSO to monitor developments in mm-Wave bands, such as Q & V Bands, as well as others. We support consideration of the long-term use of these bands and note that, from a terrestrial perspective, mmWave bands are limited in reach in terms of population – making mmWave bands for terrestrial extremely cost intensive, as shown in recent studies<sup>2</sup> (figure 1 below). Satellite, on the other hand, is not bound to such limitations.

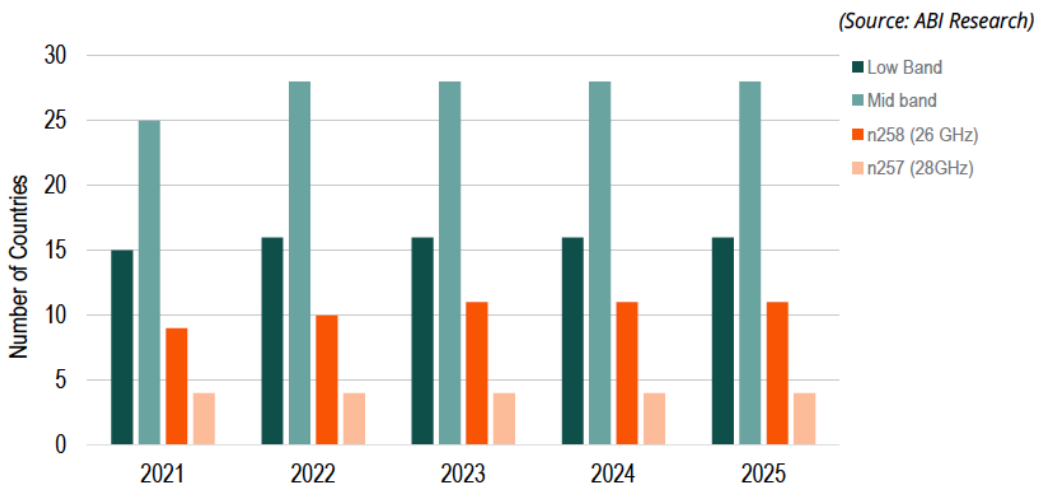


**Fig.1** Comparative Total cost of Ownership (TCO) between 5G broadband in 28 GHz and satellite-powered broadband in 28 GHz: satellite-powered broadband is significantly more cost effective than terrestrial 5G in mmWave

Because mmWave has a poor terrestrial propagation and a high cost of deployment, all regions of the world are prioritising spectrum below mid-bands for developing national 5G networks. The 28

<sup>2</sup> Study on cost effectiveness of 5G in mmWave and satellite broadband in 28 GHz:  
[http://www.strategies.nzl.com/industry-comment/dedicating-28ghz-spectrum-band-to-satellite-services/.](http://www.strategies.nzl.com/industry-comment/dedicating-28ghz-spectrum-band-to-satellite-services/)

GHz band is a poor option for terrestrial IMT/5G in New Zealand. 5G licensees are unlikely to meet national broadband objectives using this spectrum. International research<sup>3</sup> confirms that the mmWave band is not an option being prioritised globally for terrestrial IMT/5G services, as shown in figure 2 below:



**Fig.2** ABI Research: *Emerging Markets Broadband Objectives: Spectrum Requirements (ABI, 2021)*

Digital connectivity requires consideration of all technologies that contribute to the overall goals. Having adequate spectrum access to serve end users is the key to providing competitive and affordable satellite-powered broadband services to the people of New Zealand no matter where they live, work or travel. To achieve this, we need access to the spectrum on a long-term basis and we recommend that the Ministry consider it a high priority to make the frequency bands 17.7 to 20.2 GHz and 27.5 to 30 GHz available for satellite operation on a long-term basis. Europe, Africa, China, Australia, Middle East, and an increasing number of countries in APAC are planning for the full use of the 28 GHz band for satellite broadband and ESIM systems.

Any reduction in the satellite spectrum available to serve end users would reduce the number of people/passengers that can be served by a given satellite and would reduce its cost-effectiveness to the detriment of end users. Viasat is not aware of any terrestrial service provider proposing to offer this type of nationwide connectivity using this spectrum. The terrestrial services being proposed in mm-Wave bands will be specialized or limited in reach in terms of population.

<sup>3</sup> <https://go.abiresearch.com/lp-emerging-markets-broadband-objectives-spectrum-requirements>.

Having adequate spectrum access to serve end users is the key to providing competitive and affordable satellite-powered broadband services to the people of New Zealand no matter where they live, work or travel.

We look forward to further discussions on these important issues.

Sincerely,



Cristian Gomez

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