



TELSTRA GROUP LIMITED

Five-Year Spectrum Outlook 2024-2029

Public submission

6 May 2024



EXECUTIVE SUMMARY

We welcome the opportunity to provide our comments to the Australian Communications and Media Authority (ACMA) in response to its draft *Five-Year Spectrum Outlook 2024-29 (FYSO) and 2024-25 Work Program* consultation. The effective management and allocation of spectrum is critical to driving innovation, improving connectivity, and enhancing the digital experiences of Australians. We are committed to working with the ACMA and other stakeholders to ensure that Australia's spectrum resources are used efficiently and effectively to deliver the best possible outcomes for consumers and businesses alike.

Prioritisation of the ACMA's work plan.

Our number one priority is the renewal of expiring spectrum licences, so the licence holders have certainty to support continued investment in their networks and meet the ongoing and growing demand for mobile services. Following on from this, we recommend the spectrum work program be prioritised as set out in the table below.

Activity	Priority	Comment
Renewal of expiring spectrum licences	1	We strongly support this project being the ACMA's highest priority activity for the coming year. We look forward to working with the ACMA to finalise stage 2 of this process and commence work on stage 3.
Preliminary replanning of the 'upper' 6 GHz band	2	We support the entire upper 6 GHz band (6425 – 7125 MHz) being identified for IMT and consider this should be the ACMA's third highest priority.
Regulatory rules for Direct to Mobile services (<i>LEO-related activity</i>)	3	We recommend the ACMA take a more proactive approach to how satellite 'direct to mobile' services will be licensed and regulated when using existing terrestrial mobile spectrum bands. With commercial services now in place, this work needs to be prioritised and accelerated, and we propose this should be the ACMA's second highest spectrum priority.
2 GHz MSS band allocation (auction) (<i>LEO-related activity</i>)	4	We welcome the ACMA's planned allocation of licenses for MSS during 2025 and consider this should remain a moderate priority over the coming 18 months, but not at the expense of items above.
Monitoring of the 4400-4800 MHz, 7125-8400 MHz and 14.8-15.35 GHz.	5	We recommend these bands should be moved out of monitoring into preliminary investigation. WRC-23 decided these bands should be studied under agenda item 1.7 at WRC-27, ¹ and if the ACMA were to start work on these bands now by moving them into preliminary investigation, it could help inform the current study cycle.
Allocation of 600 MHz (617-694 MHz) in 5-Year horizon.	6	We support continued monitoring of developments regarding the 600 MHz band. The high value of low-band spectrum for mobile communications, and the particularly long lead times that would be required to clear this band, means this band should be prioritised ahead of additional mmWave bands.

¹ ITU, December 2023, *Final Acts WRC-23*, available at <https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-ACT-WRC.16-2024&media=electronic>



700 MHz Technical Instruments	7	We would like the ACMA to maintain focus on this activity to progress amendments to the 700 MHz technical framework.
1.8 GHz and 2.1 GHz outside Spectrum Licensed areas (Options Paper)	8	We welcome the decision by the ACMA to release an Options Paper in Q2 2024, ² although we consider it to be a low priority and we would not be concerned if this moved to Q3.
Move the 3.7 GHz unwanted emissions boundary to 4040 MHz	9	We would like this to be considered in the FYSO 2024-29 program of work over the coming 12-18 months, although we consider this to be a low priority.
Remove permanent restriction to protect Radio Altimeters.	10	The permanent restriction of 72 dBm/5 MHz EIRP should be revisited in late 2025, and if there is no empirical evidence of interference to Radio Altimeters, the permanent restriction should also fall away with the interim measures on 31 March 2026.
Allocation of 40 GHz	11	We support continued monitoring of international developments regarding the proposed use of the 40 GHz band, as this is a candidate band for future 6G services. However, we consider this to be a low priority at this stage.

² The ACMA, March 2024, *Five-year spectrum outlook 2024–29 and 2024–25 work program Draft for consultation*, (“**Draft FYSO**”), p.44. Available at <https://www.acma.gov.au/sites/default/files/2024-04/Draft%20FYSO%202024-29.pdf>



Introduction

We recognise the work program for the ACMA is driven by the policy environment and expectations from Government, and as such we will continue to work with the ACMA in delivering spectrum for the long term public interest derived from spectrum, as outlined in the *Five-year spectrum outlook 2024–29 and 2024–25 work program: draft for consultation* (FYSO).³ The amount of data being consumed over mobile networks continues to grow at rapid pace. Certainty in the renewal of expiring spectrum licences process for licence holders will enable licence holders to effectively plan their future network investment to meet this demand. Alongside this, the increasing take-up of 5G, the likely commercialisation of 6G by the end of this decade, domestic implementation of Wi-Fi 6E and Wi-Fi 7, and the emergence of low earth orbiting (LEO) satellite constellations which have the potential to provide ubiquitous mobile coverage are all factors that the Australian Communications and Media Authority (ACMA) needs to consider for the FYSO.

Prioritisation of the ACMA's workplan

Our submission focusses largely on the spectrum needs (and priorities) of International Mobile Telecommunications (IMT) bands. Our focus on IMT is not to say that other uses of radio-spectrum are unimportant or less valuable. Indeed, Telstra is an extensive user of radio spectrum across a wide range of uses including satellite, fixed link and point-to-multipoint services. Our focus simply reflects where we consider the ACMA should prioritise its work program over the coming years.

Renewal of Expiring Spectrum Licenses

We strongly support the ACMA's consultation process on the finalised framework on the expiring spectrum licences for expiring spectrum licenses in the 700 MHz, 850 MHz, 1800 MHz, 2 GHz, 2.3 GHz, 2.5 GHz and 3.4 GHz bands (which expire between 2028 and 2032) in Q2 2023.⁴ We believe this needs to be the **ACMA's number one spectrum priority**, given the capital investment costs for MNOs and the importance of the mobile network to Australian consumers and businesses.

These bands are fundamental to the delivery of wireless broadband services across Australia. Licensees should be provided with as much certainty as possible prior to the point at which renewal applications may be lodged (currently specified as 2 years from expiry⁵), noting licences in these bands begin expiring in June 2028. It is critical that the renewal mechanism (e.g. a fixed renewal price based on administrative or market rates, or a price-based reallocation) is known well in advance of the licence expiry so that incumbent licensees can plan their investment decisions accordingly and that services to the Australian community are not unduly disrupted.

We acknowledge and thank the ACMA for bringing forward the Stage 2 process of the renewal of expiring spectrum licences. We recognise the complexity of this process; however, it will be crucial for MNOs to know ASAP whether any of their existing spectrum holdings will not be renewed.

Preliminary replanning of the 'Upper' 6 GHz band

Telstra strongly supports the entire Upper 6 GHz band (6425 – 7125 MHz) being identified for IMT use in ITU Region 3. Mobile traffic continues to grow strongly in all markets and there are no other new spectrum

³ The ACMA, March 2024, *Five-year spectrum outlook 2024–29 and 2024–25 work program Draft for consultation*, ("Draft FYSO") available at <https://www.acma.gov.au/sites/default/files/2024-04/Draft%20FYSO%202024-29.pdf>

⁴ The ACMA, December 2023, *Expiring spectrum licences, Finalised framework and response to submissions*, available at <https://www.acma.gov.au/consultations/2023-05/propose>

⁵ For licences not containing a specified renewal application period, see *Radiocommunications Act 1992*, s77A (3).



bands below 7 GHz with more than 100 MHz of contiguous spectrum available that could be made available for mobile services within the next decade.

This is spectrum that is likely to be required to launch 5G Advanced before the end of this decade. The Upper 6 GHz band must remain the ACMA's **number two priority** going into **FY25**.

To support the demand for 6 GHz spectrum for IMT, the GSMA's vision for the 6 GHz band⁶ contains four pillars, including that mobile networks will, on average, need 2 GHz of mid-band spectrum per country by 2030, and that 6 GHz capacity will be required to meet increasing customer demand at the required speeds of ITU IMT-2020. The GSMA's report goes on to show that for a variety of reasons, including cost-benefit analysis of having additional spectrum when deploying IMT networks, and the socio-economic benefits of mid-band spectrum, it is essential additional mid-band spectrum is made available by 2030. We agree with the GSMA's assessment.

Regulatory rules for Direct to Mobile services (*LEO satellite related activity*)

In our submission to the ACMA's consultation on Satellite Direct-to-Mobile Regulatory Issues, we expressed our concerns about the robustness of the ACMA's "light-touch" approach for allowing LEO satellites to operate in IMT bands, by operating under Radio Regulation 4.4. We acknowledge the ACMA recently concluded the consultation process for the *Satellite direct-to-mobile services: regulatory issues*, publishing the submissions in March 2024,⁷ and we appreciate the diversity of stakeholder views on licensing and regulation to provide investment certainty for industry and ongoing operational certainty for consumers. We request the ACMA continue working on licensing and regulation of LEO delivered services, to draw it to a close by the end of this calendar year. We also request the ACMA play an active role in supporting the ITU-R work under AI1.13 at the ITU-R WP4C and WP 5D as a leading administration to shape the international outcome on this topic.

Allocation of 2 GHz MSS band

We support the preparatory work the ACMA are conducting on the *2 GHz Mobile Satellite Service (MSS) band for LEOs* ahead of an allocation of licences later in 2025. We consider LEO Direct-to-Mobile to be an important evolution in the provision of such mobile services, and the 2 GHz MSS band has been identified as a possible candidate for this purpose. We are pleased with the progress of work on this band and consider the ACMA should maintain momentum to bring the band to market by the end of 2025.

Bands being studied under WRC-27 AI 1.7 (4400-4800 MHz, 7125-8400 MHz and 14.8-15.35 GHz)

Telstra would like to see the ACMA move these bands out of Monitoring into Preliminary Investigation. WRC-23 decided these bands should be studied under agenda item 1.7 at WRC-27,⁸ and this work is now underway. By moving these bands into Preliminary Investigation, the ACMA can commence investigating the work required to clear these bands for IMT2030 use (6G). Simply leaving these bands in the Monitoring phase consigns Australia to watching what the rest of the world does, rather than developing a more nuanced and informed position based on Australia's circumstances.

⁶ See GSMA Report: *6 GHz in the 5G Era – Global Insights on 5925-7125 MHz, July 2022*, p.5. Available at <https://www.gsma.com/spectrum/wp-content/uploads/2022/07/6-GHz-in-the-5G-Era.pdf>

⁷ The ACMA. March 2024, *Satellite direct-to-mobile services: regulatory issues*, available at [Satellite direct-to-mobile services: regulatory issues | ACMA](#)

⁸ ITU, December 2023, *Final Acts WRC-23*, available at <https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-ACT-WRC.16-2024&media=electronic>



We consider this task could also occur in parallel with the first three priorities, in other words, move the bands into the Preliminary Investigation stage and commence consulting on possible future uses in parallel with the first three activities, albeit at a lower prior than the first three.

Re-allocation of 600 MHz (617-694 MHz)

The ACMA note they are “... undertaking technical research funded from the government’s Television Research and Policy Development Program to assist the government deliberations about future changes to television arrangements.”⁹ Telstra would like to advocate for the ACMA to:

- I. Provide details of the research objectives and methodology; and
- II. Upon completion of the research, make the report public.

Further, we would appreciate the opportunity to be involved in the research if this would be of interest to the ACMA. Our Broadcast Services team have experience with DVB-T2 and with the conversion from Analogue TV to Digital TV (in the first “digital dividend”) and would be happy to share their insights.

This band will be required by the IMT industry, most likely for 6G deployment, around the end of this decade. The ACMA should be mindful of the long lead time to implement a wholesale re-tune of the terrestrial broadcast network, and should therefore maintain their focus and momentum with a view to developing their policy for the future use for this band. As the consultation paper notes,¹⁰ 5G licences have been issued, and in some cases, 5G deployment has already occurred in this band in the US, Canada and Mexico.

Telstra encourages the ACMA to work with the Government (the Department of Infrastructure, Transport, Regional Development, Communications and the Arts) to develop a program of work that would facilitate reallocation of the 600 MHz band to IMT by the end of the decade. We consider this could readily occur in parallel with many of the priorities we have outlined above, including ESL, Regulatory rules for Direct to Mobile services, or preliminary replanning of the ‘upper’ 6 GHz band.

700 MHz technical framework updates

We would like the ACMA to maintain focus on this activity, and to expeditiously progress the updates to the 700 MHz technical framework once the report on our testing has been finalised.

1.8 GHz and 2.1 GHz outside Spectrum Licensed areas (Options Paper)

Telstra agrees with the ACMA that a review of spectrum in the 1.8 GHz and 2 GHz bands outside of spectrum licensed areas, needs to be undertaken. Telstra welcomes the decision by the ACMA to release an options paper in Q2 2024,¹¹ although we consider this project to be a low priority and we would not be concerned if this moved to Q3.

3.4 GHz technical framework - move the unwanted emissions boundary to 4040 MHz

Telstra and AMTA (and possibly others) have made requests to the ACMA to make an amendment to the 3.4 GHz band spectrum licence core conditions whereby the frequency at which there is a transition between the non-spurious and spurious domains is shifted up by 200 MHz to 4040 MHz (currently 3840 MHz). Telstra requests that this amendment be considered in the FYSO program of work. Such a

⁹ Draft FYSO, p.25.

¹⁰ Draft FYSO, p.32

¹¹ Draft FYSO, p.44.



change will provide support for a greater range of base-station equipment and will also align with the limits defined for AWL transmitters.

Allocation of 40 GHz

The 40 GHz band is further along the maturity curve than other mmWave bands and therefore should be progressed to the initial investigation stage ahead of others. Additional mmWave spectrum should be the lowest priority on the spectrum workplan for 5G and wide-area MBB. However, we note that this is a candidate band for future 6G services, so maintaining a monitoring position is appropriate.

Other matters

Review the permanent mitigations above 3700 MHz to protect Radio Altimeters

All the temporary mitigations¹² that apply to spectrum licensed transmitters operating above 3700 MHz will fall away after 31 March 2026 except for the 72 dBm/5 MHz EIRP restriction, which will still apply. Telstra would like to see the ACMA revisit this decision in Q4 2025, and if there is no empirical evidence of interference from IMT base stations into Radio Altimeters, then Telstra requests that follow-up action be taken during 2025 to ensure the permanent restriction is also removed on 31 March 2026 (along with the temporary mitigations) to facilitate defragmentation of the 3.4 – 3.8 GHz spectrum.

Spectrum Management

The 2023-2028 FYSO released in October, noted that the ACMA intend to conduct a review of the guidance document, *Our approach to radiocommunications licensing and allocation*. We welcome the opportunity to comment on the guidance document, especially how it might apply to bands such as 3.8-4.0 GHz band which was set aside for “innovative new use cases”. This band was part of the critical mid-band spectrum required to meet demand in mobile traffic, and we will welcome the ACMA’s review of this guideline.

Spectrum sharing

Telstra observes in the Draft FYSO paper, the ACMA state they will continue to monitor innovations and advances that might allow for spectrum sharing through ‘*careful planning and the use of appropriate regulatory tools*’¹³, citing that this approach might have benefits for regional and remote Australia. Telstra’s position on this is clear, namely that spectrum licensed under a Spectrum Licence is for exclusive use by the spectrum licensee, i.e., it is not intended for prescriptive sharing models. If there is a legitimate case for spectrum sharing, then spectrum licensees would be able of their own choice to enable such activity through their licence rights under the *Radiocommunications Act*, by using available mechanisms such as third-party authorisation.

Equipment Rules and EMC

Telstra continues to support the ongoing work of the ACMA to modernise equipment regulation. In addition to this, we support the ACMA’s work to bring radiocommunications equipment regulation into the equipment rules framework in Part 4.1 of the Radiocommunications Act¹⁴. We also welcome the decision

¹² The temporary mitigations are called out in the relevant [Radiocommunications Advisory Guidelines document](#) and are detailed in [RALI MS47](#)

¹³ Draft FYSO, p.24.

¹⁴ Ibid, p.70.



to consult on including the regulation of electromagnetic compatibility (EMC) within the Radiocommunications Equipment (General) Rules 2021 in Q4 of this year.

WRC-23 outcomes

WRC-23 identified several new bands for IMT.¹⁵ Telstra acknowledge that the ACMA have committed to support sharing studies during the next 4-year WRC cycle in the 4400–4800 MHz, 7125–8400 MHz (or parts thereof), and 14.8–15.35 GHz bands. We support the ACMA's ongoing work in identifying future IMT bands.

Sunsetting instruments

Telstra notes that the ACMA have identified 26 Radiocommunications instruments that are scheduled to sunset before the end of 2025 (CY) and that 22 of these instruments will require consultation.¹⁶ Some of these instruments will be of interest to MNO's, including (but not limited to) 3.4 GHz band RAGs, the Communication with Space Objects (CSO) class licence, both the Foreign and Australia Space Objects Determinations, the Low-Interference Potential Devices (LIPD) class licence, the Transmitter Tax Determination. Telstra believes that the sunseting of these instruments presents an opportunity to review the content of the instrument, rather than simply rolling each instrument over or allowing it to sunset.

800 MHz band technical framework

Telstra notes that in the ACMA document 'The ACMA's Long term strategy for the 803-960 MHz band'¹⁷ the ACMA foreshadowed changes to the 800 MHz band spectrum licence technical framework to accommodate the 1 MHz downshift, which is mandated to occur on or before 30 June 2028. As this downshift is intended to improve the utility of the adjacent 900 MHz band (in particular the 'restricted segment' immediately above 890 MHz), the ACMA needs to prioritise the necessary changes to the 800 MHz spectrum licence technical framework¹⁸ to give certainty to licensees holding spectrum licences in both the 800 MHz and 900 MHz bands.

¹⁵ ITU, December 2023, *Final Acts WRC-23*, available at <https://www.itu.int/en/publications/ITU-R/pages/publications.aspx?parent=R-ACT-WRC.16-2024&media=electronic>

¹⁶ Draft FYSO, pp.79-81.

¹⁷ Please refer to *The ACMA's Long term strategy for the 803-960 MHz band*, available at https://www.acma.gov.au/sites/default/files/2019-12/The%20ACMAs%20long-term%20strategy%20for%20the%20803960%20MHz%20band_decision%20paper.docx

¹⁸ See <https://www.acma.gov.au/850900-mhz-technical-framework>