

# **Response to submissions**

## Draft FYSO 2022–27

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# Response to submissions

Thank you to all stakeholders who responded to our consultation on the draft five-year spectrum outlook (FYSO) 2022–27 published in March 2022.

The Australian Communications and Media Authority (ACMA) invited comments on the draft FYSO, including the 2022–23 annual work program, as well as specific issues relating to satellite licensing arrangements and terahertz spectrum.

We received 38 submissions from members of industry, industry representatives and peak bodies, government agencies and the public. Consistent with paragraph 28 F(1)(a) of the *Radiocommunications Act 1992* (the Act) we also consulted with the Minister for Communications on the ACMA's spectrum management priorities and proposed 2022–23 work program.

Our proposed 2022–23 work program in the draft FYSO 2022–27 covered a diverse range of projects. We received a range of feedback about priorities and suggestions for inclusion of additional activities in the work program. One change we are making as a result of feedback is to include the 4500–4800 MHz band in the monitoring stage of our band planning process. While we cannot accommodate all suggestions, your feedback will inform our future work program development.

Separately, we sought views on the need for additional regulatory attention on arrangements related to non-geostationary satellite orbit (NGSO) constellations and terahertz spectrum. While we did not receive significant feedback, both issues represent longer term challenges for spectrum management arrangements. We propose:

- > for non-geostationary satellite orbit (NGSO) constellations, to continue monitoring the demand for spectrum and relevant emerging regulatory arrangements
- > for terahertz spectrum, to monitor developments in other jurisdictions, and incorporate consideration of relevant issues, including through our ongoing work to maintain the licence tax regime.

This document focuses on the major themes raised in submissions and our responses to them.

# Approach to the five-year spectrum outlook

## Wireless (mobile and fixed) broadband, including 5G demand

Access to spectrum to support 5G use-cases continues to be the focus of many submitters. Mobile network operators (MNOs) submitted that the allocation of mid-band spectrum should be the ACMA's highest priority.

One submitter expressed the view that the Australian market will need approximately 8 GHz in total spectrum allocations for international mobile telecommunications (IMT) by 2030, and that Australia must act now to formulate a policy position for mobile spectrum requirements into the next decade.

Some submitters highlighted the increasing demand for enterprise or private cellular networks, but expressed the view that the predominant price-based approach to allocating wireless broadband spectrum is geared towards large network operators at the expense of enterprise wireless broadband (WBB) markets. Another suggested the ACMA should adopt a more dynamic and flexible approach to managing spectrum access, to create a level playing field for newer entrants to the metro and regional markets that may have to compete with established MNOs.

One submission suggested the ACMA should be more transparent about how it determines the highest-value use of any spectrum band. Another submitter reiterated their position on the importance of clear property rights for MNO spectrum licensees.

One submitter stated that access to additional spectrum for the mobile telecommunications services should only be supported when there is strong evidence of actual need, citing international reports that suggest Australia has significantly more spectrum allocated per person for mobile telecommunication services than other similar countries.

### Our response

When undertaking spectrum planning and allocation activities, we take into account the object of the Act in promoting the long-term public interest derived from the use of the spectrum. We consider the impact that a regulatory proposal has on the public interest and make decisions using the latest evidence available. We have aligned our assessment framework with the new object of the Act.

The Act does not state that devices operated under spectrum licences have primacy over devices authorised by apparatus licences (and operating in accordance with licence conditions), or over a service with equivalent service-level status in the [Australian Radiofrequency Spectrum Plan 2021](#) (spectrum plan). However, spectrum licences are constructed to provide the requisite certainty and tenure to encourage investment, and flexible and widespread deployment. We consider this when planning for other services under apparatus licences and class licences. We aim to ensure that any risk posed by interference to/from spectrum-licensed services is minimised and does not compromise this certainty. Under the Act, apparatus licences are typically only issued into spectrum-licensed spectrum in specific, special circumstances. Class licences can only be issued into such spectrum after consultation with spectrum licensees. While spectrum licences mostly grant exclusive use within a defined geographical and frequency range, class and apparatus licences may be authorised to

co-exist under specified circumstances, and incidents of interference are managed in accordance with ACMA policies.

We are progressing an extensive program of planning and allocations focused on mid-band spectrum. This work includes arrangements to accommodate local area wireless broadband (LA WBB) and private networks, specifically in parts of the 3.4–4.0 GHz band, as well as spectrum in the 2 GHz band to support mobile satellite and narrowband MSS. In relation to the availability of other spectrum for IMT, in 2021 we developed arrangements for fixed and mobile WBB in the 26 GHz and 28 GHz bands, including licensing and allocation arrangements conducive to a wide range of uses/users, such as private networks. We continue to support innovative 5G services and provide information on our website about spectrum options available for LA WBB use.

## Satellite communications

Most submitters expressed support for the ACMA’s current regulatory arrangements for satellite systems in Australia and did not see a need for a more interventionist or prescriptive approach.

There were divergent views on the impact of NGSO operators, with some submitters seeking assurance that Australian Defence licences and corresponding networks are not disadvantaged by mega-NGSO constellations. Another submitter was of the view that the concern that congested orbits will constrain the capacity or throughput of GSOs and small NGSOs is unfounded.

Two submitters proposed amendments to the Radiocommunications (Communication with Space Object) Class Licence 2015 (space object class licence) to enable operation on additional space-to-earth bands.

One submitter requested that the ACMA pay greater attention to the role of the domestic launch services that support new constellation and satellite services, including investigating permanent licensing options for launch vehicles.

### Our response

Noting submitters’ views on the existing regulatory arrangements for satellite systems in Australia, we will continue to monitor the demand for spectrum, and will maintain a watching brief on emerging regulatory arrangements in other jurisdictions.

As outlined in the FYSO, our satellite service licensing arrangements do consider the impact on Australian-filed satellite systems.

We acknowledge the interest in expanding the range of frequency bands authorised for use under the space object class licence. One of the bands of interest is the 20.2–21.2 GHz frequency band. Under the spectrum plan, this band is designated for use by the Australian Defence Force and Department of Defence. We will continue to monitor trends in the spectrum needs of space-based communications systems and will consider updates to regulatory arrangements for those systems as required.

Regarding radio links on launch vehicles, scientific licensing remains the most appropriate way to authorise these links.<sup>1</sup> We will examine whether any changes to

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<sup>1</sup> In the US, the Federal Communications Commission (FCC) has a similar approach in issuing experimental short-term licences to support launch vehicles. See, for example, a recent [special temporary authorisation](#) for launch vehicle communications for mission launching.

our licensing system and associated procedures could further assist these activities, and engage with stakeholders as necessary.

## Terahertz spectrum

There was limited interest from submitters for the ACMA to explore the development of an ongoing regulatory framework for terahertz spectrum. MNOs and a representative body viewed this work as a lesser priority than work to meet demand for low and mid-band spectrum, including spectrum licence renewals. Other submitters acknowledged their interest but did not foresee an immediate need to develop regulatory arrangements.

Two submitters offered views on what the ACMA should consider in any investigation of spectrum above 100 GHz. One submitter advised that they run several projects experimenting with free space point-to-point optical links part of terrestrial networks, along with some hybrid Earth-to-space links consisting of RF and free space optical links.

### Our response

We acknowledge submitters' views, and will continue to monitor developments in these frequencies, noting recent interest in Canada to licence terahertz spectrum for mobile applications, and UK regulator, Ofcom's expression of support for exploring solutions to share terahertz spectrum in a controlled sandbox environment. As an initial step, in response to proposals outlined in our work in implementing the Spectrum Pricing Review, we have introduced new pricing arrangements where apparatus licence taxes for services above 100 MHz are now set at the minimum tax.

In monitoring developments, we will outline our understanding of international regulatory models and provide use-cases in an information paper on terahertz spectrum. Our ongoing work to maintain the licence tax regime will also incorporate consideration of pricing frameworks.

We note that the Act refers to emissions up to 420 THz.<sup>2</sup> As such, earth stations using infrared communications require authorisation under the ACMA's radiocommunications licensing system. We encourage those experimenting with optical communications, especially infrared, to engage with us to ensure appropriate licensing arrangements are in place.

## Broadcasting services

One submitter urged the ACMA to support implementing Digital Radio Mondiale standards (DRM30 and DRM+) when converting from AM to FM. One submitter sought support for small-scale DAB+ digital radio trials based in Sydney commencing in 2022–23.

One submitter requested that the ACMA consider the spectrum needs of audio program-making and special events (PMSE) users when planning bands below 1 GHz, especially in the 470–698 MHz range.

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<sup>2</sup> Under the Act, radio emissions are considered to be any emission of electromagnetic energy of frequencies below 420 THz. Laser (optical) communications systems operate using both visible and infrared light. Laser systems using visible light operating at frequencies above 420 THz are outside the scope of the Act and hence are not subject to regulation administered by the ACMA. The infrared portion of the spectrum is approximately between 300 GHz to 430 THz (1 millimetre to 700 nanometres). Accordingly, infrared lasers operating within this range, such as those used for earth-to-satellite communications, are within scope of the Act. Under the current regulatory framework, all earth stations require licensing. Hence any earth station operating on frequencies below 420 THz falls under the ACMA's regulatory arrangements.



One submitter focused on radio planning priorities and requested that, when ACMA proceeds to develop and consult on a variation to enable AM to FM conversion, that it also consults and publishes the relevant Digital Radio Channel Plan (DRCP) and declares a foundation licence. The submitter also suggested some specific DRCP consultation locations for 2022–23, and additional planning priorities. Additionally, it urged the ACMA to re-convene the Digital Radio Planning Committee.

### **Our response**

We note the significant growth in demand for audio PMSE use and continue to make planning decisions in view of this. Our current broadcast planning priorities support trials of new technologies, including DRM trials and small-scale DAB+ trials, and we maintain a watching brief on DRM technology.

Our work program priorities include making DRCPs for regional DAB+ where a commercial licensee or national broadcaster has committed to a rollout. We consider there would be little utility in making DRCPs in the absence of a commitment to digital radio rollout by individual broadcasters in particular licence areas.

The future delivery of radio project included extensive consultations with industry on a broad range of radio planning matters. In the absence of any specific digital radio regulatory issues to discuss, we are not inclined to convene the Digital Radio Planning Committee or expand its remit at this time.

## **Spectrum for government use and innovative applications**

A government body submission expressed concern about the ACMA monitoring bands that are footnoted in the spectrum plan for Defence use, and which were either identified at WRC-15 for IMT by several countries or are bands of interest for the introduction of IMT (wireless broadband) services either domestically or internationally. These concerns were echoed by a submitter from the aviation sector.

A submitter suggested that the ACMA should undertake work to enhance the Government Spectrum Holdings Report to include forecasts of future growth of spectrum dependencies.

A submitter raised interest in considering the potential for enabling private networks in 400 MHz harmonised government spectrum (HGS).

### **Our response**

The inclusion of bands in the monitoring list reflects our awareness of action being taken internationally in those bands. It does not necessarily signal any intent by us to progress those bands further in the replanning process for any particular use. We consider this transparency important, and we will continue to adopt this approach. Conversely, omitting certain bands from the monitoring lists because of domestic interests, no matter how important, could call into question the integrity of the established planning process.

We will, as always, work with Defence to accommodate the spectrum needs that accompany emerging capabilities.

The Government Spectrum Holdings Report is an initiative of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (the Department) and we have made it aware of the interest in this work.

We note that the deployment of private networks is already enabled in some parts of HGS.

# 2022–23 annual work program

## 600 MHz

There continues to be strong interest in the 600 MHz band, particularly from the telecommunications sector. Some submitters suggested this band should be advanced to the next appropriate planning stage, with a view to allowing IMT use either through spectrum licensing, or AWL licensing arrangements by 2028, or sooner. One submitter expressed its view that the progression of the band should be considered in conjunction with any future media reforms. Another was of the view that the ACMA should explore the whole UHF band (such as the 410 MHz and 450 MHz bands) for private broadband networks.

Other submitters did not expressly advocate for progressing the planning stage of this band, but did note that the release of high value, low band spectrum for IMT should take priority over more millimetre wave (mmWave) releases, given the recent 26 GHz allocation. These submitters acknowledged that media reform work is still in its early stages, with one considering that the ACMA could undertake further work to consider various options for future use of the spectrum, should it be freed up as an outcome of potential media reforms.

One submitter agreed that the band should remain at the monitoring stage, noting that future planning decisions for the band must ensure effective management of interference issues that may arise from introducing 5G services into adjacent bands.

### Our response

Our current work on the 600 MHz band includes maintaining awareness of global developments and general knowledge of the issues in the band. We also track changes in domestic demand alongside broadcasters' views on transition paths for broadcast technology. This is consistent with the band remaining at the monitoring stage.

## 2483.5–2500 MHz

Two submitters requested the ACMA urgently prioritise work in this band to facilitate the deployment of privately operated 5G terrestrial mobile services as a complementary ground component (CGC) using small cells technology.

### Our response

In Australia, this frequency band is used on an ad-hoc basis for a variety of applications from drones to launch support activities. 2.5 GHz spectrum licences are in the adjacent band and class-licensed devices operating in 2400–2483.5 MHz also bring a range of technical compatibility issues.

We are aware of interest in small cells and similar applications identified to support WBB (including private networks and LA WBB). We are also aware of interest in CGCs and have included support for such services in our planning outcomes for the 2 GHz (1980–2010/2170–2200 MHz) band to introduce mobile satellite services.

As there is no established framework that would readily support such operations in 2483.5–2500 MHz, we would need to examine the potential impact on existing services and consider the most appropriate licensing, pricing and coordination arrangements. If such arrangements were feasible, it is likely that there would also be interest from other parties, given the interest in private/enterprise networks. We would

expect to conduct our established consultation processes before implementing new arrangements.

At this time, we do not propose to begin detailed work in this band during 2022–2023, as we intend to complete our existing program of work with broader and more immediate benefits for the satellite industry, before commencing additional activities. However, noting the interest in the band, we encourage interested parties to discuss possible trials or demonstrations with us.

## **4.5 GHz and 4.8 GHz**

One MNO supported the current band planning status, but other submitters suggested moving this band to the initial investigation stage, citing interest in Asia to further investigate the potential use of this band for 5G use-cases, with some countries having already assigned it in ITU Region 3. Submitters also consider that the 300 MHz of spectrum between the two bands (4500–4800 MHz) should be included in ACMA band planning.

For the 50 MHz of spectrum at 4940–4990 MHz, a government body submitted that this should be preserved for the co-existence of public protection and disaster recovery and 5G public safety mobile broadband (PSMB) applications, noting this may require a review of the existing emission mask parameters against 5G application requirements. The submitter expressed the view that there should be a mechanism to support interference protections of PSMB communications authorised under the Radiocommunications (Public Safety and Emergency Response) Class Licence 2013 (PSER class licence). Noting the public interest, the submitter further suggested the ACMA could consider converting the PSER class licence to a free spectrum licence to further support protection from interference.

### **Our response**

Our current focus on mid-band spectrum for WBB is in the 3400–4000 MHz and 6 GHz bands. This is in line with industry views on ACMA’s spectrum review priorities, which were stated in submissions to the draft FYSO. In the meantime, we will continue to monitor industry views and international developments for the 4400–4490 MHz frequency range.

We agree the 300 MHz between the 4.5 GHz and 4.8 GHz bands should be included in the monitoring stage. Issues in these frequency ranges are similar and we have adjusted the FYSO to reflect this. Our current work on the 4400–4990 MHz frequency range will include maintaining awareness of global developments and understanding the issues in the band.

We note that when the PSER class licence was established, it encapsulated emission characteristics anticipated at that time, and it may no longer cover the full breadth of deployments enabled under current 5G standards. Only public safety and defence agencies are authorised to operate under the PSER class licence, and interference management is a matter for coordination amongst those agencies.

We do not intend to explore spectrum licensing in this band.

## **13 GHz**

There were several submissions on this band, with 3 submitters reiterating the importance of the 13 GHz (12.75–13.25 GHz) band for fixed microwave links. One submitter expressed the view that the ACMA should support the development of relevant ITU-R studies, and further encouraged measures within the domestic

regulatory framework to promote the deployment of Earth stations in motion (ESIM) in the 13GHz band for aeronautical and maritime broadband services.

#### **Our response**

We will continue to monitor industry views and international developments regarding the 13 GHz band.

### **40 GHz, 46 GHz and 47 GHz**

Telecommunications stakeholders that supported these bands remaining at the monitoring stage noted the significant interest of the satellite sector in spectrum between 40 – 50 GHz. They noted that ensuring co-existence between 5G and fixed satellite services (FSS) in these bands is critical.

An aviation sector stakeholder was of the view that these bands should be progressed to initial investigation to accommodate both FSS and 5G interests, with appropriate consultation with Defence. One submitter considered the 40 GHz band to be further along in maturity and could be progressed to the initial investigation stage.

#### **Our response**

We appreciate there are competing demands for access to the 40 GHz, 46 GHz and 47 GHz bands, and that this includes WBB systems, satellite services and fixed links.

We do not propose to move consideration of these bands to the initial investigation stage during 2022–23. However, we are open to reconsidering the prioritisation of these bands in future work programs. We consider it prudent that any such review investigates interests from all sectors and not any single sector in isolation.

It is likely that any future review will consider not only the 40 GHz, 46 GHz and 47 GHz bands, but also the broader 48.2–50.2 GHz and 50.4–51.4 GHz bands, as this will encompass relevant satellite downlink and uplink spectrum in the Q-V bands. While this will increase the scale and likely timeframe of any review, it will allow a broader consideration of future use-cases and potentially complementary band uses.

### **70 GHz and 80 GHz**

Two submitters recommended the ACMA commence planning work to support the early introduction of satellite communications services in the 71–76 GHz and 81–86 GHz frequency ranges (commonly called the E-band), noting the bands are essential for next-generation satellite systems.

#### **Our response**

We recognise the interest in E band spectrum, noting it has been identified by the satellite sector as one of the bands that can support the growth of future satellite services.

In Australia, these frequency bands are currently planned for self-coordinated links operating under [RALI FX20](#). The introduction of satellite communications services into these bands will require consideration of pricing, licensing and coordination arrangements, along with consideration of how the compatibility of different satellite services could be verified under a self-coordination framework.

At this time, we do not propose to commence detailed work on these bands during 2022–23, as we need to complete our existing program of work with broader and more immediate benefits for the satellite industry, before commencing additional activities. However, we are aware that arrangements in these bands are being reviewed

internationally and will consider future work program prioritisation informed by these developments.<sup>3</sup>

Our ongoing program of review of the spectrum planning technical framework will include consideration of developing arrangements to support satellite services on a coordinated basis with self-coordinated links operating under RALI FX20. Organisations looking to explore early developments are encouraged to contact us to discuss possible interim or trial arrangements (under scientific licensing).

## **Bands being studied under WRC-23 agenda items 1.2 and 1.4**

Submitters were broadly supportive of the ACMA's international engagement with the ITU, as well as other forums, such as the Asia-Pacific Telecommunity.

Submitters noted the linkage with the 6 GHz RLAN work, given the top 100 MHz of the 6 GHz band (7025–7125 MHz) is being considered for an IMT identification under WRC-23 agenda item 1.2. Views ranged from supporting class-licensed RLAN use over the entire 6 GHz band, to suggesting that studies should support identification of the upper 6 GHz band for IMT.

Two submitters queried the purpose of monitoring the bands being studied under agenda item 1.2 and opposed consideration of the 10–10.5 GHz band for IMT, noting that the FYSO should expressly acknowledge that the fixed and mobile allocations in that band are designated for the purposes of defence and national security.

### **Our response**

Inclusion of all bands being considered under agenda item 1.2 in the monitoring list increases transparency and reflects that there is interest and/or action being taken internationally to potentially make those bands available for IMT. We have adjusted the wording under this item to be explicit about the regions that possible IMT identifications are being considered for in all bands within the scope of agenda item 1.2. Positions on WRC agenda items are a matter for the Australian WRC Preparatory Group convened by the Department.

## **1.5 GHz and extended MSS L-band**

Submitters were divided on the treatment of these bands. Some considered the planning stage should revert to monitoring, while others supported the proposed review of these bands in the initial investigation stage. One submitter disagreed with the simultaneous review of both bands, requesting the review of the mobile satellite service (MSS) L-band be expedited independently of the 1.5 GHz band.

One submitter expressed concerns about the potential implications for aeronautical mobile telemetry from future WBB and MSS systems, if those systems are to be considered for future use of the 1.5 GHz band.

### **Our response**

In the FYSO 2021–26, we announced plans to review the 1.5 GHz and extended L-bands concurrently, and we released a consultation paper commencing this review in Q2 2022. Since co-existence between possible MSS and WBB uses is likely to be a

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<sup>3</sup> In the US, the satellite industry has asked the FCC to consider supporting satellite services in these bands through submissions to the FCC consultation on [Modernizing and Expanding Access to the 70/80/90 GHz Bands](#). The FCC has yet to decide on the matter. Additionally, at WRC-19 through [Resolution 775 \(WRC-19\)](#), the ITU identified studies in the 71–76 GHz and 81–86 GHz frequency ranges for consideration at WRC-27.

substantial issue for consideration, the simultaneous review of the 1427–1518 MHz, 1518–1525 MHz and 1668–1675 MHz bands is appropriate.

The views we receive in this consultation will inform our decision on whether to proceed to the preliminary replanning stage. If we do proceed, we will release an options paper in Q1 2023.

Footnote AUS3 in the spectrum plan states that use of the band 1435–1535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service. In moving this band to the initial investigation phase, we are interested in identifying a range of other interests in this band.

## **2300–2302 MHz**

One submitter expressed that the 2300–2302 MHz band should be progressed to the preliminary planning stage, with a view to supporting the inclusion of the bottom 2 MHz of the 2300 MHz band for wireless broadband, allowing a contiguous 100 MHz deployment.

A submission from an amateur radio representative body noted the impact of future decisions for the band on the amateur service, which uses it for narrowband data.

One submitter noted that satellite launch operators considering establishing long-term operations in Australia view access to spectrum in the adjacent 2302–2400 MHz band as necessary.

### **Our response**

We do not intend to progress a review of the 2300–2302 MHz band in 2022–23, but will review our position in the next FYSO development process. Use of the band by the amateur service will be considered as part of any future review of the band.

We note that the 2302–2400 MHz band is subject to spectrum licensing Australia-wide, and access to this spectrum can be negotiated with relevant licensees in a given area.

## **5030–5091 MHz**

One submitter queried why only 10 MHz of spectrum (5055–5065 MHz) is to be made available for terrestrial line-of-sight remotely piloted aircraft systems control and non-payload communications (LoS RPAS CNPC), suggesting the ACMA should prioritise providing full access to the band, subject to aviation regulation conditions. The submitter also urged the ACMA to take the lead in developing licensing arrangements that address the needs of LoS and beyond line-of-sight (BLoS) systems.

### **Our response**

In Q2 2022, we consulted on a draft radiocommunications assignment and licensing instruction (RALI) for the use of 5055–5065 MHz for LoS RPAS CNPC on an interim basis until more permanent arrangements have been developed. The draft RALI provides for the use of 10 MHz for RPAS, and channelling arrangements are consistent with the current draft technical standard developed by ITU-R. In our view, the 40 channels provided for LoS RPAS CNPC are sufficient for the number of CNPC links that may need to be supported at any one time within a given airspace, for the period that the interim arrangements will apply.

We will consider expanding these interim provisions for LoS RPAS CNPC after the relevant international channel arrangements are finalised by the ITU-R.

We note that considerations relating to the use of satellites for BLoS are ongoing at the ITU-R level and BLoS arrangements are only at early stages of consideration in other jurisdictions. We will continue to monitor international developments in this area.

## **6 GHz**

There continues to be very strong interest in our approach to this band. Submitters were divided between advocating for the whole band to be opened up for RLAN use, or maintaining the upper 6 GHz band at the initial investigation stage while waiting for decisions on the band at WRC-23, which could include allocation for IMT use.

Satellite sector submitters emphasised that FSS systems operate across the upper 6 GHz band and must have protection from RLANs, should those networks be allowed to operate under the low interference potential devices (LIPD) class licence.

One submitter suggested there is a need to update arrangements in the adjacent 5 GHz band to allow outdoor and higher-power indoor devices.

### **Our response**

We note the view of stakeholders relating to 6 GHz, which are in line with submissions received to previous consultations on the issue.

We will continue to monitor developments in the band and will consider updates to 5 GHz wi-fi use, and frequency-hopping spread spectrum devices in the 6 GHz band during the next general LIPD update in Q3 2022.

## **850 MHz expansion band**

A government stakeholder raised the issue that although 2 x 5 MHz of spectrum was set aside for future PSMB use, there is no equipment ecosystem to support its deployment. It emphasised that the 2 x 5 MHz spectrum must remain reserved and available for potential future allocation to PSMB.

### **Our response**

We note the submitter's comments. The development of a national PSMB capability for emergency services is a matter for government.

## **1800 MHz (remote areas)**

Telecommunications stakeholders support the proposed work program for this band, with one noting the significant incumbency issues to consider. One submitter was of the view that the naturally remote location of space launch operations means they should be allowed to join fixed and mobile WBB services in the band.

### **Our response**

We note the submissions regarding this band in the context of the planned review.

## **2 GHz**

Submitters cautiously supported a price-based allocation of the 2 x 25 MHz replanned for MSS services Australia-wide under apparatus-licensing arrangements, but urged the ACMA to take steps that ensured bidder eligibility was limited to viable MSS operators, and to guard against spectrum hoarding and market speculation. Those submitters agreed that the ACMA could transition temporary outside broadcast services out of the band in rural areas by 2024, and by 2026 in capital cities.



Most submitters did not support the allocation of 2 x 5 MHz for satellite IoT and similar narrowband services shared between operators, expressing the view that such an arrangement is wasteful of spectrum and in-orbit radio assets. One submitter supported the proposed 2 x 5 MHz allocation.

### **Our response**

We note submitter's views on planning arrangements in this band and considered them as part of the process to replan the band for MSS use.

## **3400–3575 MHz and 3700–4200 MHz**

One submitter expressed the view that the planning outcome for spectrum for WBB services across the 3400–4200 MHz band is insufficient and lower than what is allocated for the same service in peer jurisdictions.

Most submitters supported the progress of allocations of spectrum in the 3.4–4.0 GHz band across various parts of Australia, with some emphasising the priority of this work and noting that the timing of allocations should be no later than Q3 2023. Some submitters noted the need to continue supporting existing uses of the bands, including amateur, FSS and point-to-point links, as well as the potential for deploying private networks.

For the 3700–4200 MHz band, one submitter supported the introduction of LA WBB with existing FSS and point-to-point uses, providing examples of possible sharing use-cases. Another was of the view that proposals to allocate 5G and WBB in this band are likely to result in costly earth station relocation and/or retuning costs by FSS incumbents, and the ACMA should consider compensating incumbents for the associated costs. The submitter requested the ACMA consider protecting key FSS C-band teleports from 5G and WBB interference by identifying them as Earth Station Protection Zones, or a similar mechanism.

### **Our response**

We are progressing the implementation of arrangements for WBB services across the 3400–4200 MHz band, in line with the planning outcomes from the review of the band. The planning outcomes are consistent with the government communications policy objectives for the band articulated in the ministerial policy statement under subsection 28B(1) of the Act. These are to support the deployment of new and innovative technology (including 5G), to support a range of use-cases and users, and to support digital connectivity and investment in regional Australia.

We note submitter views on the forward allocation work plan. We will consider these when making final decisions in the 3400–3575 MHz and 3700–3800 MHz bands, in view of the recent re-allocation consultations and tune-ups on these bands.

We have declared a 5-year re-allocation period to provide sufficient time for incumbent licensees to pursue alternative spectrum options, such as retuning or relocation. We do not have the power to compensate incumbent licensees for costs of retuning.

To provide options for the continued use and development of FSS, we are preserving spectrum in 3800–4000 MHz in regional and remote areas of Australia for this use. We are also preserving C-band FSS use at the Earth Station Protection Zones in Roma, Moree, Quirindi (3700 MHz only) and Uralla.

## Ongoing review of spectrum planning, assignment and coordination requirements

Two submitters suggested specific changes to arrangements for fixed services to support higher capacity backhaul radio links.

### Our response

We acknowledge submitters' feedback and will consider these submissions as part of our ongoing program of review of the spectrum planning technical framework, including RALI FX3.

## Expiring spectrum licences

Submitters expressed strong support for the ACMA prioritising this work by starting to consider licence renewals 5 years from expiry. The inclusion of expiring spectrum licences in the forward allocation work plan was acknowledged.

One submitter expressed the view that the consideration of use conditions may be appropriate for area-wide licences, but that these conditions are not comparable for spectrum licences.

Two submitters stated that the consideration of spectrum licence renewal should be a holistic exercise across all spectrum-licensed bands, so that MNOs are better able to develop long-term spectrum strategies, rather than making investment decisions in response to a band-by-band renewal approach.

A submitter stated the allocation of the 600 MHz band should be coordinated with the expiry of the 700 MHz and 850 MHz bands.

### Our response

We note submitter views on this topic. Our planned consultation on licensing renewals and spectrum-use conditions will include consideration of the procedural approach to renewals.

## Technical Liaison Groups

Submitters raised concerns about how consultation processes associated with some technical liaison groups (TLGs) have progressed over the past 2 years. Their view was that discussions should be more appropriately timed and scoped so that all stakeholders have a common understanding of the expectations and objectives of the TLG. One submitter expressed the view that the lack of active participation by key stakeholders in the TLG can hinder the natural debate of technical issues that it considered are ideally canvassed through the TLG process.

### Our response

Spectrum licence technical frameworks are developed considering the interests of both prospective and/or existing spectrum licensees and co-existence considerations between spectrum-licensed and other, often adjacent, uses of the spectrum. These co-existence considerations can result in outcomes that may not completely align with the preferences of licensees but are nonetheless consistent with our broader spectrum management responsibilities. We believe that any outcomes that may be perceived as resulting in 'unfavourable' spectrum licence conditions are due to these co-existence considerations, rather than the TLG process.

For clarification, [updated information on TLGs](#) is now available on the ACMA website. We note that TLGs are an ACMA-initiated exercise to provide additional opportunities

for informal industry consultation and input before the formal consultation phase for technical frameworks.

## **CB radio**

A couple of submitters suggested the ACMA include a work item to update regulatory arrangements for the citizen band radio service (CBRS), including changes to the Radiocommunications (Citizen Band Radio Stations) Class Licence 2015 (CB class licence) to allow more channels for narrowband (12.5 kHz) UHF CB data transmissions and convert planning arrangements for CB repeaters to 12.5 kHz bandwidths.

### **Our response**

We note submitters' interest in making changes to CB radio and repeater arrangements but do not propose to investigate this at this time. We are aware of other developments in the use of the service that may influence the way the service is used domestically, which we will continue to monitor.

## **Amateur radio**

An amateur radio representative body expressed its concerns that the transition to class-licensing arrangements for the amateur service would lead to a reduction in protection from interference, and a reduction of future privileges, updates and support to the service. The submitter recommended that a service level agreement be established under the class licence that would define the responsibilities and expectations of all parties. The submitter was also of the view that the amateur service would benefit from an independent committee made up of amateur community representatives, and that operated on a consensus-based model akin to a self- or co-regulatory arrangement. Additionally, it requested that standard amateur operators be allowed to access the 50–52 MHz band.

Submitters supported further investigations into higher power limits for foundation and standard operators, in addition to advanced amateur operators.

### **Our response**

We consulted on non-assigned amateur licensing arrangements, including a draft class licence, in Q1 2021. In our response to submissions to that consultation, we addressed concerns raised about interference protection and the perceived dilution of amateur operator privileges under a class licence. Specifically, we explained that the level of interference protection for non-assigned amateur stations will remain the same under a class licence, and regulatory conditions that apply to amateur operations, including operating privileges afforded to operators at each level of qualification, will not be changed.

We expect to consult in Q3 2022 on the specific implementation issues for amateur class licensing. We continue to consider the best ways to engage with the amateur community through various channels. It is our view that amateur class-licensing arrangements, which will encompass the class licence and any operational procedures, are adequate for the regulation of the amateur service. We do not consider it is necessary or possible to establish a service-level agreement for the service.

It is open to members of the amateur community, including amateur representative bodies, to form one or more amateur radio committees, and to do so without the involvement or endorsement of the ACMA.

We have made some updates to the FYSO to clarify the scope of implementation activities we will conduct in the 2022–23 period.

## **RNSS repeaters**

A submitter considered that the development of long-term licensing solutions for these devices should remain an ACMA priority.

### **Our response**

In 2022–23, we expect to consult on amendments to the regulatory status of a wider range of RNSS retransmission technologies as part of the review of banned equipment and exemption determinations. Subject to consultation on those proposed amendments, we will undertake a body of work involving licensing, pricing and technical arrangements for these and similar devices.

## **Pricing**

Several submitters raised pricing issues relating to licensing or allocation arrangements. Submitters supported the continuing implementation of the Spectrum Pricing Review.

### **Our response**

In concluding our implementation of the Spectrum Pricing Review, we have nominated some bands for further review, including the 2690–5 GHz frequency ranges. As mentioned in the draft FYSO, if our licensing and band planning reviews imply further pricing reviews are appropriate, this work will also be undertaken.