



**Australian
Communications
and Media Authority**

Five-year spectrum outlook 2024–29 and 2024–25 work program

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Foreword

The Australian Communications and Media Authority (ACMA) is Australia's spectrum regulator, responsible for managing the radiofrequency spectrum to promote the long-term public interest derived from its use. We consult annually about spectrum management priorities through the five-year spectrum outlook (FYSO) and annual work program. Before settling the final FYSO, we undertake public consultation as well as consultation with the Minister for Communications, as required by section 28F of the *Radiocommunications Act 1992*.

As detailed in our [Statement of Intent](#), we are working to support the Australian Government's objectives and priorities, including those outlined in the December 2022 Ministerial Statement of Expectations, such as enhancing regional connectivity and promoting investment, innovation and adoption of new and emerging technologies. We also have considered and contribute to, where possible, the government's policy priorities relating to Closing the Gap on digital inclusion for First Nations Australians, the commitment to Net Zero by 2050 and deepening engagement between Australia and the Indo-Pacific.

We continue to monitor international and domestic activity across multiple spectrum bands, to inform changes in the spectrum planning pipeline. In this FYSO 2024–29, 2 bands are being advanced in the planning process. We have moved the upper 6 GHz (6425–7125 MHz) band to the preliminary replanning stage and 1.9 GHz (1880–1929 MHz) has progressed to the implementation stage.

Following our work making the lower 6 GHz band (5925–6425 MHz) available for use by radio local area networks (RLANs), we have turned our attention to future arrangements in the upper 6 GHz band (6425–7125 MHz).

We are continuing to progress our suite of mid-band spectrum allocations to support a wide range of use-cases across Australia. In 2024–25, we expect to complete the final 2 of our 4 mid-band spectrum allocations. The mid-band allocations implement our planning outcomes, which are designed to support new wide-area, highly localised and restricted-cell wireless broadband (WBB) use-cases, while protecting incumbent and adjacent band users. The combination of different licence types (including area-wide licences (AWLs)) and geographic segmentation of the allocations is intended to support a wide range of WBB use-cases across regional, rural and remote Australia.

As many spectrum licences across different bands near expiry, a priority for us is progressing activities relating to licences due to expire between 2028 and 2032, many of which are used to support and deliver WBB services, as well as for rail safety and broadcasting purposes. The second stage of our expiring spectrum licence (ESL) process commenced in Q1 2024 and involved gathering information from incumbents and prospective users of the spectrum and seeking views on uses of bands as well as a range of licensing mechanisms. To support stakeholders, we extended and modified the Stage 2 process to include a 'reply-to-comment' process.

Since we consulted on the draft FYSO, the minister has consulted on and made the [Radiocommunications \(Ministerial Policy Statement – Expiring Spectrum Licences\) Instrument 2024](#) (the ESL MPS). The ESL MPS sets out 5 key communications policy objectives that the ACMA must have regard to as it designs and implements its process to

manage the future use of ESLs used for mobile and fixed WBB. The communications policy objectives in the ESL MPS have been incorporated into our ESL framework.

We are progressing the mobile satellite service (MSS) allocation, with a focus on the allocation of licences for MSS in the 1980–2005 MHz and 2170–2195 MHz bands. We are considering submissions to our consultation on technical design and allocation considerations to support MSS use in this spectrum. This follows our work to enable licences in the 2 × 5 MHz narrowband segment for Internet of Things (IoT) and narrowband uses.

We continue to support technology and service innovation in the satellite sector, particularly those with the potential to enhance regional development and connectivity, such as satellite direct-to-mobile handset services. We will continue to ensure regulatory arrangements and spectrum access for satellite communications will enable Australia to fully benefit from these new developments.

Our international engagement activities, including both our involvement in studies related to World Radiocommunication Conferences (WRCs) and ongoing International Telecommunication Union (ITU) and Asia-Pacific Telecommunity (APT) radiocommunication forums, are key parts of our work program. WRC-23 took place in late 2023 and we will be working on implementing outcomes including some new frequency allocations, service identifications, and regulatory and procedural matters across a range of services and applications, where appropriate. We are also committed to engaging with other spectrum and communications regulatory counterparts, particularly in the Indo-Pacific, to share information and ideas, to better cooperate and strengthen our relationships.

We are continuing our significant program of radio planning and allocation activities, informed and prioritised by our radio broadcast planning priorities, outlined in our [Future delivery of radio](#) report. These include AM to FM conversions in an expanded range of competitive regional markets and improving the coverage of existing services. We are also actively supporting trials of new broadcasting technology, including small-scale Digital Audio Broadcasting (DAB). We are finalising technical research to assist government deliberations about potential future changes to television arrangements and support possible future work on television channel replanning and licensing.

We are also continuing our staged program of work to bring radiocommunications equipment regulation into the equipment rules framework in Part 4.1 of the Radiocommunications Act. As part of that program, in Q2 2025 we intend to consult on including the regulation of electromagnetic compatibility (EMC) within the Radiocommunications Equipment (General) Rules 2021 (the General Equipment Rules).

Following stakeholder feedback, we committed in the 2023–28 FYSO to review the information paper, [Our approach to radiocommunications licensing and allocation](#) to ensure it is up to date and continues to be fit for purpose. We published a revised paper in June 2024, inviting comment by late August 2024.

We are always working to improve our regulatory processes and frameworks, and optimise outcomes for licensees and the public. This includes our work to review the large number of radiocommunications instruments due to sunset in this FYSO period.



Using the FYSO

The FYSO covers the 5 financial years 2024–25 to 2028–29. It comprises:

- [Part 1](#): an outlook of the drivers likely to shape the demand for spectrum over the next 5 years
- [Part 2](#): a detailed annual work program for the 2024–25 financial year.

For ease of interpretation, references to quarters are calendar year quarters:

- quarter 1 (Q1): 1 January to 31 March
- quarter 2 (Q2): 1 April to 30 June
- quarter 3 (Q3): 1 July to 30 September
- quarter 4 (Q4): 1 October to 31 December.

Where significant changes have been made to the draft FYSO consulted on, we have included a 'change' symbol: . If significant new material has been inserted, we have identified this with a 'new' symbol: .

Key to icons



Wireless broadband



Satellite



Class licensing



Internet of Things



Radio and television broadcasting



Amateur radio



Point-to-multipoint



Point-to-point



Defence



Aviation



Maritime



International interests and engagement



Pricing



Licensing considerations

Acronyms and shortened forms

AFC	automatic frequency coordination
AWL	area-wide licence (type of transmitter licence)
BLoS	beyond line-of-sight
CNPC	command and non-payload communication
ESL	expiring spectrum licence
FCC	United States Federal Communications Commission
FSS	fixed-satellite service
IMT	international mobile telecommunication
ITU	International Telecommunications Union
ITU-R	Radiocommunication Sector of the ITU
LoS	line-of-sight
MPS	Ministerial policy statement
MSS	mobile-satellite service
Ofcom	United Kingdom spectrum regulator
PMP	point-to-multipoint
PTP	point-to-point
RALI	radiocommunications assignment and licensing instruction
RPAS	remotely piloted aircraft systems
RRs	Radio Regulations
the Department	Department of Infrastructure, Transport, Regional Development, Communications and the Arts
TLG	technical liaison group
WBB	wireless broadband
WRC	World Radiocommunication Conference

Part 1: Five-year spectrum outlook 2024–29

Part 1 provides an outlook of the trends in markets, technology and spectrum uses that inform the ACMA's medium-term planning, allocation and re-allocation activities. It also provides a description of our approach to spectrum management.

Overview

Rapid development of communications technology and a diverse range of radiofrequency spectrum uses are shaping the way Australians stay connected. The public appetite for advanced connectivity and the ubiquity of radiocommunications devices across all of Australia's economic, social and public-interest activities are key factors driving the demand for spectrum. Against this backdrop, there is an increasing need to invest in network resilience and keep our critical data, systems, and infrastructure safe.

Our activities and spectrum management approach continue to focus on promoting the long-term public interest derived from spectrum and include activities to support government objectives and policy priorities.

The FYSO and spectrum management priorities are informed by domestic and international views about the timing of technology developments and progress in international harmonisation activities.

We consider Australian market information about demand for spectrum-dependent connectivity – such as connectivity facilitated by WBB, satellite and broadcasting – and existing spectrum use. Currently, demand for spectrum is driven by Australia's appetite for advanced connectivity, with IoT functionalities such as cloud and edge computing, clean-energy solutions and enhanced network capabilities being key technology trends. The desire for higher speed, lower-latency connections in particular is driving innovations, including in 5G/6-G,¹ Wi-Fi 6/6e/7, and satellite direct-to-mobile services with low Earth orbit satellites (LEOsats). Our work program enables us to help realise the benefits of these technological developments that enhance existing, or create new, use-cases and/or have the potential to improve spectrum use and efficiency.

The ACMA, the Department of Infrastructure, Transport, Regional Development, Communications and the Arts and Australian communications industry and other government stakeholders participate in international radiocommunications forums to promote and protect Australian interests in spectrum management, including spectrum harmonisation and international frequency coordination.

The peak international radiocommunications regulatory forum is the ITU's WRC, which reviews and revises the Radio Regulations (RRs) – the international treaty-level set of texts regarding use of the spectrum and satellite orbits. WRC-23 was held in late 2023 and considered possible new frequency allocations, service identifications and regulatory and procedural matters across a range of services and applications. Along with updating the Australian Radiofrequency Spectrum Plan 2021 (ARSP) to reflect changes to Article 5 of the RRs (subject to government ratification of the updated RRs), we will be implementing WRC-23 outcomes where necessary and appropriate.

Spectrum holdings directly influence an operator's network capacity, service quality and its potential for entry into new geographic markets, making it a significant determinant in an operator's competitive ability. The management and allocation of scarce spectrum resources, including the timing of major spectrum allocations and considerations relating to expiration of spectrum licences, can have a significant impact on the nature of competition in downstream

¹ Department of Industry, Science and Resources, [Critical Technologies Statement](#), Department of Industry, Science and Resources website, 2023, accessed 10 December 2023.

markets that rely on spectrum. Our spectrum allocation program and licensing processes are intended to promote the public interest by accommodating a wide range of spectrum use-cases and a diverse set of spectrum users.

Our approach to spectrum management

Our responsibilities to manage the radiofrequency spectrum are set out in the Radiocommunications Act and in the *Australian Communications and Media Authority Act 2005*.

The object of the Radiocommunications Act is to promote the long-term public interest derived from the use of the spectrum by providing for the management of the spectrum in a manner that:

- facilitates the efficient planning, allocation and use of the spectrum
- facilitates the use of the spectrum for:
 - commercial purposes
 - defence purposes, national security purposes and other non-commercial purposes (including public safety and community purposes)
- supports the communications policy objectives of the government.

Consistent with the object of the Radiocommunications Act, we aim to facilitate efficient spectrum planning, allocation and licensing arrangements in each band for the use or uses² that best promote the long-term public interest derived from the use of that spectrum. We promote the object of the Radiocommunications Act and relevant government policy through a balanced application of market and regulatory mechanisms.

In assessing the impact that a regulatory proposal has on the public interest, we consider the overall effects on individuals, businesses, government users of spectrum and community organisations, as well as the broader economic, social and competition impacts. This approach aligns with the government's Policy Impact Analysis Framework that ensures that policy options are well designed, well targeted and fit-for-purpose. We consider:

- what is the issue we are trying to solve and what data is available?
- what are the objectives, why is government intervention needed to achieve them, and how will success be measured?
- what policy options are we considering?
- what is the likely net benefit of each option?
- who should we consult, and how?
- what is the best option of those considered and how will we implement it?
- how will we evaluate our chosen option against the success metrics?

In responding to these questions, we draw on a variety of evidence, including technical studies, stakeholder views and quantitative data, where available.

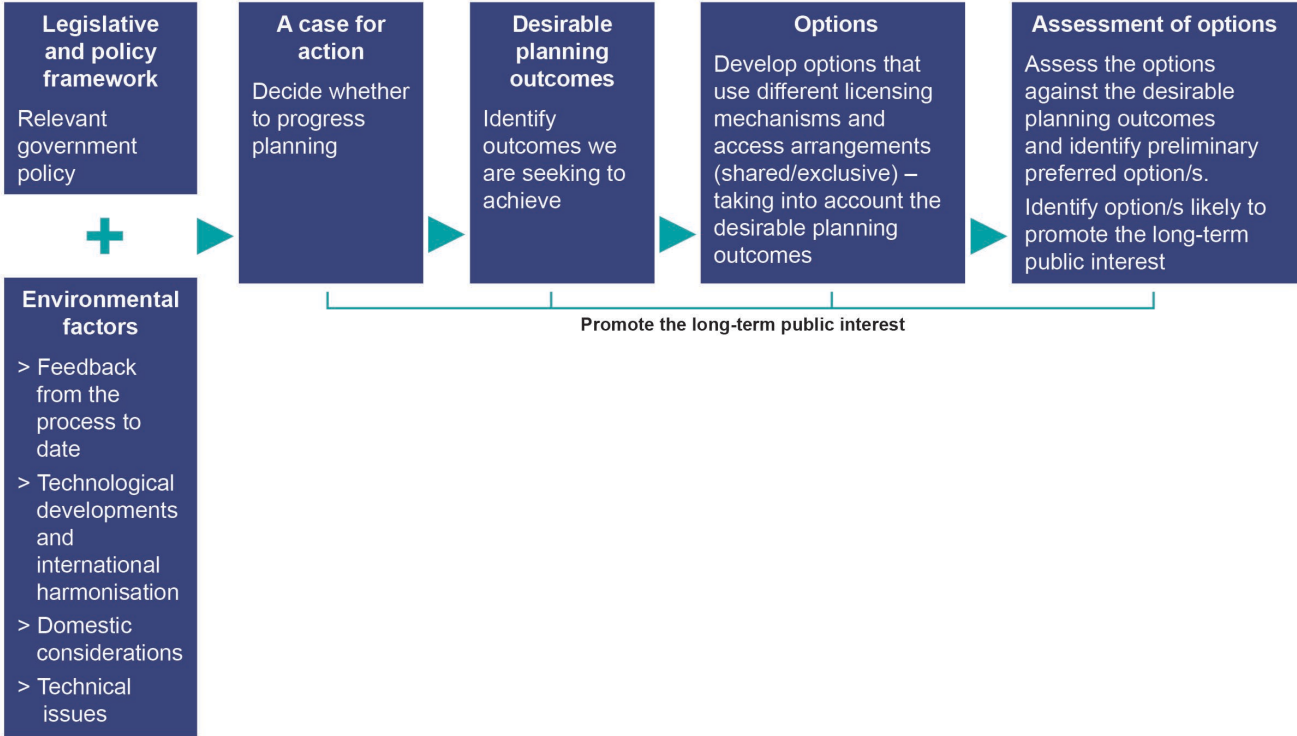
Through the FYSO and other consultation processes, we consult on our work-program priorities, as well as issues and options relating to specific planning, licensing and allocation processes. We seek input through a range of mechanisms and provide outcome statements

² 'Uses' refer both to the general types of use such as a service (for example, the mobile service) and more specific applications within a service (for example, WBB within the mobile service).

that explain the basis for our decisions. These are often iterative processes, reflecting multiple rounds of consultation.

Figure 1 describes the approach the ACMA takes in developing and assessing planning and replanning options.

Figure 1: The spectrum planning options framework



Spectrum planning comprises the investigations and decisions that determine general service and application-level uses of the spectrum. This includes developing the technical frameworks that establish co-existence arrangements between different uses and users, and heavily influences the ‘licensing product’ that will authorise access to the band. It also includes determining the most appropriate licensing mechanisms to apply in each situation.

To the extent possible, planning arrangements are intended to allow the allocation (or movement) of spectrum with no, or minimal, further regulatory intervention. Planning arrangements may remain stable over long periods; however, where there is evidence of changing optimal use, it may be necessary to amend the arrangements to enable a new use or better support an existing use. Reviewing spectrum planning arrangements in any band is a key step to ensuring they continue to support optimal use.

The band-planning process is made up of 4 stages: monitoring, initial investigation, preliminary replanning and implementation. This approach has proven to be a flexible and responsive way of addressing changes in spectrum demand and ensuring the timely delivery of spectrum to market.

We note that planning outcomes have implications for decisions on licensing and future allocations. For example, planning outcomes will determine the type of user likely to be interested in an allocation by determining which uses are permitted and which are not. In addition, to achieve the most efficient use of the spectrum, the interference management

framework is often optimised for an expected use, even if such use is not mandatory. As an example, while spectrum licences may be ‘technology flexible’ in that they do not explicitly preclude any use, they are designed and optimised with a likely technology in mind to maximise the efficiency of these licences for their expected use, consistent with co-existence requirements of other spectrum uses/users.

The spectrum management framework we use does not identify specific quantitative metrics or targets for spectrum required for a particular use or group of users. The models used to estimate such spectrum targets are highly sensitive to inputs and variables, which are difficult to predict beyond the short- to medium-term. While long-term estimates are useful as a guide for trend analysis, they are less so for determining specific spectrum targets.

The choice of approach to allocating spectrum depends on a range of factors, such as the characteristics of the spectrum to be allocated, the expected type(s) of use and the anticipated demand for the spectrum.

If significant excess demand is likely, auctions are usually preferred. While we have flexibility to use a variety of auction formats as appropriate, our most recent spectrum auctions have been conducted using a ‘2-stage clock auction’ format.

Administrative allocation approaches are used when that approach will best meet spectrum management objectives. While most of our apparatus licences are offered via a simple ‘over-the-counter’ approach, where appropriate, we use an ‘allocation window’ approach to allocating specific licence-types. An allocation window allows a staged approach to considering applications, depending on whether there are competing applications and sufficient spectrum to fulfil all applications.

The other key licensing mechanism used is class licensing. This approach is used in Australia to implement less-closely-managed spectrum arrangements,³ including ‘spectrum commons’.⁴ It allows spectrum users to use spectrum under specified rules outlined in class licences. They make available spectrum for use by services that operate on a limited set of common frequencies under a common set of conditions and often must comply with industry or legislative standards. Class licences do not involve licence taxes or charges, and there is minimal regulatory overhead for spectrum users. While most class licences offer ubiquitous access, exceptions exist for access to certain classes of use/user (for example, the Radiocommunications (Public Safety and Emergency Response) Class Licence 2023 authorising public safety agencies access to the 4.9 GHz band).

To provide clarity to stakeholders on our approach to licensing and allocation decisions under the legislative reforms that began in mid-2021, we released a [guidance document](#) in March 2021. As a priority in our 2023–24 annual work program, we revised this document to ensure it is up to date and continues to be fit for purpose. We published a revised paper in June 2024 and invited comment.

Lastly, we also implement technology flexible frameworks where practicable to promote innovation and the adoption of new and emerging technologies. This includes our [innovation and industry exemption framework](#), which was an outcome of our broader review of the banned equipment and exemptions framework. Another review outcome will be the ability to

³ M Cave and W Webb, *Spectrum Management*, Cambridge University Press, Cambridge, 2015.

⁴ Spectrum commons refer to the idea that anyone can use spectrum in the spectrum commons, as long as they follow the set rules. In Australia, those rules are set out in class licences.

potentially authorise use of a wider range of complementary radionavigation-satellite service (RNSS) technologies.

The policy environment and regulatory reform

The object of the Radiocommunications Act includes managing spectrum in a manner that supports the communications policy objectives of the government. Our work program is informed by the policy environment in which we operate and expectations from government.

Our work plan aims to support government communications and media objectives and priorities including, as outlined in the December 2022 [Ministerial Statement of Expectations](#) from the Minister for Communications, the Hon Michelle Rowland MP (the Minister):


- promoting the long-term public interest derived from spectrum, including the benefits of technological developments that improve spectrum utilisation and efficiency
- supporting government policies related to regional, rural and remote Australia including by having regard to relevant ministerial policy statements in the planning and allocation of spectrum to support innovation and competition in these areas
- promoting investment, innovation and the adoption of new and emerging technologies, while continuing to safeguard the interests of consumers and small businesses.

We also consider and contribute to, where possible, the government's policy priorities regarding:

- First Nations Australians and meeting the Closing the Gap targets
- the commitment to Net Zero by 2050 and the role that digital infrastructure and services can contribute to this objective
- deepening people-to-people links and cooperation between Australia and the Indo-Pacific.

For decisions related to the 3.4–4.0 GHz band, we are required by section 28C of the Radiocommunications Act to have regard to a Ministerial policy statement (MPS) issued in February 2022 by the then Minister for Communications, Urban Infrastructure, Cities and the Arts, the Hon Paul Fletcher MP. The [Radiocommunications \(Ministerial Policy Statement – 3.4-4.0 GHz\) Instrument 2022](#) (the 3.4 GHz MPS) specifies 4 objectives:

- supporting the deployment of new and innovative technology, including 5G
- supporting a range of use-cases and users
- supporting digital connectivity and investment in regional Australia
- promoting competitive markets.

 In December 2023, the minister wrote to the ACMA Chair, advising of her intent to consult on and consider whether to issue a new MPS, relating to ESL. The minister subsequently consulted on and, in April 2024, made, the ESL MPS, which applies to ESL spectrum used for mobile and fixed wireless broadband. We have integrated the policy objectives contained in the MPS into our ESL framework, and we must have regard to the ESL MPS as we design and implement our ESL process. In her December letter, the minister also indicated that she intends to repeal the 3.4 GHz MPS following the conclusion of our current mid-band allocation processes.

We are committed to meeting our objectives in the context of the government's broader media and communications policy framework. In our [Statement of Intent](#), we responded to the government's Statement of Expectations for the ACMA.


We showed that we will address these priorities through:

- publishing the FYSO each year, to provide a roadmap for spectrum releases and support new spectrum uses
- supporting technology trials and innovation, including through innovation and industry development opportunities in Australia for manufacturing banned equipment, where publicly beneficial; as well as innovation through the greater use of digital technologies targeted at reducing the regulatory burden for industry
- supporting opportunities for better telecommunications services in regional and remote Australia through our spectrum and licensing allocation processes and supporting innovations to improve service delivery, including by the rapidly emerging satellite sector
- participating in WRC meetings, including Study Groups and Working Parties to realise the benefits of wireless and satellite technology developments for Australia
- contributing our expertise to the government's work on modernising the media's regulatory environment for a contemporary Australia.

Regional connectivity

The [State of Australia's Regions 2024 report](#) noted the importance of digital connectivity to facilitate accessibility and keep people and communities connected. The Australian Government is committed to improving regional connectivity through targeted investment intended to expand mobile coverage in under-served regional and remote communities. Its \$1.1 billion [Better Connectivity Plan for Regional and Rural Australia](#) includes \$656 million over 5 years to improve mobile and broadband connectivity and resilience in rural and regional Australia. In addition to improving communications through the [Regional Connectivity Program](#), this investment will increase the resilience of communications services and public safety communications facilities and also accelerate Australia's agricultural sector through the [On Farm Connectivity Program](#). The Better Connectivity Plan also includes \$480 million provided to NBN Co through the NBN Fixed Wireless and Satellite Upgrade Program. This complements the \$1.1 billion being invested in full-fibre NBN upgrades in regional Australia, which is part of the wider Government commitment to invest \$2.4 billion upgrading the NBN.

A key priority in support of this objective is our program of allocating additional spectrum for a range of WBB uses, and we have completed 2 out of 4 allocations of mid-band spectrum in the 3.4–4.0 GHz band. By offering geographically disaggregated spectrum and apparatus licences through 4 allocation processes, we are providing multiple opportunities for interested parties to secure spectrum and supply innovative 5G services to regional and remote Australia.

 Connectivity and investment in regional and remote areas to deliver improved services to end users is one of the 5 communications policy priorities set out in the ESL MPS. The MPS also notes that we should consider whether LEOsat technologies may contribute to maximising the long-term public interest, including how spectrum can improve connectivity in regional areas and support inter-operability between terrestrial services and satellite services.

Resilient communications

The Australian Government is consulting with industry to explore the implementation of a temporary emergency mobile roaming capability aimed at maintaining connectivity for Australians during natural disasters. This follows the Australian Competition and Consumer Commission's (ACCC) [Regional Mobile Infrastructure Inquiry final report](#) outlining key challenges when it comes to providing reliable, accessible and resilient communications in regional Australia. The inquiry examined the feasibility of providing mobile roaming during natural disasters and other emergencies in Australia. The ACCC found that temporary emergency roaming was technically feasible, though further work was needed to design and develop the capability. Coordinated efforts between government and mobile network operators would also help mitigate risks such as network congestion. The report will help inform the Australian Government as it considers future actions building on the work already underway as part of the [Better Connectivity Plan for Regional and Rural Australia](#).

CHANGE In her December 2023 letter to the ACMA regarding ESLs, the minister also asked the ACMA to seek feedback from stakeholders on issues around resilience and temporary disaster responses in the context of spectrum licences and their renewal. We sought this feedback as part of our ESL Stage 2 process and will provide it to the minister alongside advice on a range of licensing conditions including ESLs.

Closing the Gap

We continue to support telecommunications access, broadcasting and media-related initiatives that are intended to help close the gap on digital inclusion and support Target 17 of the National Partnership Agreement on Closing the Gap: to achieve equal levels of digital inclusion for Aboriginal and Torres Strait Islander people by 2026, and ensure Aboriginal and Torres Strait Islander people have access to information and services enabling participation in informed decision-making regarding their own lives.⁵

The [Mapping the digital gap: 2023 outcomes report](#) provides a baseline to track progress toward Target 17 and identified key barriers and enablers to meet this target.⁶ It found a considerable digital gap between First Nations people and other Australians across 3 dimensions of digital inclusion – access, affordability and digital ability – as well as the crucial role of service delivery and news and media access in these communities.

The [First Nations Digital Inclusion Advisory Group's initial report](#) outlined positive steps made towards narrowing the digital divide for First Nations people. The group's report, informed by extensive engagement with stakeholders and First Nations Communities, recommended practical measures to support greater digital inclusion in line with Target 17.⁷ Some practical measures relevant to our work include planning and licensing broadcasting services targeted towards Aboriginal and Torres Strait Islander people, including in remote Indigenous communities.

We will continue to support the work of other government agencies to deliver the suite of actions to improve digital inclusion for First Nations people as outlined in the [First Nations](#)

⁵ We are committed to reconciliation and released our inaugural Reconciliation Action Plan (RAP) in August 2023. The plan was endorsed by Reconciliation Australia and outlines our commitment to reconciliation between First Nations and non-Indigenous peoples. It identifies clear actions and realistic targets within the ACMA to gain and advance reconciliation.

⁶ The Mapping the Digital Gap project was undertaken by RMIT University as part of the Australian Research Council (ARC) Centre of Excellence for Automated Decision Making and Society (ADM+S) in partnership with Telstra.

⁷ These practical measures are: 1) investing in infrastructure so that all communities have equitable access 2) ensuring that First Nations people are able to afford reliable internet services whether fixed line, satellite or mobile 3) supporting all First Nations people to have the skills to access the internet safely and effectively.

[Digital Inclusion Plan](#). This plan provides strategic guidance for government agencies to work in partnership with First Nations people to enhance opportunities for participating in the digital world.

The Mobile Black Spot Program (MBSP) is a government initiative that invests in telecommunications infrastructure to improve mobile coverage across Australia. In December 2023, the government announced the outcomes for Round 7 of the MBSP and [Round 3 of the Regional Connectivity Program](#) with \$170.2 million in funding awarded for 136 mobile and broadband projects across Australia. As part of this announcement, \$55 million through Round 7 of the MBSP was awarded to deliver [62 new mobile stations](#). This includes \$13.6 million for 19 new base stations located in First Nations communities, which will deliver new and improved mobile coverage to these communities and improve highway coverage.⁸

The online Regional Tech Hub is an independent service to help regional, rural and remote Australians get and stay connected, and make the most of new technologies. The Regional Tech Hub, an Australian Government initiative, is a free service, delivered by the National Farmers' Federation in partnership with the Australian Communications Consumer Action Network. It was awarded \$916,000 in funding under the Regional Connectivity Program and a further \$6 million has been committed under the Better Connectivity for Rural and Regional Australia Plan.⁹

CHANGE Community broadcasting licences allow licensees to provide broadcasting services on a not-for-profit basis for services that represent a community interest. Community broadcasting services are important to meet the objectives of the [Broadcasting Services Act 1992](#), and aim to promote a diverse range of broadcasting for the Australian public, develop and reflect Australian identity, character and cultural diversity and provide local content. As of October 2024, there are 153 community broadcasting radio licensees that represent either Indigenous or Torres Strait Islander community interests. We are working with the Productivity Commission to provide data on First Nations community broadcasting to support the Closing the Gap dashboard, and we provide advice to the National Indigenous Australians Agency on the licensing of First Nations broadcasting services.

The ACMA is participating in the Remote and Regional Television Transmission and Reception Audit, led by the Department. The audit is seeking to identify and quantify the gaps and deficiencies in television transmission and reception infrastructure in remote and regional areas of Australia, particularly in First Nations communities. This is intended to support ongoing access to high quality broadcast television services for these communities.

Similarly, our development of an [area-wide licence](#) (AWL) type is an innovative approach to apparatus licensing. It is designed to enhance the flexibility and adaptability of spectrum regulation and facilitate new or expanded uses for spectrum. The AWL regulatory framework is intended to provide licensees with 'building blocks' to support a wide range of spectrum uses, network types, and service and technology uses. Notably, the AWL type authorises radiocommunications transmitters within a specified area, rather than at specific location(s). This can facilitate and encourage the provision of mobile broadband and/or satellite services

⁸ Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), [Mobile Black Spot Program](#), n.d., DITRDCA website, accessed 4 March 2024.

⁹ Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), [Regional Tech Hub](#), n.d., DITRDCA website, accessed 4 March 2024.

to First Nations people who live in regional and remote communities and improve connectivity in these locations.

CHANGE As noted in our [ESL finalised framework and response to submissions paper](#) (December 2023), spectrum, along with communications technologies, is an enabler of digital inclusion. Considering how incumbent or alternative uses for and users of the spectrum can facilitate opportunities for regional, rural and remote connectivity is a way that we, as the spectrum manager, can contribute to connectivity outcomes for First Nations Australians.

Additionally, we continue to monitor and consider our international counterparts' new spectrum management activities to support First Nations communities. We invite comment from First Nations people and communities on how we can continue to improve our spectrum management approaches to help close the gap.

Net zero emissions

The Australian Government is committed to achieving net zero emissions by 2050. Efficient use of spectrum can help reduce emissions in a variety of ways. In general, sound spectrum management contributes to lower emissions by enabling optimal network topologies, which help minimise infrastructure builds and materials, for example. More specifically, spectrum management outcomes that directly enable critical technologies will further help us achieve this commitment.¹⁰

For example, smart technologies (also sometimes referred to as smart Information and Communication Technology (ICT) solutions) can be used to reduce emissions within industry settings, monitor energy use and manage resources, which can increase energy and operational efficiencies through smart technology.¹¹ These technologies may require access to spectrum across a number of bands for a variety of IoT applications, including wireless monitoring, telecommand and radio-frequency identification.

A study by [Ericsson](#) reports that smart ICT solutions have the potential to reduce global emissions by up to 15% through smart technology use in sectors such as transport, energy and agriculture. In the agriculture space, several entities utilise 5G to enable digital innovations in Australian agriculture. This includes networking of IoT devices to assist with automating farming equipment and applications.

We continue to assist in the development of new standards for the transport sector and emerging aviation sector to improve safety, provide for future technologies and improve regulatory efficiency. We continue to work with the Department and other government agencies in this evolving sector.

Spectrum is an important enabler of connected and automated vehicles (CAVs). The Department (through the Office of Future Transport Technology), state and territory road agencies, Austroads and the National Transport Commission, is revising the [National Policy Framework for Land Transport Technology](#) and, in late 2023, consulted on a draft National Road Transport Technology Strategy (which, if approved, would replace the national policy framework) and the associated draft 2024–27 action plan. The policy framework, draft strategy and action plans foster an integrated approach to the development and adoption of

¹⁰ Department of Industry, Science and Resources, [Critical Technologies Statement](#).

¹¹ Samsung spin-off company, [SOLUM](#), reports that industries have implemented measures using IoT-enabled systems to reduce their carbon footprint, including for lighting, heating and cooling, switching to a paperless environment, as well as for automated services and supply chain management networks.

emerging transport technologies, with a particular focus on vehicle connectivity and automation technologies, including cooperative intelligent transport systems (C-ITS). A report provided to and released by the Department estimated that by 2050 CAVs would result in fuel reductions worth \$6 billion and greenhouse gas emissions reductions worth \$1 billion.¹²

Spectrum is also critical to meteorological applications such as climate and weather monitoring services, as well as scientific applications for earth observation, including climate change modelling. Government agencies, such as the [Bureau of Meteorology and CSIRO](#), use spectrum when monitoring, analysing, predicting and communicating changes in Australia's climate.

With rapid technological advancements, we are increasingly looking at how spectrum can be used to support more efficient communications energy use¹³ and climate initiatives. This includes monitoring international regulatory counterparts' innovative uses of spectrum to reduce emissions,¹⁴ and evaluating their suitability in an Australian context.

Broadcast spectrum developments

The government has outlined a [range of objectives for broadcasting and media reform](#), which aim to strengthen Australian media outlets and provide equitable access to media services and content to all Australians. We contribute to a range of government broadcasting initiatives to support these objectives including being an associate member of the Future of Broadcasting Working Group, which was established in early 2022 to provide a forum for industry and government to consider future broadcasting technologies and related reforms.

We are also undertaking technical research as part of the government's Television Research and Policy Development Program. The program was set up to give the government and industry technical and market information to make choices on the future of free-to-air television services in Australia. To date, we have commissioned research on the performance of television receivers and conducted a television viewer antenna survey.

International engagement

The ITU's WRC-23 was a key part of our 2023–24 work program. Preparing for and attending WRC-23 was a strategic priority for the ACMA and a significant number of staff were involved in this activity. WRC-23 was held in Dubai, in the United Arab Emirates, from 20 November to 15 December 2023. At WRC-23, we considered possible new frequency allocations, service identifications, and regulatory and procedural matters across a range of services and applications.

The conclusion of WRC-23 marks the start of the next 4-year study cycle, which will culminate with WRC-27. We will continue to engage in domestic and international forums during this study cycle, including ITU Radiocommunication Sector's (ITU-R's)

¹² The Centre for International Economics (CIE), [The Economic Impacts of Connected and Automated Vehicles](#), CIE website, 2021, accessed 10 December 2023.

¹³ For example, Nokia's [Digital Design for Energy Efficiency](#) aims to reduce energy waste caused by unnecessarily high radio power levels. The approach is centred on considering a network's individual cells in terms of interference, load, and beam-set configuration to produce an optimised configuration, resulting in lower transmit power that reduces the carbon footprint without impacting the network performance.

¹⁴ For example, [Ofcom](#), has taken steps to support the UK Government's Net Zero targets, including adopting a new environmental policy, obtaining [ISO14001:2015](#) accreditation (Environmental Management System), and creating a Green Champions Network.

business-as-usual program of work. We lead Australia’s engagement in non-treaty level forums, such as the ITU-R Study Groups and the APT Wireless Group (AWG).

The Department leads Australia’s delegation to and participation in WRCs, and we provide expert technical, regulatory and strategic advice to the Department and lead Australia’s engagement in technical radiocommunication forums. We coordinate the 6 Australian Radiocommunication Study Groups (ARSGs) – groups of experts in the work of their respective ITU-R Study Groups – that help to form Australian positions on issues considered at the regional (Asia-Pacific) and international level.

Spectrum management system

CHANGE The ACMA has selected Spectrum Center Inc. to develop and support a modernised spectrum management system to replace the current Spectra system. This system will allow us to continue to effectively manage the more than 170,000 licences held across Australia. The government committed \$26.28 million over 5 years for a new spectrum management system and ongoing auction capability, supported by approximately \$1.45 million in ongoing funding from 2026–27. The initial deployment of the new system is planned for late 2025.

Ongoing regulatory improvements

We are working to bring radiocommunications equipment regulation into the equipment rules framework. As part of this work, we made the General Equipment Rules, which replace standards and labelling notices, allow the ACMA to issue permits for possession, operation or supply of non-standard devices and/or unlabelled devices, and regulate the supply of cellular mobile repeaters. Consultation on the regulation of EMC will be part of this work.

We are also progressing an extensive sunseting work program as a large number of legislative instruments sunset over 2024–25 and 2025–26. See [Appendix A: Sunseting instruments](#) for more details.

Market and technology drivers of change in spectrum demand

Advanced connectivity, delivered via 5G wireless broadband (WBB), wi-fi and LEOsats, is of increasing interest in the Australian communications market. Key technology trends such as cloud and edge computing, clean-energy solutions and enhanced network capabilities are driving data intensive communications and shaping spectrum demand by wireless and satellite communications.¹⁵

In the short term, heightened demand for new technologies, (along with the global adoption of IoT and connected services)¹⁶ has resulted in a shortage of semiconductors that form the basis of what are commonly known as ‘chips’. This has affected the development and distribution of various new and emerging radiocommunications technologies in the Australian market.

In the remainder of Part 1, we focus on priorities for particular spectrum uses and the demand for spectrum that is being shaped by the evolving technologies and market drivers.

Wireless (mobile and fixed) broadband

Overview

In planning for future spectrum demand, we generally recognise 3 broad categories of WBB use-cases, outlined below, and note that network deployments may reflect combinations of these categories:

1. Wide-area subscriber networks, served by ubiquitous base stations operated by one or more service providers – this category could be considered ‘conventional’ telecommunications carrier fixed or mobile broadband operations.
2. More limited market subscriber networks over smaller, localised areas, including, but not limited to, fixed WBB and fleet-oriented services. Services provided by wireless internet service providers are an example of this type of use.
3. Business, government or non-commercial enterprise services operated or controlled by an entity within the confines of their own premises or land estate – for example, a hospital, education precinct or an industrial, mining or transport facility. These private networks are usually best aligned with either class licensing or local area apparatus-licensing approaches and can use the access arrangements and bands identified above in the context of fixed wireless access. These applications are sometimes referred to as ‘P5G’ when enabled by 5G technologies or ‘pLTE’ when it uses LTE.

We anticipate that growing need for data will drive spectrum demand for 5G uses. Reviewing arrangements for access to bands already licensed for WBB is important to ensure existing allocations are efficient and can cater for new technology developments, such as 5G. This has to be balanced with the need to manage interference with other licensed services. Our work program includes projects that consider optimising existing planning frameworks and

¹⁵ M Chui, R Roberts and L Yee, [McKinsey Technology Trends Outlook 2022](#), McKinsey website, 2022, accessed 23 March 2023.

¹⁶ The [World Economic Forum](#) predicts that by 2025 there will be an estimated 30 billion connected devices.

have resulted in mobile network operators deploying 5G (or being in the process of) in existing spectrum holdings.

Our planning, allocation and licensing activities seek to support a range of regional communications use-cases and users. This is particularly relevant for WBB services, where there are multiple types of service offerings, users and deployment models, resulting in a diverse range of spectrum needs in regional Australia.

A large number of spectrum licences that facilitate WBB services will expire over 2028–32. We have a dedicated workstream to manage the statutory and policy processes associated with these expiring spectrum licences (ESL), which include licences in the 700 MHz, 850 MHz, 1800 MHz, 2 GHz, 2.3 GHz, 2.5 GHz, 3.4 GHz bands, and the 2.5 GHz mid-band gap.

We brought forward the first milestone in the ESL process by responding to submissions and finalising the ESL framework in December 2023. Stage 2 of the ESL process commenced in Q1 2024 and involves gathering information from incumbents and prospective users of the spectrum about their current future, and proposed alternative, use of bands covered by ESLs. Stage 2 will also involve seeking views on uses of bands, as well as a range of licensing mechanisms identified by the minister in her [December 2023 letter](#) to the ACMA Chair.

We are reviewing arrangements for the 1800 MHz band in remote areas for fixed and mobile WBB services and progressing replanning the 1.5 GHz and 1.9 GHz bands.

In line with WRC-27 agenda item 1.7, we will also undertake studies towards possible IMT identifications in the 4400–4800 MHz frequency band, parts of the 7125–8400 MHz and the 14.8–15.35 GHz frequency bands.

5G/6G

We expect to see increased refarming of existing 3G/4G spectrum holdings to support future 5G deployment across a wide range of bands, increasing its accessibility and capacity to support data demand.

The capabilities of 5G have resulted in increased use and interest in deploying 5G for fixed or nomadic wireless access (FWA) applications by existing mobile network operators, dedicated FWA operators and private network operators. The emergence of non-traditional use-cases is a key input to our planning and allocation processes.

Standardisation work for 6G has begun and we will continue to monitor developments in 6G technologies, with a focus on relevant implications for spectrum management.

Wi-Fi 6/6e/upper 6 GHz

Radio local area network (RLAN) technologies, in particular wi-fi, have become an integral part of everyday modern life and wi-fi use continues to expand, with more diverse devices using these networks.

To meet connectivity demand, 5G and Wi-Fi 6 are predicted to work in conjunction.¹⁷ Wi-Fi 6 provides high-performance indoor coverage, with data transmission of up to 9.6 Gbps (about 3 times faster than Wi-Fi 5) and a significant reduction in latency.

A growing number of countries have already made, or are in the process of making, arrangements to facilitate operation of RLANs in the 6 GHz band, mainly to enable the use of next generation wi-fi equipment, known as 'Wi-Fi 6e'. We have taken steps to support uptake of Wi-Fi 6e by [making changes to the low interference potential devices \(LIPD\) class licence](#) to allow RLAN equipment in the lower part of the 6 GHz band (5925–6425 MHz) in Australia.

There is also strong interest in the potential future use of wide-area WBB in the upper 6 GHz band, as well as potential expanded RLAN use in the upper band to support evolving wi-fi technologies. In particular, an outcome of WRC-23 was an identification for IMT from 6425–7125 MHz in Region 1 and 7025–7125 MHz in Region 3. It is clear that there is significant domestic interest in the upper 6 GHz band from both the RLAN and wide-area WBB sectors. Both potential use-cases, along with incumbent use-cases, have significant merit, and our consultation on potential expanded use of the band generated robust discussion.

CHANGE We held a spectrum forum (known as a 'spectrum tune-up') in February 2024 and released a [consultation paper](#) in June 2024 examining existing and potential future uses of the upper 6 GHz band and canvassing a range of planning options for the band. We aim to release our planning decisions for the upper 6 GHz band in Q4 2024. Depending on the nature of those decisions, further consultation on licensing arrangements and conditions may be needed.

Private networks

Private networks are one potential means for enterprises to access spectrum that is better suited to their business needs than that available on public wireless networks. Following the early uptake of private networks by the construction and mining sectors, we are beginning to see uptake in a range of other sectors in Australia, including agribusiness, transport and logistics, and utilities.

We anticipate there will be increasing industry interest in deploying private networks using 5G technology to take advantage of new market opportunities and potential applications. Our allocation of millimetre wave (mmWave) spectrum in the 26 and 28 GHz bands, and 3.4–4.0 GHz mid-band spectrum allocations can be used to support private networks, among other use-cases.

Spectrum bands supporting wireless broadband use

WBB (including 5G) uses spectrum across a wide range of frequency bands. This includes:

- 'low-band' spectrum below 1 GHz, specifically, bands traditionally used to provide wide area-coverage for WBB networks
- 'mid-band' spectrum between 1 GHz and 6 GHz, which is used to provide a combination of coverage and capacity for WBB networks
- 'high-band' spectrum, above 6 GHz, which includes the mmWave bands previously used for FWA and high-capacity hot spot coverage.¹⁸

¹⁷ Deloitte, [Wi-Fi: *Unsung, underexposed – and indispensable to the future of enterprise connectivity*](#), Deloitte website, n.d., accessed 15 March 2024.

¹⁸ mmWave bands span 30 GHz to 300 GHz (that is, a wavelength of 1 cm to 1 mm). However, in the current 5G context, mmWave bands span from around 24 GHz up to 86 GHz.

Each spectrum band identified for WBB (sub-1 GHz, 1–6 GHz, above 6 GHz) requires different planning considerations, due to the intrinsic features of the band (for example, propagation characteristics), as well as international regulations and standards, domestic policy, legacy planning and allocation arrangements, and other incumbency factors.

Low-band spectrum

In the medium term (that is, within this 5-year outlook period), we will focus on ESLs in the 850 MHz and 700 MHz bands that will expire in 2028 and 2029, respectively. We will also continue to engage with industry and government and monitor international developments around the 600 MHz band.


We are aware of continued interest in the use of sub-1 GHz bands, due to their propagation characteristics and equipment availability. These bands are particularly attractive for deploying WBB networks, including by regionally focused WBB providers and sector-specific providers.

There have also been recent requests to access sub-1 GHz bands for WBB use in underground mines. We considered the issue during our October 2022 consultation on new arrangements for low interference potential devices, but will not proceed with these proposed arrangements, due to limited support for such access. We encourage feedback on potential alternative regulatory options and/or frequency bands to enable these applications.

Mid-band spectrum

Work in the 3.4–4.0 GHz band follows the 3.6 GHz band auction held in 2018, as well as defragmentation work conducted in the 3.4 GHz band. We are utilising a variety of licence types and allocation methods to support a range of different users and use-cases in the 3.4–4.0 GHz band.

As outlined in our 2023–24 work program, we have been progressing allocations of spectrum across the wider 3.4–4.0 GHz frequency range in 4 separate processes:

- 3400–4000 MHz (remote areas): concluded our allocation of apparatus licences for remote areas.
- 3400–3575 MHz and 3007–3750/3800 MHz: completed the auction of spectrum licences in the band.
- 3800–3950 MHz (metropolitan and immediate surrounding areas), 3750–3950 MHz (other regional areas): released the *Applicant information pack* for licences in this band in February 2024. Stage 1 applications opened on 28 March 2024 and closed on 2 May 2024. We are finalising the process and licences are being issued.
-  3950–4000 MHz (regional and metropolitan areas), 3400–3475 MHz ('urban excise' areas): we will consult on technical and licensing arrangements for highly localised WBB services in Q4 2024. Subject to the completion of this process, we plan to invite licence applications in this band in 2025.

We have completed the [1.9 GHz band plan replanning arrangements consultation](#) process and will begin work on implementing changes to the band.

Consideration of the upper 6 GHz band for potential RLAN or WBB use-cases will be further progressed.



We are reviewing arrangements in the 1800 MHz and 2 GHz bands outside of spectrum-licensed areas.

A significant number of mid-band spectrum licences will expire between 2028 and 2032. Licences in 1800 MHz will expire in 2028, 2.5 GHz in 2029, 2.3 GHz and 3.4 GHz in 2030, and 2 GHz in 2032. As outlined above, decisions about the expiration and renewal of these licences form part of our ESL work program. As part of Stage 2 of our ESL process, which commenced in Q1 2024, we are engaging with incumbents and prospective alternative users on their current and proposed use of the spectrum covered by these bands.

In addition to these planning and allocation activities, we will continue to monitor several other bands for possible replanning for 5G WBB services.¹⁹

High-band spectrum

The 40 GHz and 47 GHz bands are of significant interest for both terrestrial 5G and satellite broadband services. We will consider global trends and local circumstances, including domestic and international take-up of mmWave 5G services, to determine whether replanning for possible 5G in the 40 GHz and 47 GHz bands is appropriate. We note that optimal spectrum management outcomes are likely to be achieved when both bands are considered simultaneously. We continue to invite comments on the likely demand for this spectrum in the near term in the Australian market.

We will also continue to monitor the 40 GHz, 46 GHz (mainly in Region 1 countries) and 47 GHz bands identified for IMT use at WRC-19 following the allocation of mmWave spectrum in the 26 and 28 GHz bands.

Emerging uses – immersive technology and use of terahertz frequencies

Over the next 5 years we expect increasing clarity around emerging areas of spectrum use for the connectivity requirements for immersive technology applications and use-cases for the terahertz frequencies (those above 100 GHz).

Immersive technologies allow for a virtual world of endless, interconnected communities where people (as their true-life self or avatar) can meet, work and play using virtual reality headsets, augmented reality glasses, smartphone apps or other devices. It is anticipated that this technology will drive additional demand for connectivity, data and reduced latency.²⁰

As outlined in our [March 2023 information paper](#), terahertz frequencies also have the potential to enable localised high-speed transfer of massive data volumes, including high-resolution images. Emerging and potential use-cases for spectrum in the terahertz range include applications for communications, sensing, and positioning and imaging. However, device development and commercial use-cases for terahertz spectrum are still in their infancy.

We will continue to monitor use-cases and regulatory developments overseas for these emerging areas of spectrum use.

¹⁹ See 'Bands being studied under WRC-23 agenda items 1.2 and 1.4' in the section on Monitoring, Part 2.

²⁰ For example, to deliver the future of the immersive technology and the kinds of applications and services currently predicted, as per [Ofcom's](#) research, it is envisaged that networks will need to be able to deliver latencies as low as 100µsec and require a variety of technologies, including 'fibre-networks, cellular-networks, wi-fi access points and satellites as well as a mixture of public and private networks and cloud-edge computing' (p. 27).

Satellites

We are continuing to witness rapid advancements in satellite innovation and connectivity. The ubiquity of satellite coverage means that satellite services both compete directly for coverage and readily plug the gaps in connectivity presented by terrestrial data networks, and new commercial satellite services will continue to emerge and evolve in response to the rising demand. As these trends continue, satellite communications are expected to play a pivotal role in shaping the future of telecommunications, providing connectivity in even the most remote corners of the globe.

The growing competition in the satellite communication sector has spurred innovation, prompting operators to explore novel technologies such as integration of artificial intelligence (AI) and machine learning, as well as optical communications for inter-satellite links. AI algorithms are being employed to optimise resource allocation, manage network traffic and enhance overall system efficiency. This approach helps satellites adapt to dynamic conditions, mitigating interference and improving data transmission.

Additionally, partnerships between satellite firms and terrestrial network operators are expanding, creating hybrid systems that enhance reliability and coverage (see below for more on satellite direct-to-mobile services). Further, the adoption of software-defined networking and high-throughput satellites has boosted the efficiency of satellite communications, catering to the increasing demand for data-intensive applications, including video streaming and cloud services.

These innovations and growth in satellite services are addressing the ever-growing demand for ubiquitous connectivity and data transfer across the range of satellite applications including communication, navigation and earth observation. Spectrum demand continues to increase accordingly, and Australia's spectrum management framework is well placed to accommodate it. We are continuing our work to support the satellite industry and ensuring Australian regulatory arrangements will allow us to use these new developments to their full potential.

Technological innovations, particularly in satellite communication services, could also assist in enhancing regional development and connectivity. Satellite operators are increasingly looking at how they can strengthen their capabilities in regional and remote areas, including through partnerships.²¹ Our work over the past few years to review and update arrangements has provided improved support for satellite services in the Ku- and Ka-bands. We have also introduced pricing changes to support the ongoing growth in satellite broadband systems in higher frequency bands. We also welcome innovations in direct-to-mobile satellite communications, noting the potential benefits such services may bring to a large, geographically dispersed nation such as Australia.

In October 2023, the US President and Australia's Prime Minister signed a space Technology Safeguards Agreement that supports new space-related commercial opportunities while providing the legal and technical framework to protect sensitive US space launch technology and data in Australia consistent with our shared non-proliferation goals.²² Negotiations towards a bilateral space framework agreement are underway, which is

²¹ Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) [Low Earth Orbit Satellite Working Group—2023 Chair's Report I](#), DITRDCA website, 24 April 2024, accessed 25 September 2024; DITRDCA [Analysis of Low Earth Orbit Satellites: Implications for Australia's agriculture and mining sectors I](#), DITRDCA website, 18 September 2024, accessed 25 September 2024.

²² Prime Minister of Australia, [United States-Australia Joint Leaders' Statement - Building an innovation alliance](#), Prime Minister of Australia website, 25 October 2023, accessed 17 March 2024.

expected to encourage further joint commercial investment across all sectors, including space situational awareness and commercial space stations.²³ We welcome views from industry on potential implications of this agreement for spectrum use in Australia.

CHANGE Facilitating opportunities for new entrants and use-cases, including for LEOsats, is one of the minister's policy objectives contained in the ESL MPS. In March 2024, as part of our ESL Stage 2 consultation, we sought detailed information from incumbent and prospective alternative licensees about how their current and proposed use of the spectrum could facilitate opportunities for new entrants and use-cases, including for LEOsats, that may reduce barriers to entry, and create entry points for new or emerging users or use-cases. We also asked stakeholders how LEOsats could contribute to promoting the long-term public interest, including how spectrum can support inter-operability between terrestrial and satellite services.

Satellite direct-to-mobile services

We continue to closely monitor developments that enable consumer mobile smartphones to communicate directly with satellite systems (direct-to-mobile services), as well as their supporting regulatory frameworks.²⁴ These developments, known as satellite direct-to-mobile services,²⁵ are in the early stages of maturity. Initially, they will allow some smartphones or those on certain networks to carry out limited communications with satellite networks – such as text or emergency messaging – as an option in rural and remote areas where there is no terrestrial mobile coverage. There is a lot of interest in these emerging capabilities, and the level of service that they can offer is likely to evolve over time. We will monitor developments in this space with a view to ensuring that our regulatory framework remains well positioned to accommodate these evolving service provisions.

CHANGE In the FYSO 2023–28, we committed to seeking stakeholder views on the suitability of Australian regulatory arrangements and spectrum access for satellite direct-to-mobile services. On 31 October 2023, we held an online stakeholder forum (known as a 'spectrum tune-up') where stakeholder views were canvassed on regulatory challenges and opportunities. We followed this with a formal consultation that closed on 31 January 2024. On 24 September 2024, in our response paper, we confirmed our view that International Mobile Telecommunications-based satellite direct-to-mobile services can be operated under Australia-wide spectrum licences without the need for further approval from the ACMA.²⁶ General guidance on the applicability of our existing regulatory frameworks to direct-to-mobile operation was also released.²⁷

2 GHz mobile-satellite services

We are working to introduce arrangements for mobile-satellite services in the 1980–2010/2170–2200 MHz bands in accordance with our January 2021 [Replanning the 2 GHz band \(1980–2010 and 2170–2200 MHz\) outcomes paper](#). As part of that work, in August 2022,²⁸ we made 2 × 5 MHz available for shared narrowband MSS, including

²³ [Space situational awareness](#) refers to keeping track of objects in orbit and predicting where they will be at any given time.

²⁴ For example, on 14 March 2024, the FCC finalised new arrangements to facilitate such systems. See [FCC Advances Supplemental Coverage From Space Framework](#), released 15 March 2024.

²⁵ Other common names for this type of satellite service include direct to handset (DTH), direct to cell or direct to satellite.

²⁶ See our consultation on [Satellite direct-to-mobile services: regulatory issues](#) and Regulatory guide: [Operation of an IMT satellite direct-to-mobile service](#).

²⁷ See our consultation on [Satellite direct-to-mobile services: regulatory issues](#) and Regulatory guide: [Operation of an IMT satellite direct-to-mobile service](#).

²⁸ See our consultation on [proposed licensing arrangements for 2 GHz narrowband mobile-satellite services and 28 GHz fixed-satellite services - consultation 46/2021](#).

telemetry, short messaging, and low-data-rate services such as satellite IoT applications. This arrangement aims to assist growth of the Australian space industry by enabling spectrum access with a low barrier to entry for innovative satellite applications. Apparatus licences have been issued to 4 satellite operators in this segment. We look forward to further interest in these arrangements from the narrowband MSS industry.

CHANGE We are continuing preparatory work to support the allocation of licences for MSS (including arrangements to provide support for terrestrial applications for mobile satellite licensees to supplement/extend their mobile-satellite service).²⁹ Consultation on technical matters was completed in February 2024, and consultation on allocation matters is planned for late Q4 2024 or Q1 2025. Subject to the findings of this consultation, we expect to start an allocation process in the first half of 2026.

Australian satellite filing procedures

We are considering submissions to our review of the procedures we use to assess requests to submit technical details of new satellite systems to the ITU.³⁰ With the procedures last updated in 2012, the review aims to provide a more flexible, contemporary approach that supports growth in the Australian space industry while meeting ACMA regulatory obligations. The review also explores environmental, policy and regulatory matters that might inform any future changes to our approach to satellite filing and the licensing of space-based communication systems.

Open RAN/Neutral hosts

Industry restructures are paving the way for operators to adopt different models for network deployment and management, including network sharing and passive infrastructure asset sales. Open RAN (Open Radio Access Network, also known as ORAN) is an emerging approach to network and infrastructure sharing. Standardisation of RAN elements allow for compatibility between a range of hardware and software elements, enabling telecommunications providers to integrate operating technologies from a variety of original equipment manufacturers. Using Open RAN technology can decrease rollout costs, open the market to other companies, help with rollouts to remote and regional areas, increase resilience of telecommunications networks and allow greater sharing arrangements during natural disasters.

The Australian Government continues to engage with international counterparts, including through the [Quad](#), a diplomatic partnership between Australia, India, Japan, and the US. The Quad will advance interoperability and security through a Memorandum of Cooperation on 5G Supplier Diversification and Open RAN. In September 2022, the government released a [joint statement](#) with the US Department of Commerce on resilience and security for 5G and Open RAN, reaffirming the commitment of the government agencies to develop and strengthen practical cooperation in open, interoperable, and disaggregated telecommunications approaches, including for testing-related activities for Open RAN. In February 2024, the governments of the US, Australia, Canada, the Czech Republic, Finland, France, Japan, the Republic of Korea, Sweden and the United Kingdom endorsed shared principles for the research and development of 6G wireless communication systems to support open, free, global, interoperable, reliable, resilient and secure connectivity.

²⁹ For example, extending coverage of a satellite network with terrestrial-based complementary ground component infrastructure or direct air-to-ground communications services (involving ground-based links to aircraft) to provide inflight communication services in 1980–2005/2170–2195 MHz.

³⁰ See consultation [Review of Australian satellite filing procedures](#).

While we are monitoring these developments closely – particularly relevant industry standards in terms of how they relate to use of the spectrum (such as those based on 3GPP specifications) – we have not yet identified any specific implications for spectrum management.

Spectrum sharing

Spectrum sharing in its traditional form is a core component of managing access to spectrum – all users ‘share’ the spectrum through coordinated access (by working around other users on a time, frequency and/or spatial separation basis) or by uncoordinated access, where interference potential is understood and accepted and/or mitigated by technology (for example, under the Radiocommunications (Low Interference Potential Devices) Class Licence 2015 (LIPD class licence). ‘Non-traditional’ sharing arrangements, most notably dynamic spectrum access regimes are also being considered, or implemented, internationally.

Spectrum sharing through careful planning and use of appropriate regulatory tools presents a unique opportunity to allow a diverse range of licensees to access spectrum and help foster greater levels of industry partnerships through different spectrum-sharing arrangements. These can have beneficial effects on the economies of some areas, such as regional and remote Australia.

We will continue to monitor innovations and advances in spectrum-sharing arrangements domestically and internationally.³¹ We also continue to encourage industry-led proposals of new approaches to spectrum sharing and remain open to discussing how spectrum-sharing arrangements could be best facilitated to meet the needs of different spectrum users.

Broadcasting services

600 MHz

The 600 MHz band is currently used by digital television services in Australia and is available for some services under the LIPD class licence.

Current television channel arrangements include spectrum inside and outside the 600 MHz band.

Planning decisions for the 600 MHz band will be guided by relevant government policy decisions. Making spectrum available in this band would require a further restack of television channels to yield a contiguous block of spectrum. We 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.

Planning radio and television services

Broadcasting services may be delivered using spectrum, including AM and FM frequencies (for radio), VHF, UHF and satellite frequencies. Evolving digital transmission technology and changes in viewer and listener behaviour are altering the modes of delivery and, consequently, changing the broadcasting demand for spectrum. For example, we are aware

³¹ International initiatives focused on spectrum sharing include the US regulator Federal Communications Commission’s [Enhanced Competition Incentive Program \(ECIP\)](#) and UK regulator Ofcom’s consultation on [Hybrid sharing: enabling both licensed mobile and Wi-Fi users to access the upper 6 GHz band](#). We are also aware of ongoing work in the US as outlined in the [National Spectrum Strategy](#) to pursue expanded opportunities for shared access to government-held spectrum through the exploration of a common spectrum management platform.

that some television broadcasters have been changing the video compression standard of some of their services from MPEG2 to MPEG4. In some areas, all the television services are now delivered using the MPEG4 compression standard.

We continue with a significant program of radio planning and allocation activities, informed and prioritised by our radio broadcast planning priorities, outlined in our [Future delivery of radio](#) report. These include AM to FM conversions and improving the coverage of existing services. We are also supporting trials of new broadcasting technology – in 2023, we licensed multiple trials of small-scale DAB+ technology and past trials have included DAB+, DRM for AM (DRM30) and DRM for FM (DRM+) technologies for radio.

We have expanded the AM–FM conversion program for commercial radio broadcasting services in regional areas to include competitive markets. FM conversion of AM services in regional areas has the potential to improve listener experience and support industry by delivering improved audio quality, reduced signal interference and lower costs for broadcasters. We are continuing to work with commercial AM licensees in solus and competitive regional radio markets to progress their requests for AM–FM conversions.

Spectrum for government requirements

Many public service entities require the use of spectrum, including federal and state agencies responsible for defence, national security, law enforcement, safety and emergency services. Scientific, meteorological and transport services also have unique spectrum needs.

For example, the Bureau of Meteorology is the third-largest spectrum holder, by frequency, in Australia, with many licences between 2 MHz and 100 GHz used to support a range of observing systems including active and passive sensors, fixed and mobile systems, and terrestrial to satellite services. Spectrum enables observations, forecasts, warnings, analyses and advice about Australia’s atmosphere, water, ocean and space environments, which assists Australians to manage and live safely and productively within their natural environment.

Government spectrum users typically operate within the same spectrum management framework as other users, although some government spectrum needs warrant additional considerations and regulatory arrangements. For example, a significant portion of Defence spectrum access is authorised under Defence apparatus licences, which can be issued in bands with certain footnotes ascribed in the Table of Allocations in the ARSP. These are commonly termed ‘Defence bands’. Similarly, bands accessed by Airservices Australia used for internationally harmonised aeronautical communications, navigation and surveillance services are set aside through ARSP footnotes.

In February 2023, the Department of Defence published the Defence Strategic Review 2023. This review aimed to provide a strategic assessment of investment in Defence capabilities to meet the nation’s security challenges through to 2033 and beyond. We will continue working closely with Defence’s Joint Capability Group (JCG) on ongoing access to spectrum to support a range of key capabilities, including Defence Strategic Review outcomes to ensure that Defence remains connected to securely communicate, collaborate and co-ordinate where and when it is required, including in the deployed, degraded and disconnected environment.

Defence is investing heavily into capability acquisition programs involving the delivery of new technologies. Many of these new projects³² will deliver spectrum dependant capabilities requiring spectrum access across various bands allocated to mobile, radiolocation, radionavigation, fixed and aeronautical.

Defence requires global connectivity through beyond-line-of sight high frequency and satellite communication. It is important that Defence have access to adequate spectrum to support these systems³³ including orbital resources. Some of these new capabilities are seeking access to higher frequencies such as Q and V bands to facilitate technology development. Defence is also facing increased demand for access to spectrum across traditionally used spectrum bands.

We are continuing to explore potential changes to licensing and standards arrangements for emergency service use of LMR portable and mobile terminals on maritime VHF channels outside emergency situations.³⁴

Artificial intelligence's role in spectrum management

The rise of AI presents a variety of new possibilities in the way Australians work and live. We are monitoring international developments on the use of AI in spectrum management. This includes a technical inquiry in August 2024, in which the US regulator, the Federal Communications Commission, will consider whether AI could improve data collection of data about commercial spectrum use to enable better spectrum management.

Just as the volume of data associated with AI might place increasing pressure on demand for spectrum, AI may itself present opportunities for enhancing how we manage access to spectrum. For example, as spectrum becomes more congested, using AI to collect and analyse data may lead to more opportunities for efficient spectrum use, such as new sharing techniques and greater coexistence among users and services. The UK regulator Ofcom is considering the potential for AI and machine learning to play a role in spectrum management by better enabling innovation in spectrum coexistence and sharing.

We will continue to monitor international use-cases, potential risks, opportunities and regulatory developments for these emerging areas of spectrum use and spectrum management.

³² Defence, [Projects](#), Defence website, n.d., accessed 17 March 2024.

³³ Defence, [Lockheed Martin to deliver Defence satellite communication system](#) [media release], Defence website, 3 April 2023, accessed 17 March 2024.

³⁴ Sections 49 and 196 of the Radiocommunications Act provide for operation and possession of unlicensed devices and causing interference to radiocommunications to deal with emergencies, respectively.

Part 2: 2024–25 annual work program

Part 2 provides information about the spectrum management work program that will be the ACMA's focus over 2024–25.

Overview

When we set our spectrum management priorities, we consider a range of relevant matters, including:

- domestic and international trends in spectrum uses
- developments in international spectrum harmonisation and technology standardisation
- evolution of communications technology
- the most cost effective and least restrictive approach to achieve policy objectives
- feedback received through consultation with stakeholders.

In response to these influences, we develop our detailed annual work program, which is outlined in Part 2. Work program activities are grouped under the following headings in accordance with the ACMA's spectrum management functions and powers:

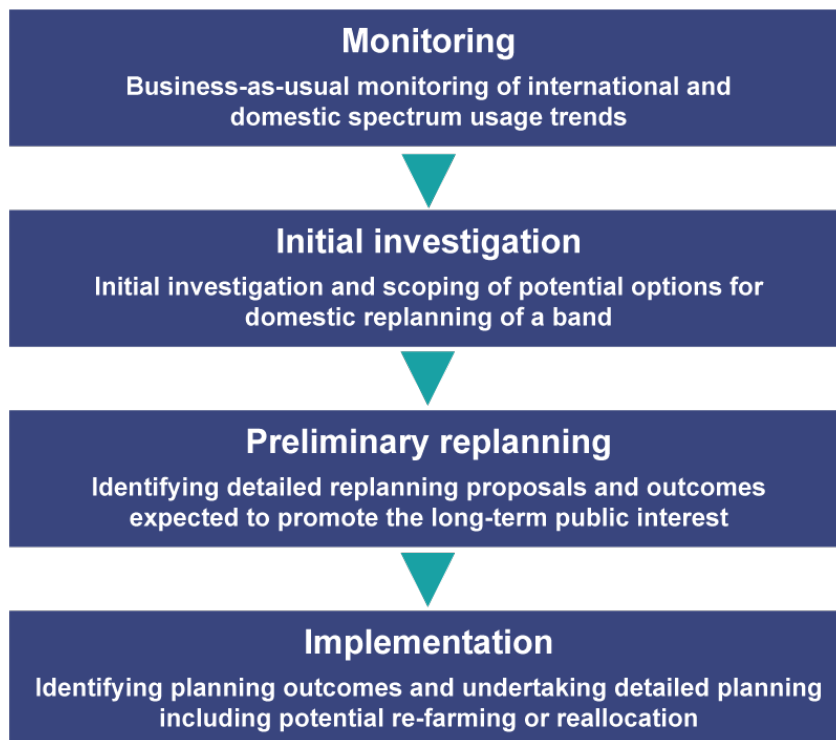
- band planning
- forward allocation program
- optimising established planning frameworks
- licensing and licensing systems
- pricing
- compliance and enforcement
- international engagement.

Band-planning

Band-planning activities support the establishment of new spectrum uses.

In establishing new planning frameworks, we consider bands at 4 distinct stages as shown in Figure 2.

Figure 2: Stages in spectrum management band planning




A band's possible progression through each stage will depend on a range of factors and, in some cases, may move back to an earlier stage if consultation processes, information gathering, or work-program prioritisation suggest this is appropriate. Similarly, bands may 'jump' stages if circumstances warrant doing so. There is no set period a band must remain at a particular stage, or an expectation that a band must proceed between stages. Timing of any progression is based on the circumstances at hand and not on any predetermined cadence.

In addition, only a relatively small number of bands are considered beyond the monitoring stage at any one time – most spectrum is subject to a relatively stable environment that does not necessitate replanning considerations.

When considering replanning options, we try to identify alternative bands or alternative arrangements within the same band for incumbents to mitigate some costs.

The 4 stages of band planning provide thorough consultation opportunities. This enables stakeholders to keep us apprised of developments and issues in various bands and inform us of their views and the effects of different options on incumbent and potential new services. The consultation process at each stage allows us to be transparent about our approach to planning arrangements in each band and understand the costs and benefits of a particular planning proposal.

Table 1: Band-planning activities

Planning stage	Frequency band/s	Priorities and proposed timelines
Monitoring	600 MHz (617–698 MHz) 3.3 GHz (3300–3400 MHz) 4.0 GHz (4400–4990 MHz) 13 GHz (12.75–13.25 GHz) 40 GHz (37–43.5 GHz) 46 GHz (45.5–47 GHz) 47 GHz (47.2–48.2 GHz) Bands being studied for a possible IMT identification under WRC-27 agenda item 1.7: <ul style="list-style-type: none"> • 4400–4800 MHz • 7125–8400 MHz • 14.8–15.35 GHz Bands being studied for possible MSS allocation under WRC-27 agenda item 1.13: <ul style="list-style-type: none"> • from 694/698 MHz to 2.7 GHz within existing IMT identifications 	Continue to monitor domestic and international developments to identify usage trends.
	5030–5091 MHz band for drone command and non-payload communications (CNPC)	Continue to monitor development of the relevant draft ITU recommendation that specifies the characteristics of terrestrial air-ground links operating in the aeronautical mobile radiocommunication service. Further work depends on global developments and domestic needs.
Initial investigation	2300–2302 MHz	Not scheduled for 2024–25.
Preliminary replanning	1.5 GHz (1427–1518 MHz)	A review of terrestrial (non-satellite) services in the broader 1427–1535 MHz range is proposed for 2024–25.  We aim to release an options paper in Q1 2025, which will also consider the sunseting of the Radiocommunications

Planning stage	Frequency band/s	Priorities and proposed timelines
		1.5 GHz Frequency Band Plan 2015.
	6 GHz band (5925–7125 MHz)	CHANGE Q4 2024: outcomes of the June 2024 consultation and planning decision expected to be published.
Implementation	1800 MHz and 2 GHz bands outside of spectrum-licensed areas	Review of RALIs MS33 and MS34 regulatory arrangements. Q1 2025: outcomes paper planned.
	1.9 GHz (1880–1920 MHz)	CHANGE Q3 2024: consult on review of service usage criteria for all devices, including DECT devices, in the Radiocommunications (Cordless Communications Devices) Class Licence 2024. Q4 2024: release outcomes paper on Q3 2024 consultation and start development of draft technical framework for rail services in the 1900–1910 MHz band and short-range WBB in the 1900–1920 MHz band. Q2 2025: consultation on technical arrangements.
	2 GHz MSS (1980–2010 MHz and 2170–2200 MHz) 1.9 GHz (1880–1920 MHz)	Q1 2025: consultation on technical framework and allocation design matters.
	3.4–4 GHz band (3400–3575 MHz and 3700–4200 MHz)	Q4 2024: consultation on technical and apparatus-licensing allocation arrangements for highly localised use of 3950–4000 MHz band in regional and metropolitan areas, and 3400–3475 MHz band in ‘urban excise’ areas. Allocation timelines for other parts of the 3.4–4 GHz band are outlined in the ‘ Forward allocation workplan ’.

Monitoring stage

In the *monitoring* stage, we maintain an awareness of international and domestic spectrum-related developments and interest in potential changes to the use of the band that may require substantial planning activities.

There is no direct action required by stakeholders, but there is an open invitation for stakeholders to engage with us on relevant developments and issues.

In general, bands and issues included at the monitoring stage represent potential work items beyond our immediate, detailed, annual work program. Importantly, not every band being monitored will subsequently be considered in detail.



600 MHz (617–698 MHz)³⁵

As discussed in Part 1, the current television channel arrangements would require a further restack to yield a contiguous block of spectrum in the 600 MHz range.

The sixth channel is currently available in most areas for trials of more advanced digital television technology. Previous industry trials of DVB-T2 technologies were conducted in 2018 and 2019 and we will continue to support industry-driven initiatives for trials of new television transmission technologies in the future. We note that some television broadcasters have been changing the video compression standard of some of their services from MPEG-2 to MPEG-4. In some areas, all the television services are now delivered using MPEG-4.

In December 2019, an operator in the US was the first to deploy a 5G service in the band.³⁶ In 2019, Canada issued licences for use of the 600 MHz band. In Q1 2024, Mexico consulted on arrangements to award spectrum in the 600 MHz band for use by WBB, including 5G.³⁷

In addition, the Radio Spectrum Policy Group (RSPG) of the European Commission (EC) provided a [long-term strategy for the future of the UHF band](#), which suggests it remains available for broadcasting services until at least 2030. It also recommends that the band should be available for downlink-only broadband services on a secondary basis. This outcome is reflected in [Decision \(EU\) 2017/899](#) of the European Parliament and of the Council of 17 May 2017 on the use of 470–790 MHz frequency band in Europe.

Recommendation ITU-R M.1036 was amended to include frequency arrangements for the implementation of the terrestrial component of IMT in the 600 MHz band.

The AWG meeting 30 in 2022 updated [APT Report 79](#) on Frequency Arrangements for IMT in the band 470–698 MHz, which includes a modified APT 600 MHz band plan alongside the US band plan. The modification consists of the addition of the 2 additional 5 MHz blocks. 3GPP have assigned band number 105 to this plan.

³⁵ This lower boundary (617 MHz) is based on the bottom edge of the 2 × 35 MHz plan identified for the US 600 MHz band. The size of any guard band between the bottom of possible 600 MHz arrangements and the upper edge of ongoing broadcasting would need to be considered as part of any review of the band. The upper boundary aligns with the top edge of the US 600 MHz band plan, noting that the top edge of the highest channel used for broadcasting in Australia ceases at 694 MHz.

³⁶ T-Mobile, [T-Mobile 5G: It's On! America's First Nationwide 5G Network Is Here](#), T-Mobile website, 2019, accessed 1 July 2024.

³⁷ Cenerva, [IFT to stage consultation regarding 'flexible' 600MHz, 3.5GHz auction in January - Cenerva](#), Cenerva website, 2024, accessed 9 July 2024.

Recent developments

As an outcome of WRC-23 agenda item 1.5, a footnote to Article 5 of the RRs was added to the 470–694 MHz band in Region 1 that both allocates the 614–694 MHz part of the band to the mobile service on a primary basis and identifies it for IMT use in specified countries in the Middle East. Additional footnotes were added to the 470–694 MHz band in Region 1 that allocate the entire band to the mobile service on a secondary basis in specified countries in Europe and allocate the 614–694 MHz part of the band to the mobile service on a secondary basis in Africa. The EU Radio Spectrum Policy group [Opinion on the ITU-R World Radiocommunication Conference 2023](#) paper supported this outcome, with a WRC-31 agenda item to further study mobile use in the band and possible regulatory action.

We are conducting complementary technical research that will support possible future work on television channel replanning and licensing. The research will also provide information to both government and industry about any potential future change to television planning arrangements.

We have completed the television viewer antenna survey and published 5 reports about household television antenna use covering Sydney, Melbourne, Brisbane, Adelaide, and Perth.

We also contracted with Free TV Australia to conduct work on television receiver performance testing; the final report was completed in December 2023.³⁸ The television broadcasting spectrum in Australia is also used by various forms of white space devices, most notably wireless audio devices, such as wireless microphones. Future planning decisions concerning the use of white space devices in the 600 MHz band will be guided by relevant government policy decisions.

Next steps

We will continue to engage with industry and government and monitor international developments.



3.3 GHz (3300–3400 MHz)

The 3.3 GHz band is currently allocated in the ITU RRs on a primary basis to the radiolocation service worldwide. In Australia, this band is designated to be used principally for defence and national security, as described in footnote AUS101A of the ARSP. The Department of Defence is normally consulted in considering non-defence use of this service. At WRC-15, the 3.3 GHz band was identified for IMT by several countries. Recommendation ITU-R M.1036 includes frequency arrangements for the implementation of the terrestrial component of IMT in the 3.3 GHz band with some implementation aspects included. Numerous countries have identified the band for IMT.

The 3.3 GHz band forms part of 3GPP profile bands n77 (3300–4200 MHz) and n78 (3300–3800 MHz) for 5G.

³⁸ Australian Communications and Media Authority (ACMA), [Television research](#), ACMA website, 2023, accessed 4 March 2024.

Recent developments

As an outcome of WRC-23 agenda item 1.2, this band was identified for IMT in Region 2. Several African countries also added their name to existing footnotes in the ITU-R RRs identifying the band for IMT.

There has been increasing interest in using this band for IMT; countries in Asia, Africa, South America and the Middle East plan to or have assigned spectrum in the band for WBB.³⁹

Next steps

We will continue to monitor developments in this band.



4.0 GHz (4400–4990 MHz)

The 4400–4500 MHz band is currently allocated in the ITU RRs on a co-primary basis to fixed and mobile services worldwide, while the 4500–4800 MHz band also includes an allocation for the fixed-satellite service (FSS). In Australia, these bands are designated to be used principally for defence and national security, as described in footnote AUS101 of the ARSP. The Department of Defence is normally consulted in considering non-defence use of spectrum in the 4400–4800 MHz band.

The 4800–4990 MHz band is currently allocated on a primary basis for fixed and mobile services in Australia. In Australia, the fixed and mobile services in this band are designated to be used for defence and national security purposes, as defined in Footnote AUS101A of the ARSP. The Department of Defence is normally consulted in considering non-defence use of these services. The 4950–4990 MHz part of the band is also allocated to the radio astronomy service on a primary basis under Footnote 443 of the ARSP.

The 4.0 GHz band forms 3GPP profile band n79 (4400–5000 MHz) for 5G. As of December 2023, there were 810 devices announced for this band.⁴⁰

There is some interest domestically from mobile network operators as well as from wireless internet service providers and other fixed wireless access operators in pursuing this band for WBB in Australia. However, while individual countries have expressed interest, we are not aware of support for using this band for WBB by regional bodies, such as the European Conference of Postal and Telecommunications Administrations (CEPT), the Inter-American Telecommunication Commission or the APT.

Several countries, including Australia, have implemented arrangements in the 4940–4990 MHz band for public safety, defence and national security purposes. This was originally intended to support high-speed localised coverage for an incident or event, however, the inclusion of the band in 3GPP standards for 5G technologies means that it may be suitable for wider-area high-speed broadband public safety applications. The [Radiocommunications \(Public Safety and Emergency Response\) Class Licence 2023](#) (the PSER class licence) sets out arrangements for the use of this band by those entities.

³⁹ Global mobile Suppliers Association, [Mid-band Spectrum. Member Report May 2023](#), GSA website, 2023, accessed 11 January 2024.

⁴⁰ Global mobile Suppliers Association, [5G Device Ecosystem – Member report](#), GSA website, 2023, accessed 11 January 2024.

Recent developments

Over the past few years, there has been increasing interest in this band from other countries. Japan has made the 4500–4900 MHz band available for WBB. Over 40 countries have identified some or all the band for IMT, but to date, only a few have allocated the spectrum.

China, Nigeria, Korea, Russia and Taiwan plan to assign, or have assigned spectrum in the 4800–5000 MHz band for WBB use. Brazil, China, Myanmar, Nigeria, Paraguay, Russia, Singapore, Uruguay and Vietnam are also considering all or part of the broader 4400–5000 MHz band for WBB use.⁴¹ There is some interest from domestic WBB users in pursuing this band for that use in Australia.

CHANGE Separately, the 4940–4990 MHz band is included in IEEE standard 802.11y Public Safety Wireless Local Area Network (WLAN) and has also been included in 5G standards (3GPP band n79). In September 2023, we remade the PSER class licence to include provisions that are more conducive to the deployment of 5G technology. Provisions that support WLAN technologies were also retained in the PSER class licence. This update supports our long-standing policy that the 4940–4990 MHz band continues to be available for public safety and emergency response purposes.

Co-existence between IMT and aeronautical use of the 4800–4990 MHz band at national borders was studied as part of WRC-23 agenda item 1.1. As an outcome of this issue, 11 countries from Africa and South America added their name to the existing Footnote 5.441B of the RRs identifying the band for IMT, while 3 countries removed their name from that footnote.

The 4400–4800 MHz frequency range will be studied for a possible IMT identification in the RRs in Regions 1 and 3 under WRC-27 agenda item 1.7.

Next steps

We will continue to monitor developments in this band, including engaging in the relevant ITU-R studies under WRC-27 agenda item 1.7.



40 GHz (37–43.5 GHz)

The 40 GHz band has primary allocations in the ITU RRs for a range of services across different portions of the band. These include space research, fixed, mobile, mobile satellite and FSS in Australia. Some of the footnotes in the ARSP that apply to the 40 GHz band include:

- Footnote 516B, which identifies different portions of the band in regions 1, 2 and 3 for use by high-density FSS applications
- Footnote 547, which identifies the 37–40 GHz and 40.5–43.5 GHz bands for use by high-density applications of the fixed service
- Footnote AUS87, which identifies several radio astronomy facilities that use the 40 GHz band to conduct passive observations

⁴¹ Global mobile Suppliers Association, [Spectrum – 4400MHz-5000MHz January 2022. National Spectrum Positions](#), GSA website, 2022, accessed 23 March 2022.

- Footnote AUS101, which states the 37–37.5 GHz band is designated to be used principally for defence and national security. The Department of Defence is normally consulted in considering non-defence use of this service.

In Australia, there are currently arrangements in place for point-to-point (PTP) use of the 37.5–39.5 GHz band. At WRC-19, the 40 GHz band was identified globally for IMT.

In December 2019, the US auctioned licences in the 37.6–38.6 GHz, 38.6–40 GHz and 47.2–48.2 GHz frequency ranges to support 5G.

On 18 November 2022, the European Communications Commission (ECC) published a decision on harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 40.5–43.5 GHz band.

Recent developments

Canada plans to make spectrum in the 37.6–40 GHz (38 GHz) band [available for 5G in 2024](#). In December 2023, [Ofcom commenced consultation](#) on the planned auction of the 40.5–43.5 GHz band.

As a result of these developments, it is likely a viable equipment ecosystem could develop for fixed and mobile broadband systems in this band. We are also aware of interest from the satellite industry for access to this band. This may include uncoordinated class licence and coordinated earth station use.

Next steps

We will continue to monitor developments in this band.

We recognise that the satellite industry is seeking increased predictability on future arrangements to assist long-term planning. As outlined in the *Response to submissions: Draft FYSO 2023-28*, we developed an interim licensing process for licence applications for gateway satellite earth stations in these bands, before undertaking a comprehensive review of the bands to determine long-term arrangements. The interim licensing procedures are now recorded in [spectrum embargo 80](#).



46 GHz (45.5–47 GHz)

The 46 GHz band has primary allocations in the ITU RRs for mobile, mobile satellite, radionavigation and radionavigation-satellite services in Australia. Some of the footnotes in the ARSP that apply to the 46 GHz band include:

- Footnote 62, which indicates that parts of the band might be used in the future for defence
- Footnote AUS87, which identifies several radio astronomy facilities that use the 46 GHz band to conduct passive observations.

In Australia, there are currently no formal arrangements for any services in the band.

At WRC-19 more than 50 countries (mainly from Region 1) identified the 46 GHz band for IMT.

Recent developments

None.

Next steps

We will continue to monitor developments in this band.

We recognise that the satellite industry is seeking increased predictability on future arrangements to assist long-term planning. As outlined in the *Response to submissions: Draft FYSO 2023–28*, we developed an interim licensing process to inform consideration of licence applications for gateway satellite earth stations in these bands, before undertaking a comprehensive review of the bands to determine long-term arrangements. The interim licensing procedures are now recorded in [spectrum embargo](#) 80.



47 GHz (47.2–48.2 GHz)

The 47 GHz band has primary allocations in the ITU RRs for fixed, mobile and FSS in Australia. Footnote AUS87 in the ARSP identifies several radio astronomy facilities that use the 47 GHz band to conduct passive observations.

In Australia, there are currently no formal arrangements for any services in the band.

At WRC-19, Region 2 and 68 other countries in Region 1 and Region 3 (including Australia) identified the 47 GHz band for IMT.

In December 2019, the US auctioned licences in the 37.6–38.6 GHz, 38.6–40 GHz and 47.2–48.2 GHz frequency ranges to support 5G.

Recent developments

None.

Next steps

We are aware of interest from the satellite industry for access to this and the adjacent 48.2–50.2 GHz and 50.4–52.4 GHz bands. This may include uncoordinated class licence and coordinated earth station use. Consequently, we will consider including these bands in any future review of the 47 GHz band.

We will continue to monitor developments in this band.

We recognise that the satellite industry is seeking increased predictability on future arrangements to assist long-term planning. As outlined in the *Response to submissions: Draft FYSO 2023–28*, we developed an interim licensing process for licence applications for gateway satellite earth stations in these bands, before undertaking a comprehensive review of the bands to determine long-term arrangements. The interim licensing procedures are now recorded in [spectrum embargo](#) 80.



Bands being studied under WRC-27 agenda item 1.7

WRC-27 agenda item 1.7 will consider studies on sharing and compatibility and develop technical conditions for the possible use of IMT in the frequency bands 4400–4800 MHz, 7125–8400 MHz (or parts thereof), and 14.8–15.35 GHz taking into account existing primary services operating in these, and adjacent, frequency bands. Those bands, either in part or in full, are used for defence purposes in Australia.

Recent developments

ITU-R Working Parties 5D has been identified as the responsible group for conducting work under agenda item 1.7. Work will begin in 2024.

Next steps

We will continue to engage with stakeholders via the usual international preparatory process to develop Australian positions on WRC-27 agenda item 1.7. Developments in other regions and countries will also be monitored.



Bands being studied under WRC-27 agenda item 1.13

WRC-27 agenda item 1.13 will consider studies on possible new allocations to the mobile-satellite service to enable direct connectivity between space stations and IMT user equipment to complement terrestrial IMT network coverage.

Recent developments

ITU-R Working Party 4C has been identified as the responsible group for conducting work under agenda item 1.13. Work on this issue will begin in 2024.

Next steps

We will continue to engage with stakeholders via the usual international preparatory process to develop Australian positions on WRC-27 agenda item 1.13. Developments in other regions and countries will also be monitored.



5030–5091 MHz

At WRC-12, the 5030–5091 MHz band was identified for use by line-of-sight (LoS) and beyond line-of-sight (BLoS) remotely piloted aircraft systems (RPAS) command and control radio links (CNPC) in the RRs. LoS and BLoS CNPC relate to terrestrially and satellite-based control of RPAS, respectively.

Excluding Defence use, RPAS operating in non-controlled airspace currently use technologies predominantly authorised under the LIPD class licence for both CNPC and payload communications. In controlled airspace, however, operation of remotely piloted aircraft is far more heavily regulated, and systems authorised under the LIPD class licence may not have the level of protection from interference required for safety-critical control links.

The band is being examined internationally as a potential candidate for CNPC in controlled airspace, although consideration of LoS arrangements is more advanced than for BLoS.

Recent developments

The ITU-R has been drafting a new recommendation that specifies the characteristics and protection of terrestrial and satellite CNPC links operating in the aeronautical mobile (route) service and aeronautical mobile satellite (route) service in the band for some time. ITU-R Working Party 5B (WP 5B) updated the status of this recommendation to 'preliminary draft' at its November 2022 meeting and further progressed its development in July 2023. However, the focus on studies related to WRC-23 agenda items within WP 5B's purview, given the late stage of the WRC study cycle, has meant there was little progress on this recommendation in 2023.

The US is currently in the final stages of establishing regulatory arrangements for use of the band by LoS RPAS CNPC operating in controlled airspace, while some countries in Europe and the Asia-Pacific are also currently considering implementation of the WRC-12 outcomes.

Acknowledging domestic and international momentum in this space, we started a consultation process in 2021 on international trends in the 5030–5091 MHz band. In 2022, we published arrangements to allow temporary access to part of the band (5055–5065 MHz) for LoS RPAS CNPC links. These interim arrangements will be in place while we await finalisation of relevant work within the ITU-R on band planning.

Next steps

We will continue to monitor the progress of the ITU draft recommendation through our participation in ITU-R Working Party 5B meetings. An options paper outlining proposals for more permanent arrangements will be released when international arrangements are sufficiently mature. The timeframe for elevation of this frequency band to preliminary replanning status depends on the completion timeframe of relevant ITU-R studies and other international developments.

It should be noted that our role in enabling CNPC operation in the band is confined to making licensing arrangements to access this spectrum. Specific technologies and procedures for safe operation of RPAS are matters for other regulatory agencies, such as the Civil Aviation Safety Authority and Airservices Australia, and any arrangements in the band will be developed in consultation with those agencies.

Consideration of BLoS CNPC arrangements using other bands is ongoing within the ITU-R (and was the subject of a WRC-23 agenda item). Noting the lack of progression on these arrangements for LoS CNPC internationally, BLoS CNPC was not within the scope of the interim arrangements put in place in the band. We will continue to monitor developments and may consider consulting on arrangements if international momentum warrants us doing so.

Initial investigation stage

In the *initial investigation* stage, we scope potential options for domestic replanning of a band. Factors that may influence moving a band from monitoring to initial investigation include international spectrum harmonisation, technology standardisation, developments in other countries, the existing domestic spectrum environment and domestic demand drivers.

This stage normally includes initial consideration of whether the new spectrum use/s would contribute to promoting the long-term public interest derived from the use of the spectrum, along with preliminary assessments on co-existence and other technical considerations.

We may undertake public consultation through mechanisms including public and industry meetings (such as spectrum ‘tune-ups’) and/or discussion papers.



2300–2302 MHz

The 2300–2302 MHz band is allocated in the ARSP to fixed and mobile services on a primary basis and amateur services on a secondary basis. It is currently used by amateur services, including for earth-moon-earth operations. The adjacent 2302–2400 MHz (2.3 GHz) frequency range has been subject to spectrum licensing since 2000.

The 2300–2400 MHz band was identified globally for IMT at WRC-07. The 2.3 GHz band is currently used to provide WBB services across Australia. The most spectrally efficient profile bandwidths for internationally standardised WBB equipment are in multiples of 5 MHz.

Recent developments

Carrier aggregation and emerging 5G technologies will allow operators to deploy services in bandwidths of up to 100 MHz. The current 98 MHz of spectrum available in the 2.3 GHz band is not optimised for this use. Consequently, there is interest from spectrum licensees in the 2.3 GHz band in making the 2300–2302 MHz band available for WBB use.

Next steps

While recognising that there are competing interests for use of the 2300–2302 MHz band for incumbent and possible new services, we have maintained this band in the initial investigation stage and will reassess its timing priority in FYSO 2025–30.

Preliminary replanning stage

In the *preliminary replanning* stage, we identify detailed replanning options, based on feedback received at the initial investigation stage, along with a thorough consideration of the spectrum uses/s that would promote the long-term public interest.

Considerations are informed by detailed technical co-existence studies and include identification of draft, high-level technical planning frameworks. We also analyse ongoing incumbent spectrum needs and identify available mitigations to address any adverse impacts that potential changes in the planning environment may have on incumbent users.

Formal public consultation may occur through mechanisms such as public industry meetings (such as spectrum ‘tune-ups’) and/or options papers.



1.5 GHz (1427–1518 MHz)

At WRC-15, the entire 1.5 GHz band was identified for IMT within Regions 2 and 3, while 1427–1452 MHz and 1492–1518 MHz were identified in Region 1 by footnotes. Region 1 identification of the 1452–1492 MHz range was limited to African and Arab administrations – Europe did not identify this band due to disagreement over the protection of aeronautical mobile telemetry services.

There is support domestically from WBB representatives to progress the re-farming of this band. There is interest in using the band for WBB from both mobile network operators and private operators, subject to equipment availability.

Domestically, the impact on aeronautical telemetry services and fixed services, including the digital radio concentrator system, will need to be considered in any replanning process. Compatibility with MSS operating above 1518 MHz will also need to be considered.

Recent developments

On 18 October 2023, [Ofcom released a consultation](#) seeking input on the proposal to make spectrum in the 1492–1517 MHz band available for mobile use, while managing interference with other services (including adjacent band MSS).

As co-existence with possible MSS use above 1518 MHz has been identified as a likely consideration. In Q2 2022, we undertook an the [initial review of the 1.5 GHz band](#) alongside the extended MSS L-band (1518–1525 MHz and 1668–1675 MHz). After considering submissions, we decided that, due to the differing pace of international developments for different uses of the band, we would progress the review of arrangements for MSS in the extended MSS L-band first. The review of arrangements for terrestrial (non-satellite) services in the broader 1427–1535 MHz frequency range would be progressed separately and was proposed for consideration in the 2024–25 financial year.

On 16 August 2023, we consulted on options for use of the extended MSS L-band. We [published the outcomes of that process](#) on 20 December 2023. This included updating arrangements in the Radiocommunications (Communication with Space Object) Class Licence 2015 to support MSS use of the extended MSS L-band.

In December 2023, the ITU-R published Recommendation M.2159 on “Technical and regulatory measures to provide compatibility between IMT and MSS, with respect to MSS operations in the frequency band 1518–1525 MHz for administrations wishing to implement IMT in the frequency band 1492–1518 MHz”.

Next steps

CHANGE We aim to release an options paper in Q1 2025 to progress the review of arrangements in the 1.5 GHz band. This paper will also consider the sunset of the Radiocommunications 1.5 GHz Frequency Band Plan 2015.



CHANGE 6 GHz (5925–7125 MHz)

There is significant ongoing interest in international developments in the 6 GHz band (5925–7125 MHz) for both radio local area networks (RLANs, most notably wi-fi) and IMT use in the upper 6 GHz band (6425–7125 MHz).

The US FCC and European Conference of Postal and Telecommunications Administrations (CEPT) recently implemented changes to the 6 GHz band aimed at enabling the use of next generation wi-fi (Wi-Fi 6E). Since then, regulators in many other countries have also implemented – or are planning – changes to the band. Parts of the 6 GHz band have also been identified for IMT use by WRC-23 (under agenda item 1.2). WRC-19 also made changes to the RRs for wi-fi use in parts of the 5 GHz band (5150–5350 MHz and 5725–5925 MHz), most notably in 5150–5250 MHz.

Arrangements already exist in Australia for RLANs in the 5150–5350 MHz band (for low-power indoor use only), the 5725–5850 MHz band and the lower 6 GHz band (5925–6425 MHz). These bands are also included in the IEEE 802.11 series of standards for RLAN. There are no arrangements in place for RLANs in the 5350–5470 MHz and 5850–5925 MHz bands in Australia.

Recent developments

In late 2023, WRC-23 identified the 7025-7125 MHz band for IMT use in Region 1 (Europe, Africa, and the Middle East) and Region 3 (Asia-pacific). The frequency range 6425–7025 MHz was also identified for IMT in Region 1 as well as in some Region 2 (Americas) and Region 3 countries.

In February 2024, we held a spectrum tune-up that canvassed stakeholder views on the future use of the upper 6 GHz band, as well as views on the potential introduction of arrangements for ‘standard’ power RLAN (including automatic frequency coordination (AFC) feasibility and issues).

In June 2024, we released a public [consultation paper](#) on potential options for the upper 6 GHz band. This paper also provided additional consideration of the potential for the use of higher powered RLAN devices in the broader 6 GHz band.

Next steps

Stakeholder feedback to date has revealed a diverse range of views on preferred use of the upper 6 GHz band – primarily the question of RLAN or IMT use of the band. Following our June 2024 consultation process and taking into account stakeholder feedback, we are aiming

to release our planning decisions for the upper 6 GHz band in Q4 2024. Depending on the planning decisions taken, there may be further consultation on managing incumbent services and/or licence types and conditions.

We may also continue to explore the feasibility of implementing complementary technologies in Australia, such as AFC for managing access by higher-power RLAN devices in both the 5 GHz and 6 GHz bands.

Implementation stage

The *implementation* stage concludes an ACMA band-planning activity and identifies planning outcomes expected to promote the long-term public interest derived from use of the spectrum. This stage includes further development of detailed technical planning frameworks (and additional consultation if necessary), and licensing and allocation frameworks, as required. Depending on the nature of the existing use of the band and the outcome of the planning process, this stage could potentially lead to refarming or re-allocation activities.

Conclusions from our planning process are communicated in outcomes or decision papers and/or identify preliminary views on future activities.

When reviewing or developing technical frameworks that describe technical arrangements for the use of a frequency band, we may establish a technical liaison group (TLG) to assist in the development of those frameworks. Further information on [TLGs](#) is available from the ACMA website.



1800 MHz (1710–1785 MHz and 1805–1880 MHz) and 2 GHz (1920–1980 MHz and 2110–2170 MHz) outside of spectrum-licensed areas

The 1800 MHz and 2 GHz bands, outside of spectrum-licensed areas, are used for mobile and fixed services via Public Telecommunications Service (PTS) and PTP licensing. Existing policy on the assignment and using of PTS licences is described in radiocommunication assignment and licensing instructions (RALIs) MS33 and MS34.

Recent developments

Previous FYSOs have indicated our plan to review arrangements in these spectrum spaces, driven by an increasing demand by infrastructure users for PTS licences.

NEW From June to October 2024, we [consulted](#) via an options paper to seek views on what future arrangements would best be in the public interest..

Next steps

CHANGE We are considering the submissions to the options paper and plan to release our outcomes in Q4 2024 or Q1 2025.



1.9 GHz (1880–1920 MHz)

The 1.9 GHz band is allocated in the ARSP to fixed and mobile services on a primary basis. There are arrangements in place for Digitally Enhanced Cordless Telecommunications (DECT) technology under the [Radiocommunications \(Cordless Communications Devices\) Class Licence 2014](#) in the 1880–1900 MHz range and PTP and point-to-multipoint (PMP) licensing in the 1900–1920 MHz range in regional and remote areas. We are also aware of wireless microphone use in the 1880–1900 MHz band (using DECT).

With the evolution of technology, for example, the standardisation of DECT-2020 new radio (DECT-2020 NR), including its inclusion as an ITU-R IMT 2020 radio technology, and the

development of new technology, for example, future railway mobile communication systems⁴² (FRMCS), we have reviewed the band to ensure it is fit for purpose. We conducted an initial consultation in 2021 and released an options paper in 2022.

Recent developments

Following our Q4 2022 consultation on the options paper, we reviewed submissions and considered the necessary coexistence scenarios and regulatory approaches. We released an outcomes paper in Q4 2023, which detailed the decision to implement Option 3.

NEW In June 2024, we made the [Radiocommunications \(Cordless Communications Device\) Class Licence 2024](#) (CCD Class Licence) that allows DECT NR to be used in the 1880–1900 MHz frequency range. In addition, the CCD Class Licence was amended in September 2024 to remove the usage provisions for devices, including DECT, operated under the CCD Class Licence.

NEW We have started analysing international studies and conducting internal studies to inform the required regulatory arrangements for indoor short range WBB in the 1900–1920 MHz range, and rail mobile radio (RMR) along rail corridors in the 1900–1910 MHz frequency range.

Next steps

NEW Consultation on the proposed arrangements in the 1900–1920 MHz frequency range is planned for Q2 2025. This will include arrangements for FRMCS, indoor DECT operation and, if appropriate, changes to RALIs MS33 and MS34.

CHANGE We intend to undertake the following work to support the implementation of the 1.9 GHz band:

- release outcomes of the July 2024 consultation process in Q4 2024
- consult on a proposed framework to support rail services in the 1900–1910 MHz frequency range in Q2 2025
- update RALI FX 19 to include provisions for indoor short-range WBB in the 1900–1920 MHz frequency range
- update RALI FX 3 to reflect the planning decisions.



2 GHz MSS (1980–2010 MHz and 2170–2200 MHz)

The 1980–2010 MHz and 2170–2200 MHz bands are currently used for television outside broadcast (TOB) services on a shared and non-exclusive basis for short-term applications, such as covering special events. TOB was introduced in the 2 GHz band in 2012 on an interim basis. In January 2021, we released the [Replanning the 2 GHz band \(1980–2010 and 2170–2200 MHz\)](#) outcomes paper after considering submissions to the 2019 discussion paper, [Planning of the 2 GHz band](#).

⁴² UIC, [Future railway mobile communication system](#), UIC website, n.d., accessed 23 November 2023.

In the outcomes paper, we outlined our decision to replan the 2 GHz band for MSS, with:

- 2 × 25 MHz (1980–2005 MHz paired with 2170–2195 MHz) replanned for MSS Australia-wide under apparatus-licensing arrangements, with:
 - a price-based allocation mechanism via auction – we expressed the preliminary view that an auction was the most appropriate mechanism to resolve competing demand, given demand appeared likely to exceed supply (as expressed in responses to the options paper).
 - arrangements to provide support for terrestrial applications if a mobile-satellite licensee wishes to supplement/extend its MSS. For example, extending coverage of a satellite network with terrestrial-based complementary ground component infrastructure or direct air-to-ground communications services (involving ground-based WBB links to aircraft) to provide inflight communication services.
- 2 × 5 MHz (2005–2010 MHz paired with 2195–2200 MHz) dedicated for satellite IoT and similar narrowband services to be used on a shared basis between operators. This arrangement will provide spectrum access with a low barrier to entry for innovative satellite applications and will assist in growing the Australian space industry.

To support the introduction of MSS in the band, existing TOB services will be required to stop operation. Under the Radiocommunications (Mobile-Satellite Service) (1980–2010 MHz and 2170–2200 MHz) Frequency Band Plan 2022, TOB services are to cease operations by 1 March 2026 in metropolitan and designated areas (as defined in the band plan), and by 1 March 2024 elsewhere.

In Q3 2022, we updated our licence assessment procedures for space and space receive licences to include the new arrangements for 2 GHz narrowband MSS.

Recent developments

In Q4 2023, we started preliminary consultation with industry on draft technical design principles (technical parameters and coordination requirements with adjacent band services) to support MSS use in 1980–2005/2170–2195 MHz (including the use of CGC). We also sought updated information on the level of demand for 2 GHz MSS spectrum to assess whether it remains the case that demand for the spectrum is likely to exceed the available supply. In addition, we sought stakeholder views on the availability of suitable equipment for deployment of MSS in the 2 GHz band. We are currently considering submissions.

Next steps

As stated in our Q4 2023 consultation paper, the ACMA has not formed a final view on the allocation approach. An important consideration that will inform any decision on the design of a preferred allocation method is the level of expected demand for the spectrum. If demand is likely to exceed supply, we will generally look to design a mechanism to resolve competing demand that is transparent and results in an efficient allocation of spectrum.

CHANGE As noted, we are currently considering submissions and the outcome of the consultation will inform a decision on the allocation method and draft technical framework supporting the allocation of licences in 1980–2005/2170–2195 MHz. We expect to undertake further consultation on technical and allocation design matters in late Q4 2024 or Q1 2025. Subject to the findings of that consultation, we anticipate consulting in the second half of 2025 on draft allocation instruments, with the intention of starting an allocation process in the first half of 2026.



3.4–4 GHz band

Optimising arrangements for spectrum in the 3.4–4 GHz band continues to be an important priority. Synergies between the 3400–3700 MHz band decisions and the 3700–4200 MHz band outcomes mean we have aligned the implementation stages for segments of these bands in some geographies. In addition to defined areas being allocated by spectrum licensing, we are making additional mid-band spectrum available for local area WBB use-cases.

The 3.4–4 GHz frequency range is being allocated in 4 distinct processes:

1. 3400–4000 MHz AWLs in remote areas
2. 3.4/3.7 GHz bands spectrum licence auction in metropolitan and regional areas
3. 3.8 GHz band AWLs in metropolitan, regional and rural areas
4. highly localised WBB allocation.

Previous FYSOs contain details of work in this band since 2019.

Recent developments

In Q4 2023, we issued AWLs in the 3400–4000 MHz band in remote areas.

In Q4 2023, we conducted the 3.4/3.7 GHz bands spectrum licence auction in metropolitan and regional areas. Licences were issued in Q1 2024.

CHANGE In November 2023, the ACMA formed a TLG to provide advice on the development of arrangements to support the introduction of highly localised WBB services in the 3400–3475 MHz (in defined urban areas) and 3950–4000 MHz (in metro and regional areas) frequency ranges. The TLG is expected to finalise its work in Q3 2024.

We opened applications for the allocation of 3.8 GHz AWLs in metropolitan, regional and rural areas on 28 March 2024 and the application window closed 2 May 2024. We have considered these applications and have started issuing relevant licences. We will soon consider new applications received after the close of the application window.

NEW On 24 July 2024, we began accepting over-the-counter applications for AWLs in the remaining spectrum in the 3400–4000 MHz band in remote areas.

Next steps

CHANGE We are planning to publicly consult on technical, licensing and allocation arrangements for highly localised WBB use in Q4 2024.⁴³ Subject to the completion of this process, we plan to begin accepting licence applications in this band in calendar year 2025.

See the 'Forward allocation workplan' below for allocation of specific parts of the overall 3.4–4 GHz band.

⁴³ The consultation will also include consultation on the proposed remake/sunset review of the Radiocommunications Licence Conditions (Fixed Licence) Determination 2015.

Forward allocation workplan

Timely access to spectrum for wireless and satellite communications is increasingly important to an innovative and dynamic economy.

Our approach to designing spectrum allocations reflects outcomes from the ACMA's planning processes, guided by the object of the Radiocommunications Act and relevant government policy considerations. Information from incumbent and prospective spectrum users about the demand for access to specific bands, and the timing of any possible allocation, also provides important feedback to guide the development of technical frameworks, licensing and allocation decisions.

The Radiocommunications Act enables us to allocate spectrum licences via auction, tender, or by a pre-determined or negotiated price. We seek to tailor allocation processes to the particular circumstances and objectives of each allocation.

Access to apparatus-licensed spectrum has typically used an 'over-the-counter' process, also known as administrative allocation. This process can provide timely spectrum access to support specific and diverse kinds of radiocommunications services and use-cases. More recently, when opening a band to a new set of users, we have employed an 'allocation window' approach, which enables a staged consideration of applications for apparatus licences.⁴⁴ We can also set allocation limits for administrative allocation of apparatus licences,⁴⁵ as well as allocating transmitter licences using a price-based process like an auction.

The Radiocommunications Act establishes a set of mandatory processes for allocating spectrum licences. In our experience, this can take at least 16 to 18 months, from confirmation of the planning decision to the start of an auction for a price-based allocation of licences. This process will take longer where there is uncertainty – for example, if there are options for how spectrum can be configured, the process will take longer because further consultation and engagement with potential bidders will be necessary and important.


We recognise the regulatory, consultation and financial burden of running multiple allocations concurrently, and so we seek to plan appropriately to minimise encumbrance on applicants and interested bidders.

Table 2 summarises our indicative timing expectations for future allocations.

⁴⁴ This approach was used for the allocation of AWLs in the 26/28 GHz bands.

⁴⁵ Under section 102G of the Radiocommunications Act.

Table 2: Forward allocation indicative timing

Band	Stage	Proposed allocation timing	Notes	Allocation method
3.95–4.0 GHz band (regional and metropolitan areas); 3.4–3.475 GHz band ('urban excise') areas	Consultation on technical and licensing arrangements Implementing planning decision	Contingent on learnings from the TLG, we will consult on technical and licensing arrangements in Q4 2024 Subject to the completion of this process, we plan to issue licences in calendar year 2025	Apparatus licence allocation	Our preliminary view is to administratively allocate licences, subject to further consideration
2 GHz MSS (1980–2005/2170–2195 MHz)	Further consultation on allocation design and technical framework matters	 Q1/2 2026	Allocation of apparatus licences New services will not commence until TOB services have transitioned to new arrangements As specified in the Radiocommunications (Mobile-Satellite Service) (1980–2010 MHz and 2170–2200 MHz) Frequency Band Plan 2022, services for TOB are to cease operations by 1 March 2026 in metropolitan and designated areas (as defined in the band plan) and by 1 March 2024 elsewhere	Our preliminary view is that a price-based allocation mechanism may be required to resolve competing demand for the spectrum, subject to further consideration ⁴⁶

⁴⁶ As per the 2 GHz outcomes paper, our preliminary view, given that demand is likely to exceed supply (as expressed in responses to the 2 GHz options paper), is that the most appropriate mechanism to resolve competing demand is a price-based allocation mechanism.



3750/3800–3950 MHz (metropolitan, regional and rural areas)

In Q1 2024, we opened applications for an administrative allocation of AWLs in the 3800–3950 MHz band in metropolitan and regional areas, and in the 3750–3950 MHz band in rural areas.

CHANGE Arrangements in the 3.8 GHz band support local area WBB services on a shared basis with fixed satellite and point-to-point services. Applications were initially received during a 4-week window, which is to be followed by a first-in-time allocation process. NBN Co, Optus, Telstra, TPG and their respective associates were subject to a nil allocation limit for approximately 6 months.

CHANGE NBN Co, Optus, Telstra, TPG and their respective associates are now subject to the following cross-band limits that apply to the 3.4–3.95 GHz frequency range:

- 140 MHz in metropolitan areas
- 160 MHz in regional and rural areas.

The administrative allocation process also supported AWL receive licences for earth-receive applications, in the same geographic areas, but up to 4.0 GHz.



3400–3475 MHz (urban excise areas) and 3950–4000 MHz (regional and metropolitan areas)

Following the TLG for highly localised services, which we expect to complete in Q3 2024, we plan to consult on technical and licensing arrangements for highly localised WBB services in Q4 2024. As we consider apparatus licensing to be the best mechanism to use, our preliminary view is to administratively allocate these licences, subject to further consideration as part of the planned public consultation.

CHANGE Subject to the completion of this process, we plan to begin accepting licence applications in this band in calendar year 2025.




2 GHz MSS

In 2024–25, we are focused on progressing the allocation of licences for MSS in the 1980–2005 MHz and 2170–2195 MHz bands.

In the 2 GHz consultation paper released in Q4 2023, we indicated that the ACMA has not formed a final view on the approach to allocation of this band. An important consideration that will inform any decision on the design of a preferred allocation method is the level of expected demand for the spectrum. If demand is likely to exceed supply, we will generally look to design a mechanism to resolve competing demand, which is transparent and results in an efficient allocation of the spectrum.

CHANGE In our Q4 2023 consultation paper, we sought updated information on the likely level of demand for 2 GHz MSS spectrum, to assess whether the demand for the spectrum is likely

to exceed the available supply. We also sought views on the availability of suitable equipment for the deployment of MSS in the 2 GHz band, on lot configurations for the spectrum, and on the most appropriate amount of spectrum for desired use-cases. We are considering submissions received to inform our approach to the allocation, with a public consultation on the allocation design and technical framework matters scheduled for late Q4 2024 or early Q1 2025.

 Subject to the findings of the Q4 2024 or Q1 2025 consultation, further consultation on the allocation instruments will follow. We anticipate that the allocation process will start in the first half of 2026.

Optimising established planning frameworks

Optimising existing spectrum planning arrangements is a significant priority for the ACMA. This is typically achieved through updates to elements of the spectrum planning technical framework, such as band plans (either administrative or legislative) and RALIs.


These changes are intended to address band- and service-specific issues identified within existing frameworks; for example, by addressing technology developments and enabling sharing opportunities and other changes to improve the efficient use of the spectrum.

We have an ongoing review program for the spectrum planning technical framework to ensure its currency and consistency with current technologies and operational practices. This work is primarily focused on frequency coordination requirements for apparatus-licensed services, which are predominately recorded in RALIs.

Considering spectrum licence technical frameworks and ensuring spectrum embargoes continue to be appropriate are additional elements of this work program.



Our proposed optimisation work across a range of different spectrum uses is outlined in Table 3.

Table 3: Optimising established planning frameworks

Planning area	Project priorities	Proposed timelines and actions
Broadcasting	Vary several solus licence areas in NSW and VIC ⁴⁷ to enable AM to FM conversions	Ongoing: consultations
	Vary several competitive licence areas in NSW, VIC and ACT ⁴⁸ to enable AM to FM conversions	Ongoing: consultations
	Vary the Wangaratta LAP to enable AM to FM conversion	 Q4 2024: consultation
	Vary the Remote Western Australia Radio LAP	Q4 2024: consultation

⁴⁷ This may include a subset of the following commercial licence areas: Lithgow, Inverell, Moree, Gunnedah, Young and Parkes. We are consulting with the licensees to determine indicative timelines and relative priorities. Proceeding with these variations may depend on the relevant licensees making timely strategic business decisions on available implementation options.

⁴⁸ This may include a subset of the following commercial licence areas: Albury, Atherton, Bunbury, Canberra, Coffs Harbour, Dubbo, Kempsey, Maryborough (Bendigo), Maryborough (QLD), Murwillumbah, Muswellbrook, Newcastle, Orange, Sale Toowoomba and Warragul. We are consulting with the licensees to determine indicative timelines and relative priorities. Proceeding with these variations may depend on the relevant licensees making timely strategic business decisions on available implementation options.

Planning area	Project priorities	Proposed timelines and actions
	Vary the Perth LAP to give effect to ABC AM to FM conversions and other requests	Q4 2024: consultation
	Vary the Longreach LAP to amend technical specifications of various services	Q3 2024: consultation
	Vary the Deniliquin LAP to amend technical specifications of various services	 Q4 2024: consultation
	Consult on digital radio channel plans for the licence areas where broadcasters have committed to rollout digital radio	Timing is driven by demand from broadcasters
Satellite	Consider applications for test and demonstration purposes in the 2 GHz band	Ongoing
	Manage filing and coordination of Australian satellite systems	Ongoing
	Review procedures for filing and coordination of Australian satellite systems	Q3 2024: release outcome
	Consider suitability of regulatory arrangements for satellite direct-to-mobile services in terrestrial mobile bands	Q3 2024
Low interference potential devices (LIPD)	Monitor developments	Ongoing
	Lower 6 GHz band (5925–6425 MHz): explore possible use of higher-power RLAN class-licensed devices (under a dynamic spectrum allocation framework). Any resulting update to the LIPD class licence will depend on upper 6 GHz band consideration outcomes	 Q4 2024: outcomes of the June 2024 Planning options in the upper 6 GHz band consultation expected to be published
Intelligent Transport Systems	Monitor developments in cooperative intelligent transport systems (C-ITS)	Ongoing
Review of spectrum planning, assignment and	Review the spectrum planning technical framework to ensure its currency and consistency with current technologies and operational practices	Ongoing

Planning area	Project priorities	Proposed timelines and actions
coordination requirements		
Spectrum licence technical frameworks: review of frameworks below 4 GHz	700 MHz band	A TLG has been formed to review technical conditions on spectrum licences CHANGE Q4 2024: consultation on proposed changes to technical conditions on licences
	2.5 GHz band	Work will commence once work on the 700 MHz band nears completion
Spectrum-sharing approaches	Consideration of new approaches to spectrum sharing when proposals are submitted	Ongoing – AFC-based sharing will be considered in the context of further work on the lower 6 GHz band
Out-of-policy spectrum arrangement requests	Provide advice on requests that departing from our published policies and consider applications for trial demonstrations of new technologies	Ongoing



Broadcasting

We are conducting a technical research program to prepare for channel replanning activities, if required, to support possible future government policy decisions that may require replanning of TV channels. Under this program we are:

- Contracting consultancy services to undertake consumer antenna surveys in known reception and single frequency network (SFN) hot spots, in and around, Perth, Adelaide, Melbourne, Sydney/Central Coast and Brisbane/Gold Coast.
- Investigating television receiver performance capabilities, including operating under SFN scenarios, and the ability of receivers to cope with shared multiplexing. This work will help our understanding of potential consumer impacts under different planning scenarios, and coverage and interference modelling in possible subsequent channel planning.
- Investigating new processes and tools for channel planning to assist with any possible restack channel planning under multiplex sharing arrangements.

- Exploring possible parameters and solutions for channel planning relevant to possible new shared multiplex arrangements. This work will provide evidence to inform any possible future restack channel planning framework and planning principles.
- Undertaking preliminary work on the licensing options under potential arrangements for shared multiplexing and assessment of requirements for amendments to television licence area plans (TLAPs).

We continue to provide spectrum planning and licensing assistance for ad-hoc requests for optimising existing television transmission infrastructure, as well as facilitating trials of new television transmission technologies.

We provide information about television reception and interference on our website and manage the [mySwitch](#) website, a public television coverage data portal with address specific information about television coverage and access to Viewer Access Satellite Television (VAST). We also provide interference diagnostic services where external interference is the cause.

For radio spectrum planning, we are progressing with the priorities outlined in the [Future delivery of radio](#) report.

Our current radio broadcasting planning priorities are:

- converting commercial, national and community broadcasting services from AM to FM where FM spectrum is available
- enhancing coverage of national, commercial and community broadcasting services where spectrum is readily available
- making digital radio channel plans for regional DAB+ if a commercial licensee or national broadcaster has committed to a rollout
- supporting trials of new broadcasting technology.

These broad categories of activity inform our prioritisation of individual requests for planning and allocation.

Recent developments

We have:

- published an update to our broadcast planning priorities to provide industry and audiences with further information on how we intend to deliver these priorities
- engaged with commercial radio AM licensees in regional radio markets that had expressed interest in converting of their AM services to FM to confirm their continued intention to convert
- started the process to undertake regular stakeholder engagement forums on the AM to FM conversion process to discuss the issues around the program and possible ways to progress applications
- reallocated resourcing to AM to FM conversion tasks, and are improving our capacity to undertake conversion work
- continued to engage in targeted consultation with the ABC and commercial radio broadcasters in Perth to progress replanning the Perth FM radio band
- finalised a variation to the Tamworth LAP to enable the conversion of Tamworth commercial AM service to FM

- finalised variations to the Roxby Downs and Armidale LAPs to improve coverage of radio broadcasting services
- issued scientific licences for trials of digital radio in Launceston and continued to engage with all industry sectors on possible further trials of digital radio and rollout of digital radio in regional Australia
- finalised a digital radio channel plan for Launceston and issued category 3 digital radio multiplex transmitter licence to ABC to enable the rollout of digital radio services in Launceston.

Activities planned for 2024–25

- Providing guidance notes and data for AM to FM conversions in regional competitive markets, in accordance with the planning principles for AM to FM conversions in regional licence areas.
- Starting engineering assessments for AM to FM conversions in regional competitive markets once we receive engineering reports prepared by the broadcasters or their consultants; these will be prioritised in accordance with the planning principles.
- Progressing engineering assessments for AM to FM conversions in regional solus markets, as required.
- **NEW** Varying the Perth LAP to give effect to ABC AM to FM conversions and other requests.
- Varying the Wangaratta LAP to enable the conversion of the Wangaratta commercial AM service to convert to FM.
- **CHANGE** Varying the LAPs for Remote Western Australia, Deniliquin, and Longreach to improve coverage of various radio broadcasting services and amend technical specifications of various services.
- Consulting on remaking the Radiocommunications (Allocation of Transmitter Licences – Low Power Open Narrowcasting Licences) Determination 2015 due to sunset on 1 October 2025.
- Consulting on remaking the Radiocommunications Licence Conditions (Temporary Community Broadcasting Licence) Determination 2015 and the Radiocommunications (Broadcasting Licence) Determination 2015, due to sunset on 1 April 2025 and 1 October 2025, respectively.
- Engaging with the broadcasting industry on requests for trials of digital radio and potentially issuing further scientific licences for trials.
- Engaging with the broadcasting industry following requests for making or varying digital radio channel plans and potentially consulting on these proposals.

Table 4 summarises the status of AM to FM conversions in competitive markets. Planning work will be progressed in 2024–25. We are consulting with the licensees on the required inputs to determine relative priorities.

Table 4: Status of requests for AM to FM conversions in competitive markets

Licence area	Expressed interest	Submitted B92 form for LAP variation	In-market licensee agreement
Albury	Yes	Yes	Yes
Atherton	Yes	Yes	Yes
Ballarat	Yes		
Bunbury ⁴⁹	Yes	Yes	
Canberra	Yes	Yes	Yes
Coffs Harbour	Yes		
Dubbo	Yes	Yes	
Kempsey	Yes		
Maryborough (Bendigo)	Yes	Yes	Yes
Maryborough (Qld)	Yes		
Murwillumbah	Yes	Yes	Yes
Muswellbrook	Yes	Yes	Yes
Newcastle	Yes	Yes	
Orange	Yes		
Sale	Yes	Yes	Yes
Toowoomba	Yes	Yes	Yes
Warragul	Yes	Yes	Yes



Satellite planning

We continue to engage internationally to coordinate, develop and implement measures to enhance spectrum use for satellite communications and space research services.

Recent developments

In September 2023, we consulted on a review of the Australian satellite filing procedures, which we use to assess requests to submit technical details of new satellite systems to the ITU.⁵⁰

NEW In November 2023, we consulted on the suitability of Australian regulatory arrangements and spectrum access for future satellite direct-to-mobile services (in terrestrial mobile bands) to inform our considerations on whether the current framework is fit for purpose, or a more

⁴⁹ Only one AM station applied.

⁵⁰ ACMA, [Review of Australian satellite filing procedures](#), ACMA website, 2023, accessed 17 March 2024.

formal investigation is required. On 24 September 2024, in our response paper, we confirmed our view that International Mobile Telecommunications-based satellite direct-to-mobile services can be operated under Australia-wide spectrum licences without the need for further approval from the ACMA. We also published a Regulatory guide: Operation of an IMT satellite direct-to-mobile service.⁵¹

In November 2023, we consulted on draft technical design principles to support MSS use in the 2 GHz band (1980–2005 MHz and 2170–2195 MHz), including the use of a complementary ground component). We also sought further information from stakeholders on the demand for MSS use in this band.⁵²

We continued to examine arrangements to support E-band (71–76/81–86 GHz) satellite services on a coordinated basis with PTP links operating under RALI FX20.

CHANGE This work is expected to continue across Q4 2024 and Q1 2025.

Activities planned for 2024–25

Our key satellite spectrum planning priorities over the next year are:

- progressing work on implementing 2 GHz MSS planning outcomes
- **CHANGE** finalising the review of the Australian procedures for the coordination and notification of satellite systems, with an outcome expected in Q4 2024
- providing ongoing operational support for Australian-filed satellite networks, including:
 - assisting Australian satellite operators with ongoing satellite coordination negotiations with other administrations
 - assessing new notices related to the progress of existing Australian satellite networks
 - filing of new networks
 - supporting international administration-level satellite coordination meetings with other administrations
- ongoing monitoring of the suitability of Australian regulatory arrangements and spectrum access for satellite direct-to-mobile services inform our considerations on whether the current framework is fit for purpose, or whether a more formal investigation is required
- continuing to monitor trends in the spectrum needs of space-based communications systems and developments in emerging space-based technologies and applications, with a view to:
 - update regulatory arrangements for space-based communication systems as required, as well as general updates Radiocommunications (Australian Space Objects) Determination 2014 and the Radiocommunications (Foreign Space Objects) Determination 2014 if required (as these instruments are also sunseting)
 - decide whether changes are required to licensing procedures for space-based communications to support new developments
 - encourage organisations planning new satellite communication systems or intending to change existing systems to contact us to discuss if updates are required and, if so, their timing, as any future work will depend on its priority in the detailed annual work program

⁵¹ See our consultation on [Satellite direct-to-mobile services: regulatory issues](#) and [Regulatory guide: Operation of an IMT satellite direct-to-mobile service](#).

⁵² ACMA, [2 GHz MSS technical parameters and demand considerations](#), ACMA website, 2024, accessed 17 March 2024.

- supporting the development of the Australian space industry by participating in forums such as the Australian Space Agency Space Coordination Committee
- assessing new licence applications for space-based communications systems for consistency with Australian and ITU requirements
- providing support and information to assist organisations wanting to develop experimental satellite systems with short-duration missions
- continuing to monitor the demand for spectrum and emerging regulatory arrangements for NGSO constellations.



Low interference potential devices (LIPD)

The LIPD class licence authorises a wide range of applications including wi-fi, Bluetooth technologies and IoT services along with other uses, including certain spread spectrum and ultra-wideband transmitters. The most recent update to the LIPD class licence occurred in May 2023.

Recent developments

Recent developments have focused on 6 GHz RLANs. Following a consultation in Q4 2021, we updated the LIPD class licence to add the 5925–6425 MHz band for RLAN access. In Q4 2022, we consulted on the next general update of the LIPD class licence. Several issues arising from the recent 6 GHz consultations were considered in this consultation, including frequency-hopping spread spectrum devices in the 6 GHz band and possible updates to the use of RLANs in parts of the 5 GHz band.

Activities planned for 2024–25

We will continue to monitor international and domestic developments that may prompt variations to the LIPD class licence.

Further consideration will be made on some of the other issues we consulted on in Q2 2023 but were not included into the LIPD class licence at the time. These include the authorisation of IoT earth station receivers in the 900 MHz and 2.4 GHz bands and the introduction of arrangements for frequency-hopping spread spectrum devices in the lower 6 GHz band.

The LIPD class licence may also be updated (as it is also sunsetting) as an outcome of our work in the upper 6 GHz band – see 6 GHz (5925–7125 MHz) depending on planning decisions on the future use of that band.



Intelligent transport systems

Intelligent transport systems (ITS) are a range of wireless technologies designed to enable vehicle-to-vehicle, vehicle-to-person or vehicle-to-infrastructure (collectively known as V2X) communications.

The Radiocommunications (Intelligent Transport Systems) Class Licence 2017 (ITS class licence) supports the use of wireless technologies and devices in the frequency range 5855–5925 MHz (the 5.9 GHz band). Compliance with the current European standard for cooperative ITS (C-ITS) is a condition of the ITS class licence, following advice from industry.

Recent developments

Current arrangements for C-ITS remain fit for purpose. The Australian approach has been to follow European standards. As discussions are ongoing within the CEPT regarding a review of ECC Decision (08)01 (the harmonised use of Safety-Related ITS in the 5875–5935 MHz frequency band), we are pausing further work on V2X and channelisation until it can be informed by these ongoing deliberations in Europe.

We previously undertook to investigate possible permanent arrangements for the assignment and coordination of FSS earth stations in the 5.9 GHz band to replace the interim arrangements outlined in Spectrum Embargo 48 by Q4 2023 if any action were necessary. It was ultimately determined that case-by-case exemptions to Embargo 48 for new earth station applications remain appropriate for siting new stations away from areas where ITS is likely to be heavily relied upon, noting that there will invariably be localised interference to ITS devices near those sites (and that class-licensed ITS cannot claim protection from such interference). As a result, no further action is necessary at this time.

Activities planned for 2024–25

We will continue to monitor the developments in C-ITS.



Ongoing review of spectrum planning, assignment and coordination requirements

The spectrum planning framework is complex, made up of an array of interlinking technical and policy documents. The content and interrelationships can be difficult to understand and interpret, even for experienced practitioners, with information on any one service or part of the spectrum contained in multiple documents. Several areas for review have become apparent, including improving the overall transparency and clarity of the framework and ensuring that existing arrangements remain current and fit-for-purpose.

In Q3 2022, we released an information paper on the role of the spectrum planning framework, how the various framework elements interact with each other and other aspects of spectrum management.⁵³ The paper is just one measure we will implement to improve transparency and explain the planning framework to assist all stakeholders.

We also regularly review the spectrum planning technical frameworks to ensure they remain current and consistent with current technologies and operational practices. This includes routinely reviewing the frequency coordination requirements detailed in RALIs. This is captured in our rolling frequency coordination requirements review work program for the coming 12-18 months.

Recent developments

CHANGE In July 2023, we consulted on the frequency coordination requirements review work program for 2023–24, which sets out our work program for further reform of RALIs and associated documents. This work program was finalised in September 2023, and we began reviewing the identified RALIs over the 2023–24 period.

⁵³ See our webpage on [our role to manage spectrum](#).

Activities planned for 2024–25

We will continue to consider where improvements can be made to our assignment and coordination requirements. RALIs identified for review will be captured in an update to the frequency coordination requirements review work program.



Review of spectrum licence technical frameworks

In November 2019, we consulted with spectrum licensees about a review of current arrangements in bands that were already licensed for WBB. This was to ensure existing allocations are efficient and can cater for new technology developments such as 5G. The consultation identified interest in reviewing all technical frameworks below 4 GHz.

In Q4 2022, we consulted on the draft legislative instruments associated with the spectrum licence technical frameworks for the 700 MHz, 1800 MHz, 2.5 GHz and 2.5 GHz mid-band gap frequency bands. These instruments were required to be remade as they sunset on 1 April 2023.

Reviews of the 850/900 MHz, 1800 MHz, 2 GHz, 2.3 GHz and 3.4 GHz band technical frameworks have been completed.

Recent developments

Work on the review of the 700 MHz band began in Q2 2023 with the establishment of a TLG. Work carried out by the TLG is ongoing.

The final band identified in the work program that is still required to be reviewed is the 2.5 GHz band.



Activities planned for 2024–25

The review of the 700 MHz band spectrum licence technical framework will be completed in Q1 2025. The review of the 2.5 GHz band will begin pending the progress of the 700 MHz review.



Spectrum-sharing approaches

Spectrum sharing in its traditional form is a core component of managing access to spectrum – all users ‘share’ the spectrum either through coordinated access (by working around other users on a time, frequency and/or spatial separation basis) or uncoordinated access, where interference potential is understood and accepted and/or mitigated by technology (for example, under the LIPD class licence).

Recent developments

Attention has turned to ‘non-traditional’ sharing arrangements; most notably, dynamic spectrum access (DSA) regimes being examined or implemented internationally. A consultation was held in 2019–20 seeking views on the appetite for making arrangements for DSA and potential implementation methodologies; however, no specific arrangements or trials were proposed. As there was no strong domestic interest, it was decided that it was not yet the right time to actively pursue DSA arrangements in Australia.

When consulting on updates to the LIPD class licence to allow low-power RLAN devices in the lower 6 GHz band, we also discussed the option of implementing an automatic frequency coordination (AFC) system to facilitate access to the band for higher power devices. We will continue to consider the value of introducing such a system in Australia and are monitoring the upcoming introduction of similar systems in the 6 GHz band in other countries, particularly in the US.⁵⁴

We are also monitoring developments internationally. We are aware of regulatory tools used in other jurisdictions to facilitate spectrum sharing, including less dynamic ‘use it or share it’ licence conditions on area-based licences and the issuing of overlapping (non-exclusive) licences.

Activities planned for 2024–25

We welcome proposals for potential trials of DSA technologies and approaches or other suggested mechanisms to facilitate spectrum-sharing in Australia. We also continue to explore the utility and feasibility of AFC as part of a broader consultation process on the future use of the upper 6 GHz band ([consultation paper](#) released in June 2024).



Spectrum management advice and out-of-policy requests

We have an ongoing role to provide advice on potential future spectrum use, including advice on requests that involve licensed use that departs from our published technical planning and assignment policies and consideration of applications for scientific licences to authorise testing or demonstrations of new radiocommunications technologies. However, prospective licensees should still obtain their own legal and engineering advice to inform their decision-making processes.

⁵⁴ Such as the FCC’s February 2024 announcement that it had [approved Wi-Fi management systems to operate in the 6 GHz band](#).



Licensing

The ACMA issues 3 broad categories of licences:

- spectrum licences can only be issued in specified areas and frequency ranges and have a high degree of exclusivity
- apparatus licences generally relate to specific radiocommunications services and use-cases, such as land mobile, fixed, satellite and maritime
- class licences allow shared use of the spectrum, with no application process and no associated regulatory fees for users.

In addition, to promote efficient use of the spectrum, the interference management framework is often optimised for an expected use, even if such use is not prescribed within the planning or licensing arrangement. For example, while spectrum licences may be ‘technology flexible’ in that they do not explicitly preclude any use, they are designed and optimised with a likely technology in mind. This maximises the efficiency of these licences for their expected use alongside the co-existence requirements of other spectrum uses/users.

Table 5 summarises our proposed licensing activities for 2024–25.

Table 5: Licensing and licensing systems

Work area	Project priorities	Proposed timelines
Expiring spectrum licences (ESLs)	Stage 2: <ul style="list-style-type: none"> • Publish views on alternative licensing conditions 	Q4 2024
	Stage 3: <ul style="list-style-type: none"> • Consult on preliminary views on multi-band and band-specific issues, including pricing 	Q1 2025
Radiocommunications regulatory reform	Review sunseting instruments	Q3 2024–Q2 2025
	Consult on incorporating the regulation of EMC within the General Equipment Rules	Q2 2025
	Publish a revised information paper on our approach to radiocommunications licensing and allocation	Q1 2025
Drone regulation	Monitor licensing requirements	Ongoing
RNSS retransmission technologies	Implement long-term licensing solution	Q2 2025
	Ongoing management of innovation and industry development framework	Ongoing

Work area	Project priorities	Proposed timelines
Banned equipment and exemptions framework	Finalise outcome of consultation on the scope and operation of the innovation and industry development framework and Radiocommunications (Exemption) Determination 2021	Q3 2024
Maritime regulatory arrangements – portable and mobile land mobile radio (LMR)	Consult on arrangements to facilitate specified LMR portable and mobile terminal use on maritime VHF channels	 Q2 2025



Expiring spectrum licences (ESLs)


Spectrum licences across the 700 MHz, 850 MHz, 1800 MHz, 2 GHz, 2.3 GHz, 2.5 GHz, 2.5 GHz mid-band gap, and 3.4 GHz bands are due to expire between 2028 and 2032. These ESLs are used to deliver mobile and fixed WBB, rail safety communications and electronic news gathering for broadcasting services.

As of June 2024, there are 68 in-force spectrum licences that will expire as part of the ESL process. This includes several licences that recently came into effect – namely, the 850 MHz downshift licences, and the 3.4 GHz spectrum licences that were allocated in late 2023.

The ACMA is responsible for deciding whether a licence should be renewed, including whether renewal is in the public interest, as well as the duration, conditions and pricing for renewed licences under the Act.

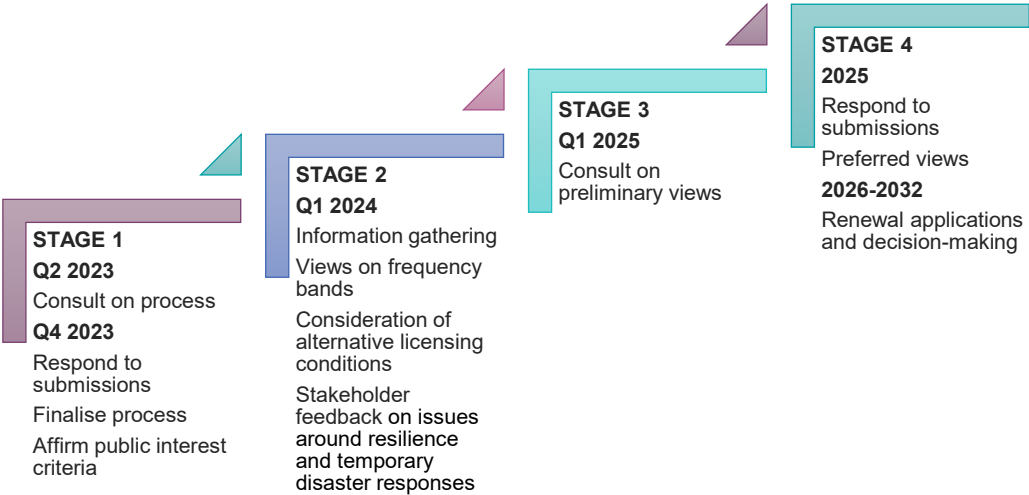
We started work on the ESL process 5 years before the first tranche of ESLs were due to expire and have received strong support from stakeholders for the prioritisation of our ESL work. We aim to have the ESL policy and decision-making framework (comprising preferred long-term views for the relevant spectrum, pricing and licence conditions) settled as close as possible to one year before licensees are able to apply for renewal of the first tranche of ESLs. The first to expire will be the 850 MHz (original band and downshift) and 1800 MHz licences on 17 June 2028; applications for renewal will open on 18 June 2026.

Over May to August 2023, we consulted on our proposed ESL 4-stage process (see Figure 3) and public interest criteria framework. We released a paper in December 2023 [responding to submissions and finalising our 4-stage process and public interest criteria](#). In April 2024, the minister made the [ESL MPS](#), and the communications policy objectives it specifies are integrated into our ESL framework.

 In March 2024, we commenced [Stage 2 of the ESL process](#) by releasing a paper that sought submissions from incumbent and prospective alternative licensees on how their historical, current and proposed future use of ESL spectrum could further the long-term public interest. We also sought submissions on our views on uses of ESL bands and certain alternative licensing conditions, and feedback from stakeholders about resilience and temporary disaster responses in the context of the ESLs. Responding to stakeholder views,

we also modified the Stage 2 process to include a reply-to-comment process, necessitating a small delay to the start of Stage 3 from late Q4 2024 to Q1 2025.

Figure 3: ESL 4-step process



To ensure we are consistent with the object of the Act in promoting the long-term public interest derived from spectrum, we developed a policy and decision-making framework, underpinned by public interest criteria. The framework is a way of articulating matters that we will generally consider as being relevant to ESL decision-making and integrates the policy objectives in the ESL MPS.

According to the public interest criteria, spectrum use should:

- facilitate efficiency
- promote investment and innovation
- enhance competition
- balance public benefits and impacts
- support relevant policy objectives and priorities.

Activities planned for 2024–25

CHANGE We will review submissions made to the Stage 2 process and intend to publish our views on alternative licence conditions in Q4 2024.

Submissions made to Stage 2 will directly inform Stage 3, which is scheduled to begin later in Q1 2025. During Stage 3, we will consult on our preliminary views on the long-term arrangements for the spectrum covered by ESLs, including licence frameworks, conditions and pricing. Information gathered in Stage 2, along with other inputs, will help inform such views.

In Stage 4, scheduled for the first half of 2025, we will publish a response to submissions received to the Stage 3 consultation. This will communicate our preferred views on planning, licensing and pricing arrangements for the spectrum. These views will not bind the ACMA, and applications will be considered on their merits. Our preferred views will, however, provide clear guidance stakeholders on the matters the ACMA will consider relevant in making a decision in response to a renewal application.



Sunseting legislative instruments

We are continuing the significant body of work to consult on remaking or revoking sunseting instruments.⁵⁵

With the large number of radiocommunications instruments scheduled to sunset in 2024 and 2025, to assist our stakeholders, we are distributing these consultations over a number of years.

Activities planned for 2024–25

Appendix A outlines the consultations we plan to undertake in 2024–25 on various instruments scheduled to sunset in 2025.



Outlining our approach to licensing and allocation

In 2021, we published an information paper on our approach to implementing the changes arising from amendments to the Radiocommunications Act made by the *Radiocommunications Legislation Amendment (Reform and Modernisation) Act 2020* (the Modernisation Act).⁵⁶

The information paper included our approach to licensing and allocation decisions. As the paper was developed in response to the Modernisation Act, it is timely to review the paper to ensure it is up to date and continues to be fit for purpose.

CHANGE We released the [revised *Our approach to licensing and allocation paper*](#) for comment in June 2024.

Activities planned for 2024–25

Following consideration of comments on the revised paper, we will release a final version of the paper. This is scheduled for Q1 2025, with the timing dependant on the comments received.



Drone spectrum regulation

Uncrewed aircraft systems, also known as remotely piloted aircraft systems (RPAS) or drones, have become increasingly popular with hobbyists and commercial users. Drones rely on radiocommunications for remote piloting and other uses, such as video and sensing.

As drone use continues to become more widespread, so too are concerns about their unlawful use, including how counter-drone technologies impacts spectrum users. We have put into place exemption arrangements that facilitate law enforcement access to counter-drone equipment, and will continue to monitor international approaches, and domestic needs,

⁵⁵ Sunseting involves setting a date for the automatic repeal of legislation. Legislative instruments are automatically repealed after a fixed period (subject to some exceptions). The sunseting rules are set out in Chapter 3, Part 4 of the *Legislation Act 2003*.

⁵⁶ See [our approach to radcomms licensing and allocation](#).

to detecting and responding to incidents where drones may pose a risk to safety and security.

Following consultation in July 2022 on new arrangements for the banned equipment and exemptions framework, in March 2023 we imposed a permanent ban on [drone jamming equipment](#) that was not already subject to one or more permanent bans. These arrangements clarified the regulatory status of equipment designed to cause interference to drones, and will help prevent that equipment from entering Australian supply chains.

We are also supporting local industry through the [innovation and industry development exemption framework](#), which can facilitate R&D and manufacturing of counter-drone equipment.

Additionally, radiocommunications exemption arrangements are in place to facilitate the use of counter-drone capabilities by Australian police agencies, which allows them to access and use this capability for law enforcement activities. On the spectrum front, most drones use spectrum authorised under the LIPD class licence. While we expect drones to transfer more and more to mobile (including 5G) networks over time, larger drones used for commercial or military purposes are increasingly requiring access to dedicated aeronautical spectrum.

Activities planned for 2024–25

During 2024–25, we will continue to collaborate with the Department on drone management and contribute to relevant government initiatives. This includes monitoring the current and future implications of spectrum and licensing requirements for drones alongside international developments in spectrum management. We are also working with the emerging aviation technologies sector to monitor spectrum and licensing requirements internationally and domestically.

Spectrum planning to support interim access by RPAS to the 5030–5091 MHz band is discussed earlier in the section on [‘Optimising established planning frameworks’](#).



RNSS retransmission technologies

We have collaborated with a range of emergency services and road transport stakeholders on proposals to facilitate trials and small-scale deployments of certain radionavigation-satellite service repeaters (RNSS) in road tunnels.

CHANGE Loss of RNSS (which encompasses a number of ubiquitous systems including GPS and GLONASS, a global navigation satellite system) coverage often occurs in many indoor and underground locations.

In 2020, we removed regulatory barriers to using types of RNSS repeaters, creating a pathway to authorise trials using scientific licences, and have since collaborated with stakeholders on trials of RNSS repeaters in road tunnels.

Following consultation in July 2022 on new arrangements for the banned equipment and exemptions framework, we made new regulatory arrangements that removed further barriers to authorising a wider range of RNSS technologies, including repeaters, simulators and pseudolites.

NEW In June 2024, we released a [consultation paper](#) on long-term licensing arrangements for RNSS retransmission technologies.

Activities planned for 2024–25

While permanent licensing arrangements are being considered, we will continue to consider applications for assigned scientific licences for trials of RNSS retransmission technology devices.

CHANGE Following consideration of consultation feedback on long-term licensing arrangements for RNSS retransmission technologies, we aim to finalise permanent licensing arrangements in Q2 2025.



Review of banned equipment and exemptions framework

Permanent bans on equipment are made under Radiocommunications Act. The ACMA has imposed permanent bans on the 3 types of equipment: mobile phone jammers (public mobile telecommunications service jamming devices), RNSS jammers, and wi-fi and drone jammers (radio local area network and remotely piloted aircraft system jamming devices).

The banned equipment framework was updated in March 2023. The framework continues to ensure that high-risk jamming equipment remains illegal, places a new ban on drone and wi-fi jamming equipment, and ensures that beneficial technologies are less likely to be subject to a ban and can be considered for licensing by the ACMA. The updated exemptions regime provides continuity for law enforcement, and creates new opportunities for the defence and technology sectors.

CHANGE The Radiocommunications (Exemption) Determination 2021, which is the legal basis for the innovation and industry development framework, expired on 28 August 2024.

CHANGE We consulted in May and June 2024 on the proposed remake of the instrument with minor changes. In July 2024, we finalised the outcome of consultation and made the [Radiocommunications \(Exemption\) Determination 2024](#).

Activities planned for 2024–25

We will continue to assess applications to access the innovation and industry development framework, and also engage with stakeholders on expiring permissions.



High-power amateur radio operation

In September 2022, we [consulted](#) on a proposal for a staged implementation of high-power authorisation for amateur radio. That is, implementing scientific licensing for amateur high-power experimentation, and, in the medium-term, considering the establishment of a mechanism by which high-power use-cases, not enabled under scientific licensing, can be authorised.

In March 2023, in the draft FYSO 2023–28 we noted our intention to publish information to support the use of scientific-licensing arrangements for advanced amateur higher-power experimentation (from 1 July 2023). The [Scientific apparatus licences: Guidelines](#), were

published in late August 2023 and include information to support the consideration of applications for assigned scientific licences to authorise certain higher-power experimentation uses by amateurs. The guidelines aim to assist applicants understand the matters we will take into account when assessing an application and the type of information that should accompany an application.

In August 2023, we also released the [response to submissions](#) to the September 2022 consultation, which reiterated that amateur operators may apply for assigned scientific licences for certain experimentation uses, including for activities such as reflecting signals from a celestial body, and inter-continental ionospheric and trans-equatorial propagation experiments. It also outlined that we intend to work through mechanisms and arrangements that could be put in place for a medium-term high-power authorisation and would communicate next key milestones and proposed timing in the draft FYSO 2024–29.

Activities planned for 2024–25

Due to competing priorities and a suitable scientific licensing pathway being in place for high-power operation by amateurs, we do not plan to consult on the medium-term proposal in 2024–25. We will update consultation timings in a future FYSO.




Assigned amateur beacons and repeaters

Submissions to the [review of non-assigned amateur and outpost licensing arrangements](#) noted that the assigned amateur beacon and repeater licensing process could be streamlined.

Currently, applicants are required to obtain a letter of endorsement from the Wireless Institute of Australia before approaching an accredited person or applying for their licences directly through the ACMA. This requirement can introduce delays to the licensing process.

To improve the transparency of technical coordination arrangements that underpin the licensing of assigned amateur beacon and repeater apparatus licences, we plan to publish technical guidance material for coordination and licensing of amateur beacons and repeaters.

 In June 2024, we began [consultation](#) on this amateur beacon and repeater guidance with amateur operators and accredited persons.

Activities planned for 2024–25

Following consideration of consultation feedback, we plan to finalise and publish the technical guidance material for coordination and licensing of amateur beacons and repeaters in Q4 2024.



Equipment regulation

Following the Modernisation Act's commencement, we have engaged in a staged program of work to bring radiocommunications equipment regulation into the equipment rules framework in Part 4.1 of the Radiocommunications Act.

As part of that program, we have made the General Equipment Rules.

In 2021, we amended the General Equipment Rules to include the standard and labelling requirements for electromagnetic energy (EME) associated with mobile stations within the instrument. In February 2023, we incorporated the general compliance standards and associated labelling requirements within the General Equipment Rules.

Activities planned for 2024–25

CHANGE As part of this staged program, we intend to consult on including the regulation of electromagnetic compatibility (EMC) within the General Equipment Rules. We issued a discussion paper outlining key issues in EMC regulation in Q4 2023. Following a review of the submissions received, we expect to consult in Q2 2025 on incorporating the relevant EMC requirements into the General Equipment Rules. In Q3 2025, we plan to finalise incorporating the regulation of EMC within the General Equipment Rules.



Maritime regulatory arrangements – portable and mobile LMR

We are exploring emergency service use of LMR portable and mobile terminals on maritime VHF channels. Emergency service operators can currently use LMR on VHF maritime frequencies in emergency situations.⁵⁷ However, licensing and standards arrangements mean they are not routinely allowed to possess or use this equipment outside of emergency situations, including for routine training purposes.


Ongoing use would allow emergency services operators to, for example, test the equipment and operational arrangements to ensure they can be deployed in emergency situations, allow personnel to carry less equipment, reduce costs and making routine operation easier.

However, there are various considerations that need to be evaluated, including any impact on maritime radio channels and users.

A trial is currently underway in Tasmania and Victoria, under a permit issued in accordance with the [General Equipment Rules](#) and a scientific-assigned licence, which will provide useful data to inform considerations of ongoing use and quantify any impact on maritime channels and users.

⁵⁷ Sections 49 and 196 of the Radiocommunications Act provide for defences relating to operation and possession of unlicensed devices and causing interference to radiocommunications to deal with emergencies.

Activities planned for 2024–25

 We plan to consult in Q2 2025 on arrangements to facilitate certain specified LMR portable and mobile terminal use on maritime VHF channels. Subject to a review of the submissions received, we aim to finalise arrangements in Q3 2025.



Pricing

We implement and maintain pricing arrangements for the use of radiofrequency spectrum. The pricing arrangements encompass several taxes on different types of radiofrequency spectrum use, including apparatus licence tax, spectrum licence tax and commercial broadcasting tax. Our pricing work is informed by recommendations from the Spectrum Pricing Review, for which implementation has been progressive and is ongoing.

In 2024–25, we will focus on:

- maintaining the tax regimes, including the annual updates to the transmitter and receiver licence tax determinations (that is, the apparatus licence tax determinations), and spectrum licence tax determinations
- consulting on the sunseting and remaking of the apparatus licence tax determinations
- consulting on a pricing review of the 2690 MHz to 5 GHz frequency range
- assessing the commercial broadcasting tax arrangements and implementing the Commercial Broadcasting (Tax) (Transmitter Licence Tax Rebate) Rules 2024 (the Rebate Rules 2024).

This work will complement our work on several licensing and band reviews (including the ESL process) that will continue into 2024–25. As part of those reviews, we will undertake work for any spectrum pricing implications. For example, as part of the ESL work in Q1 2025, we plan to publish preliminary views on multi-band and band-specific issues, including pricing.

Maintaining the tax regimes

The ACMA maintains tax arrangements to ensure consistency with its licensing and planning arrangements.

Activities planned for 2024–25

Our work to maintain the tax regimes is ongoing and will be a focus of our pricing work for 2024–25, as shown in Table 6.

Table 6: Tax regime activities, 2024–25

Project priorities	Proposed timelines
Consulting on the sunseting and remaking of the apparatus licence tax determinations scheduled to sunset in April 2025	<p>CHANGE Q3 2024: consultation held between 5 August and 2 September 2024.</p> <p>We anticipate the remade determinations will be in force from April 2025.</p>
Maintaining the current apparatus licence tax regime by implementing the second annual update of apparatus licence taxes based on the new population-based methodology from the Spectrum Pricing Review	<p>CHANGE Q3 2024: consultation held between 5 August and 2 September 2024.</p> <p>We anticipate the new taxes will apply from April 2025.</p>

Project priorities	Proposed timelines
<p>Maintaining the current licence tax regime, by updating the Radiocommunications (Spectrum Licence Tax) Determination 2021 to adjust the total annual EME component amount for 2024–25 and other machinery changes</p>	<p>CHANGE Q3 2024: consultation held between 9 August and 23 August 2024.</p> <p>The Radiocommunications (Spectrum Licence Tax) Amendment Determination 2024 (No. 1) came into effect on 13 September 2024.</p>

Note: The EME component of the spectrum licence tax recovers the cost of the EME Program. The EME Program provides information and research into the impacts of EME on human health. In 2023-24, the total annual EME component was \$2,014,000. It was increased to \$2,090,532 in 2024–25 based on the 3.8% annual increase in the consumer price index.

Spectrum Pricing Review implementation

To implement the recommendations of the Spectrum Pricing Review, we published [pricing guidelines](#) in December 2020 and implemented the first tranche of pricing reforms in 2021. In October 2021, we published a consultation paper on a [second tranche of pricing reform proposals](#). We implemented the second tranche reforms in Q2 2022 to formally end the substantive decision phase of the Spectrum Pricing Review process (noting some pricing adjustments to be implemented).

In 2023–24, we implemented the first annual update apparatus licence of taxes based on the new population-based methodology. We consulted on the methodology for making the population-based adjustments in Q1 2023 on new prices and then consulted on the adjusted prices in Q3 2023. We made the changes to the tax determinations in Q4 2023, and these new taxes have applied from 5 April 2024.

Activities planned for 2024–25

There are ongoing pricing adjustments from the implementation of the Spectrum Pricing Review, including:

- preparing for expansion of the boundaries of the Perth and Adelaide medium-density areas to allow affected licensees time to prepare for the changes to their apparatus licence tax amounts. In our consultation paper about remaking sunseting apparatus licence tax determinations, which was released in August 2024, we proposed to align the changes with the introduction of our new spectrum management system, which is expected to go live by the end of 2025. We therefore will not implement the changes by mid-2025 and will defer them to the following financial year.
- ongoing band reviews to update apparatus licence taxes in certain frequency ranges. Following the implementation of the second tranche of Spectrum Pricing Review reforms, we flagged some pricing reviews in specific band to ensure the appropriateness of price settings. The first of these reviews is for the 2690 MHz to 5 GHz frequency range. We anticipate consulting on the review in Q2 2025.

We also anticipate reviewing the frequency range 520 MHz to 2690 MHz in the following financial year.

Commercial broadcasting tax assessment process

The commercial broadcasting tax is imposed annually on transmitter licences associated with a commercial broadcasting licence. We assess the commercial broadcasting tax on the anniversary date for each transmitter licence. An overview of the commercial broadcasting

tax arrangements can be found in the [Commercial broadcasting transmitter licence fee schedule](#), including information about the responsibility to pay commercial broadcasting taxes by the due date, the need to contact the ACMA should a licensee anticipate that payment may not be made by the due date and the penalties that can apply for making late payments.

Activities planned for 2024–25

We will continue assessing commercial broadcasting tax on an ongoing basis throughout 2024–25. The assessment process will also incorporate the recently made Rebate Rules 2024, for which there are 4 annual rebate periods, the first of which is effective from June 2024. These rules and the previous rebate rules made in 2022, provide for rebates to eligible commercial radio and commercial television broadcasters. The ACMA will apply the Rebate Rules 2024 to relevant assessments in 2024–25.



Compliance priorities

The utility of spectrum is also affected by the interference protection environment. The risk of causing harmful interference to the radiocommunications spectrum is managed through both our planning and allocations work, and our compliance programs.

Each year, as part of these compliance programs, we set whole-of-agency compliance priorities that aim to systematically identify and address high-risk compliance issues or issues of significant concern to the community or industry by maximising our regulatory reach in a strategic and resource-efficient manner.

Compliance activities in 2023–24

In Q1 2023, we consulted on our compliance focus for 2023–24 and, informed by submissions to the consultation, we identified areas for the [2023–24 ACMA compliance priority program](#).⁵⁸

We continued to manage the risk of interference to radiocommunications spectrum through our focus on tackling the online supply of ‘dodgy’ devices.

Complaints about non-compliant radiocommunications devices advertised or bought online are ongoing. These devices may not meet safety standards and can cause interference to communications, including GPS and emergency services communications, which can put Australians at risk. Key outcomes of the 2023–24 program included:

- completing 2 audits of selected eCommerce platforms that identified 2,209 advertisements for non-compliant devices, which were then removed by the platforms
- running an advertising campaign across online platforms to educate and inform consumers during November 2023 to June 2024
- undertaking consumer research about purchasers of non-compliant devices. We will publish a report of our findings in the latter half of 2024.

We also continued our program of EME measurements at 5G-enabled mobile base stations. The growing rollout of millimetre wave (mmWave) technologies in Australia continues to make EME emissions and 5G compliance a priority. We have extended our EME measurement program to these technologies and assessed EME in buildings. This program of work complements our existing EME measurement program and provides additional information and assurance to Australians about 5G and EME. Key outcomes for the 2023–24 program included:

- conducting EME measurements at 85 sites with mmWave deployments. Early measurement results suggest that EME levels from 5G mmWave deployments are more than 10 times lower than from 5G mid-band (3500 MHz) deployments. More information on our measurements results can be found at [EME Checker](#)

⁵⁸ See the [ACMA's 2023–24 compliance priorities](#).

- conducting EME measurements at a selection of in-building locations of interest to the public such as sporting stadiums, shopping centres, schools, residential homes and airports. As of 30 June 2024, we have measured 18 in-building locations.

We also maintained radiocommunications licensing integrity with a focus on Low Power Open Narrowcast (LPON) licence compliance.

Recent audits have revealed widespread non-compliance by LPON licensees with their licence conditions. This includes over-powering transmitters, operating from unlicensed locations, failing to keep records and not providing services.

Non-compliance increases interference risk to other users of the radiocommunications spectrum, denies spectrum to others, degrades services and undermines the efficient allocation and use of spectrum. Key outcomes for the 2023-24 program included completing 142 desktop audits and 57 field audits of a sample of LPON licensees from October 2023 to April 2024.

We will publish a report of our findings and updated guidance information for licensees in the second half of 2024.

Compliance activities for 2024–25

Compliance activities planned for 2024–25 were announced on 1 July 2024.

Radiocommunications devices that do not comply with Australian rules and safety standards may cause interference to communications, GPS and emergency services, which can put Australians at risk. We continue to see complaints about non-compliant radiocommunications devices advertised or bought online. Building on last year's work, we will use a 3-pronged approach to tackle online supply of dodgy devices. We will:

- continue our work with online platforms to proactively remove ads for non-compliant devices
- develop a voluntary pledge with eCommerce platforms to better protect Australian consumers buying online
- educate Australians about the risks of buying these devices online.



International engagement

The ACMA, the Department, Australian industry and government stakeholders participate in international radiocommunications forums to promote and protect Australian interests in spectrum management, including spectrum harmonisation and international frequency coordination.

The highest level international radiocommunications forum is the ITU’s WRC, which reviews and revises the RRs, the international treaty level document regarding use of the spectrum and satellite orbits.

The next WRC will be held in late 2027 (WRC-27) and will consider a large agenda concerning new frequency allocation and procedural matters across a range of services. The Department will lead the Australian preparatory processes and the Australian delegation to this meeting in preparation for WRC-27, with the ACMA providing technical, regulatory and strategic expertise.

Other forums within the ITU, and regionally within the Asia–Pacific Telecommunity (APT), consider issues with a technical focus that are also of significance to Australian spectrum management. These forums include ITU-R study groups and working parties, and the APT Wireless Group (AWG). We manage Australian input and participation in these forums in consultation with the Department and industry. ITU-R study groups and working parties also undertake studies relevant to WRC agenda items. We work in consultation with the Department to manage engagement in these processes.

We also undertake informal bilateral and multilateral engagement with peer regulators from around the world. This engagement is invaluable in coordinating international activities and sharing information from other spectrum managers on issues of common interest. In particular, we are focused on strengthening the relationship and cooperation between Australia and the Indo-Pacific to support broader government policies and activities. For instance, we will host officers from Papua New Guinea’s National Information and Communications and Technology Authority (NICTA) in the second half of 2024.

Table 7 outlines the delegations to the ITU and APT meetings that we led or will lead in 2023–24.

Table 7: International engagement in 2023–24

Meeting	Date
ITU-R Working Party 5B	10–21 July 2023
Sixth meeting of the APG for WRC-23 (APG 23-6)*	14–19 August 2023
ITU-R Study Group 5 and Working Party 5A	13–26 September 2023
Radiocommunications Assembly 2023*	13–17 November 2023
World Radiocommunication Conference (WRC-23)*	20 November – 15 December 2023

Meeting	Date
First Session of the Conference Preparatory Meeting for WRC-27 (CPM 27-1) *	18–19 December 2023
ITU-R Working Party 5D	31 January – 7 February 2024
APT Wireless Group Meeting 32 (AWG-32)	4–8 March 2024
ITU-R Working Party 4A, 4B, 4C and Study Group 4	24 April – 10 May 2024
ITU-R Working Party 5A, 5B, 5C and Study Group 5	13–24 May 2024
NEW First meeting of the APG for WRC-27 (APG 27-1)*	3–6 June 2024
ITU-R Working Party 5D	25 June – 2 July 2024

*Denotes meeting led by the Department.

Activities planned for 2024–25

Table 8 summarises the anticipated international engagement activities for the coming year. Meetings are subject to confirmation and may change.

Table 8: International engagement in 2024–25

Meeting	Date
NEW NICTA study visit	Second half of 2024 (planned)
NEW APT Wireless Group Meeting 33 (AWG-33)	9–13 September 2024
ITU-R Working Party 5D	3–11 October 2024
ITU-R Working Party 4A, 4B, 4C and Study Group 4	10 October – 1 November 2024
ITU-R Working Party 5A, 5B, 5C and Study Group 5	19 November – 3 December 2024
NEW Telecommunications and Radiocommunications Training Program	25–27 November 2024
NEW ITU-R Working Party 5D	5–12 February 2025 (planned)
NEW ITU-R Working Party 5A, 5B and 5C	28 April – 9 May 2025 (planned)
NEW ITU-R Working Party 4A, 4B and 4C	30 April – 23 May 2025 (planned)
NEW ITU-R Working Party 5D	24 June – 3 July 2025 (planned)

In addition to these meetings in which the ACMA leads Australia’s participation, we also manage Australian participation for the following meetings: Study Group 1, Study Group 3 and Working Parties 3J, 3K, 3L, 3M, Study Group 6, and Working Parties 6A, 6B, 6C, Study Group 7 and Working Parties 7A, 7B, 7C and 7D.

We will continue to manage and provide technical, regulatory and strategic expertise for Australian engagement in international spectrum management forums through consultative frameworks.

At a domestic level, the [Australian Radiocommunications Study Groups \(ARSGs\)](#) and the Preparatory Group for the Asia-Pacific Telecommunity Wireless Group (PG AWG), which contain representatives from industry, academia, and other government agencies, provide expert advice to the ACMA on international radiocommunications matters.

We consider input from these groups to help develop Australian contributions to international forums and form Australia's positions on international radiocommunications and spectrum management issues.

NEW The ACMA, in conjunction with the Asia-Pacific Telecommunity, will host the Telecommunications and Radiocommunications Training Program (TRTP) in Melbourne from 25–27 November 2024, with support from the Department of Foreign Affairs and Trade as well as the Department of Infrastructure, Transport, Regional Development, Communications and the Arts. The TRTP is tailored for Pacific Island nations and their specific needs. It is funded and implemented by the Australian Government and fellowships will be provided to Pacific Islands countries to attend.

Upcoming consultations

Approaches to consultation

The ACMA consults extensively with industry through both formal public and targeted informal industry consultation processes. This not only meets various legislative obligations and Parliamentary expectations but also assists us to obtain industry views as well as key technical and industry information.

The information and views obtained through consultation processes are essential inputs to informing our decision-making and the development of appropriate regulation. Consultation processes also provide transparency to industry, both about our thinking and decision-making, but also to the views and evidence put forward by other parts of industry.

While our approach to consultation is well established, we consider there is value in testing existing approaches to ensure they remain fit for purpose and best meet the goals of information gathering and transparency, while remaining alert to the consultation load on industry.

In the context of major band reviews, the typical⁵⁹ steps and associated papers are described in the work program and usually include an information-gathering discussion paper followed by an options paper that includes proposed regulatory approaches. ACMA decisions and preliminary views are then announced in an outcomes paper, followed by further consultation on specific aspects of implementation.

In some jurisdictions (such as the US), the regulator provides for a ‘reply comment’ period that allows industry to comment on other party’s submissions. That is, a 60-day comment or submission period is followed by a 30-day period in which industry submissions can be rapidly responded to. The key benefit of this approach is that it allows industry to test notionally factual assertions and opinions, rather than this solely being the role of the regulator.







We see value in adopting such an approach in some circumstances and have used this approach for the options paper for the 1.9 GHz band extended MSS L-band replanning project, which used a one-month reply-to-comment period. We are currently evaluating its use for those projects and considering its wider application.




Table 9 summarises consultations flagged throughout the FYSO for 2024–25. Consultation plans are subject to change.

⁵⁹ If circumstances require it, we may compress or expand this process.

Table 9: Consultation plans for 2024–25

Consultation details	Proposed timelines
Maintenance of the current apparatus licence tax regime (based on new population-based methodology)	Q3 2024
Maintenance of the current spectrum licence tax regime by updating to the Spectrum Licence Tax Determination to adjust the total annual EME component amount for 2024–25	Q3 2024
Sunsetting of the Radiocommunications (Interpretation) Determination 2015	Q3 2024
Sunsetting of the Radiocommunications (Receiver Licence Tax) Determination 2015 and the Radiocommunications (Transmitter Licence Tax) Determination 2015	Q3 2024
Proposed changes to technical conditions on licences for 700 MHz band	Q4 2024
Sunsetting of the Radiocommunications (Low Interference Potential Devices) Class Licence 2015	Q4 2024
CHANGE Technical and apparatus-licensing allocation arrangements for highly localised WBB, in combination with sunsetting of the Radiocommunications Licence Conditions (Fixed Licence) Determination 2015	Q4 2024
CHANGE Varying the Perth LAP to give effect to ABC AM to FM conversions and other requests	Q4 2024
CHANGE Varying the Remote Western Australia Radio LAP	Q4 2024
Preliminary views on multi-band and band-specific issues for expiring spectrum licences	Q4 2024
Sunsetting of the Radiocommunications Licence Conditions (Maritime Ship Licence) Determination 2015	Q4 2024
NEW Sunsetting of the Radiocommunications (Minimum Age for Issue of Certificates of Proficiency) Declaration 2015	Q4 2024
NEW Sunsetting of the Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015	Q4 2024
NEW Radiocommunications Licence Conditions (Broadcasting Licence) Determination 2015	Q4 2024
NEW Radiocommunications Licence Conditions (Temporary Community Broadcasting Licence) Determination 2015	Q4 2024
CHANGE Varying the Wangaratta LAP to enable AM to FM conversion	Q4 2024
CHANGE Varying the Deniliquin LAP to amend technical specifications of various services	Q4 2024

Consultation details	Proposed timelines
Sunsetting of the Radiocommunications (Australian Space Objects) Determination 2014	Q4 2024
Sunsetting of the Radiocommunications (Foreign Space Objects) Determination 2014	Q4 2024
Sunsetting of the Radiocommunications (Communication with Space Object) Class Licence 2015	Q4 2024
Sunsetting of the Radiocommunications (Trading Rules for Defence Spectrum Licences) Determination 2015	Q1 2025
Further consultation on design of technical framework and allocation matters for 2 GHz MSS (1980–2010 MHz and 2170–2200 MHz)	Q1 2025
Options paper for arrangements in the 1.5 GHz band, in combination with sunsetting of the Radiocommunications 1.5 GHz Frequency Band Plan 2015	 Q1 2025
Sunsetting of the Radiocommunications (Allocation of Transmitter Licences – Low Power Open Narrowcasting Licences) Determination 2015	 Q1 2025
Sunsetting of the Radiocommunications (Maritime Ship Station – 27 MHz and VHF) Class Licence 2015	 Q1 2025
 Sunsetting of the Radiocommunications Licence Conditions (Maritime Coast Licence) Determination 2015	Q1 2025
 Sunsetting of the Radiocommunications Licence Conditions (Major Coast Receive Licence) Determination 2015	Q1 2025
 Sunsetting of the Radiocommunications (27 MHz Handphone Stations) Class Licence 2015	Q1 2025
Sunsetting of the Radiocommunications (Unacceptable Levels of Interference — 3.4 GHz Band) Determination 2015	Q1 2025
Sunsetting of the Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters — 3.4 GHz Band) 2015	Q1 2025
Sunsetting of the Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 3.4 GHz Band) 2015	Q1 2025
Sunsetting of the Radiocommunications Licence Conditions (Aeronautical Licence) Determination 2015	Q1 2025
Sunsetting of the Radiocommunications Licence Conditions (Amateur Licence) Determination 2015	Q1 2025
Sunsetting of the Radiocommunications Licence Conditions (Land Mobile Licence) Determination 2015	Q1 2025

Consultation details	Proposed timelines
Sunsetting of the Radiocommunications (Limitation of Authorisation of Third Party Users and Transfer of Apparatus Licences) Determination 2015	Q1 2025
Sunsetting of the Radiocommunications (Radio-controlled Models) Class Licence 2015	Q1 2025
Expiring spectrum licences, Stage 3: preliminary views	Q1 2025
Incorporating EMC regulation within the General Equipment Rules	 Q2 2025
Arrangements to facilitate certain specified LMR portable and mobile terminal use on maritime VHF channels	 Q2 2025
Sunsetting of the Radiocommunications (Citizen Band Radio Stations) Class Licence 2015	 Q2 2025
Sunsetting of the Radiocommunications (Radionavigation—Satellite Service) Class Licence 2015	Q2 2025

Appendix A: Sunsetting instruments 2024–25

Table 10 and Table 11 outline consultations we plan to undertake in 2024–25 for some radiocommunications instruments scheduled to sunset on 1 April 2025 and after 1 April 2025, respectively.

If consultation is proposed,⁶⁰ this would be for instruments to replace or revoke the sunsetting instrument. This replacement or revocation will take place after we have considered consultation comments, with the outcome published on our website.

Table 10: Select radiocommunications instruments due to sunset on 1 April 2025

Sunsetting instrument	Consultation timing
Radiocommunications (Interpretation) Determination 2015	Q3 2024
Radiocommunications (Receiver Licence Tax) Determination 2015 and the Radiocommunications (Transmitter Licence Tax) Determination 2015	Q3 2024
NEW Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015	Q4 2024
NEW Radiocommunications Licence Conditions (Broadcasting Licence) Determination 2015	Q4 2024
NEW Radiocommunications Licence Conditions (Temporary Community Broadcasting Licence) Determination 2015	Q4 2024
Radiocommunications Licence Conditions (Maritime Ship Licence) Determination 2015	Q4 2024
Radiocommunications (Australian Space Objects) Determination 2014	CHANGE Q4 2024
Radiocommunications (Foreign Space Objects) Determination 2014	CHANGE Q4 2024

Table 11: Select radiocommunications instruments due to sunset after 1 April 2025

Sunsetting instrument	Consultation timing
Radiocommunications (Low Interference Potential Devices) Class Licence 2015	Q4 2024
NEW Radiocommunications (Communication with Space Object) Class Licence 2015	Q4 2024
NEW Radiocommunications Licence Conditions (Fixed Licence) Determination 2015 ⁶¹	Q4 2024

⁶⁰ If a sunsetting instrument only applies to a narrow range of stakeholders, we may engage directly with those stakeholders.

⁶¹ Incorporated into Q4 consultation on technical and apparatus-licensing allocation arrangements for highly localised WBB.

Sunsetting instrument	Consultation timing
NEW Radiocommunications (Minimum Age for Issue of Certificates of Proficiency) Declaration 2015	Q4 2024
Radiocommunications 1.5 GHz Frequency Band Plan 2015	CHANGE Q1 2025
Radiocommunications (Allocation of Transmitter Licences – Low Power Open Narrowcasting Licences) Determination 2015	CHANGE Q1 2025
Radiocommunications (Maritime Ship Station – 27 MHz and VHF) Class Licence 2015	CHANGE Q1 2025
Radiocommunications Licence Conditions (Maritime Coast Licence) Determination 2015	CHANGE Q1 2025
Radiocommunications Licence Conditions (Major Coast Receive Licence) Determination 2015	CHANGE Q1 2025
Radiocommunications (Unacceptable Levels of Interference — 3.4 GHz Band) Determination 2015	Q1 2025
Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters — 3.4 GHz Band) 2015	Q1 2025
Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 3.4 GHz Band) 2015	Q1 2025
Radiocommunications (27 MHz Handphone Stations) Class Licence 2015	Q1 2025
Radiocommunications Licence Conditions (Aeronautical Licence) Determination 2015	Q1 2025
Radiocommunications Licence Conditions (Amateur Licence) Determination 2015	Q1 2025
Radiocommunications Licence Conditions (Land Mobile Licence) Determination 2015	Q1 2025
Radiocommunications (Limitation of Authorisation of Third Party Users and Transfer of Apparatus Licences) Determination 2015	Q1 2025
Radiocommunications (Radio-controlled Models) Class Licence 2015	Q1 2025
Radiocommunications (Trading Rules for Defence Spectrum Licences) Determination 2015	Q1 2025
Radiocommunications (Citizen Band Radio Stations) Class Licence 2015	CHANGE Q2 2025
Radiocommunications (Radionavigation—Satellite Service) Class Licence 2015	Q2 2025