Apparatus licences in the 3.4–4.0 GHz band in remote Australia

Licensing, allocation process, technical framework and pricing arrangements – consultation paper

march 2022

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# Introduction

The Australian Communications and Media Authority is consulting on arrangements for allocating apparatus licences in the 3.4–4.0 GHz band in remote Australia.

The arrangements in the 3.4–4.0 GHz band in remote areas are intended to facilitate a wide range of new wireless broadband (WBB) use-cases while supporting a range of existing services. These WBB use-cases include wireless internet service providers, public mobile telecommunications services, and enterprise and campus-style private networks, such as for mine sites, agricultural uses or industrial uses.

We propose to authorise access to the 3.4–4.0 GHz band in remote areas by means of area-wide apparatus licences (AWLs). Key features of AWLs are that they are scalable in bandwidth and geographic area by aggregating geographic licence cells and/or spectrum blocks.

We are proposing that AWLs be allocated using a 2-stage administrative allocation, similar to the approach used for the recent allocation of AWLs in the 26/28 GHz bands, commencing in June 2022. We will announce the opening and closing dates for the allocation on our website.

To support the allocation of AWLs in 3.4–4.0 GHz remote areas, we would like to make regulatory instruments setting out the technical conditions and pricing arrangements for AWLs in the band. These instruments are supported by administrative policies on aspects of the technical framework and our process for allocating AWLs. Detailed discussion on the proposed instruments and administrative policies are in the [Technical framework](#_Technical_Framework), [Allocation process](#_Allocation_process), [Tenure and renewal](#_Licence_tenure_and) and [Pricing](#_Pricing) sections of this paper.

# Background

The 3.4–4.2 GHz band is a key band for the delivery of local area and wide-area 5G wireless broadband (WBB) services globally. Wide-area (WA) WBB services are typically network deployments over large, often contiguous, geographical areas, such as those traditionally undertaken by mobile network operators (MNOs). Local area (LA) WBB services are deployments by operators needing smaller geographic areas, including wireless internet service providers (WISPs), fixed wireless access providers, as well as campus-style and private network deployments by industry vertical and enterprise users. It is expected that area-wide apparatus licences will be used to facilitate LA WBB services, while spectrum licensing will be normally used to facilitate WA WBB services.

The allocation of apparatus licences in the 3.4–4.0 GHz band in remote areas is part of a larger planning and allocation activity in which the ACMA is making spectrum available in the 3.4–4.0 GHz band. This includes:

600 MHz of spectrum available between 3.4–4.0 GHz in remote areas for apparatus licensing

200 MHz of spectrum available in the 3.8–4.0 GHz band in regional and metropolitan areas for apparatus licensing

100 MHz of spectrum available in the 3.7–3.8 GHz frequency range in regional and metropolitan areas for spectrum licensing.[[1]](#footnote-2)

We will commence allocating apparatus licences in the 3.4–4.0 GHz band in remote areas in June 2022. It is anticipated that this will be followed by 2 other allocation processes – prioritising the spectrum licensing allocation in metropolitan and regional areas, and then the remaining apparatus licensing allocations in other metropolitan and regional areas.

The 3.4–4.0 GHz band is currently used by a mixture of services and applications including point-to-point (PTP) links, point-to-multipoint (PMP) links, coordinated fixed satellite service (FSS) earth stations, radiodetermination, amateur and various low-power class-licensed devices. The proposed allocation process and accompanying technical frameworks carefully balance the needs of both wireless broadband and incumbent services.

## Planning decisions

In January 2021, we released the [*Replanning the 3700–4200 MHz band - Outcomes paper*](https://www.acma.gov.au/consultations/2020-07/planning-options-3700-4200-mhz-band-consultation-222020) (the 2021 outcomes paper).It described our planning outcomes and preliminary views to introduce WBB services in the 3.7–4.2 GHz band, using a combination of apparatus and spectrum licensing arrangements.

The 2021 outcomes paper also stated that we would, as far as practical, extend or align frameworks and the timing of their development with similar ones in the   
3.4–3.7 GHz (3.4 GHz) band. The paper [*Optimising arrangements for the 3400–3575 MHz band: Planning decisions and preliminary views*](https://www.acma.gov.au/consultations/2019-08/optimising-3400-3575-mhz-band-consultation-122019)(the 2019 outcomes paper) outlines the planning outcomes for the 3400–3575 MHz part of the 3.4 GHz band.

New planning arrangements for the development of LA WBB include:

* Australia-wide, in the 3.8–4.0 GHz frequency range, introducing arrangements to support LA WBB services on a shared basis with existing FSS and PTP services. New apparatus licences for FSS and PTP services would be issued on a coordinated, shared basis with LA WBB services.

In remote areas in the 3.7–3.8 GHz range, introducing apparatus licensing arrangements to support LA WBB services on a shared basis with existing FSS and PTP services. New apparatus licensed FSS would be issued on a coordinated, shared basis with licences for LA WBB services, but new PTP licences will likely not be issued to simplify new PTP technical arrangements in the band. Existing licensed PTP services would be allowed to continue (grandfathered).[[2]](#footnote-3)

In remote areas in the 3.4–3.7 GHz range, introducing apparatus licensing arrangements to support LA WBB services.

In regional areas in the 3.4–3.575 GHz range, introducing apparatus licensing arrangements to support LA WBB services.

This consultation package considers the process of implementing apparatus licences in the 3.4–4.0 GHz band in remote areas only.

## Area-wide apparatus licences (AWLs)

We want to allocate AWLs to authorise access to spectrum in the 3.4–4.0 GHz band in remote areas. Unlike ‘service-specific’ apparatus licence types, which typically align with specific uses and purposes, the AWL type may be used for a wide range of purposes, uses, services, applications and technologies. This flexibility is intended to allow the licensee to tailor the spectrum capacity and geographic reach of the licence to specific use-cases, including smaller-scale and/or bespoke deployments. We have previously allocated AWLs in parts of the 26 GHz and 28 GHz bands to facilitate both WBB and FSS use-cases.

## Related allocation processes

The 3.4–4.0 GHz remote area allocation process is the first part of a broader allocation process which will also see spectrum and apparatus licences made available in regional and metropolitan areas in the 3.4–4.0 GHz band.

Under the current planning arrangements, we are proposing to allocate remote areas of the 3.4–4.0 GHz bands in 2022 using apparatus licensing, with additional allocations to occur in 2023 in regional and metropolitan areas through a mixture of spectrum and apparatus licensing.

We currently plan to allocate the following spectrum through spectrum licences:

Between 25 MHz and 42.5 MHz (3.4–3.425 GHz / 3.4–3.4425 GHz) in regional areas, including major regional centres, with the available quantum varying depending on the area.

100 MHz (3.7–3.8 GHz) in metropolitan and regional areas.

We also intend to allocate the following spectrum through apparatus licences:

600 MHz (3.4–4.0 GHz) in remote areas (the subject of this consultation)

200 MHz (3.8–4.0 GHz) in regional and metropolitan areas

Between 35 and 67.5 MHz (3.475–3.510 GHz / 3.4925–3.5425 GHz /   
3.475–3.5425 GHz) in regional areas, with the available quantum varying depending on the area.

Another 75 MHz (3.4–3.475 GHz) will also become available in some inner metropolitan areas as a result of freeing up unused spectrum from NBN in an ‘urban excise’ process. Spectrum licensing arrangements are the preferred option among those under consideration for this spectrum. In conjunction with options being considered for the implementation of different LA WBB use-cases in the 3.8–4.0 GHz band in metropolitan and other high demand areas, this is expected to result in the most efficient use of the broader 3.4–4.0 GHz band while catering for the different WBB use-cases.

We are currently also consulting on alternative planning options for the 3.4–4.0 GHz bands in regional and metropolitan areas as part of the consultation on the terms of the draft re-allocation declaration. A copy of that consultation paper is available from our website.

## Policy objectives

The object of the *Radiocommunications Act* *1992* (the 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 Commonwealth Government.

The Minister for Communications, Urban Infrastructure, Cities and the Arts has made a [Ministerial Policy Statement](https://www.legislation.gov.au/Details/F2022N00015) (MPS) that specifies the communications policy objectives we must consider when performing our spectrum management functions, and exercising our spectrum management powers in the 3.4–4.0 GHz band. These are:

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.

# Consultation package

We are seeking comments from interested stakeholders on the following aspects of our framework for implementing AWLs in the 3.4–4.0 GHz band in remote areas of Australia using an ‘allocation window’:

**Technical framework**: Amendments to the Radiocommunications Licence Conditions (Area-Wide Licence) Determination 2020 (AWL LCD) and draft new and amended Radiocommunications Assignment and Licensing Instructions (RALIs) MS47, FX3 and FX19. The purpose of these new and amended instruments and policy instructions is to provide an interference-managed set of conditions and instructions for access that will facilitate LA WBB and existing use-cases in remote areas, as applicable.

**Allocation process**: Administrative allocation policies and principles to support the allocation of AWLs in remote areas.

**Tenure and renewal**: Our proposed policies in relation to the duration and renewal arrangements for AWLs.

**Pricing**: Amendments to the Radiocommunications (Transmitter Licence Tax) Determination 2015 to calculate the annual apparatus licence tax applicable to AWLs.

You can find details on the proposed legislative instrument amendments and draft administrative policies in the [Technical framework](#_Technical_Framework), [Allocation process](#_Allocation_process), [Tenure and renewal](#_Licence_tenure_and) and [Pricing](#_Pricing) sections of this consultation paper.

# Technical framework

## Introduction

In proposing a technical framework for 3.4–4.0 GHz in remote areas, we have considered the object of the Act to promote the long-term public interest derived from the band by facilitating the efficient planning and use of the band. The proposed framework also has regard to the MPS where the Australian Government’s communications policy objectives to support the deployment of new and innovative technology, including 5G as well as a range of use-cases and users, are of particular relevance.

The technical framework designed to support AWLs in the 3.4–4.0 GHz band in remote areas sets out the conditions and arrangements that allow coexistence with other services operating in, and adjacent to, the band in which AWLs are proposed to be issued. The conditions and arrangements are described in:

* The Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015, which imposes conditions that apply to all apparatus licences.
* Proposed amendments to the AWL LCD, which imposes conditions that apply to all AWLs, and 3.4–4.0 GHz band-specific AWL conditions.
* Radiocommunications Assignment and Licensing Instruction MS47 (RALI MS47), which provides information about, and describes necessary steps for, the frequency coordination and licensing of AWLs in the band in remote areas and technical requirements that must be met before devices are registered.
* Consequential amendments to existing RALIs; specifically, revisions to RALI FX3 and FX19 and the proposed suppression of RALIs FX14 and MS39.
* Conditions on individually issued licences.

Other legislative instruments or ACMA policy documents referenced in any the above.

The proposed amendments to the AWL LCD, RALIs MS47 and FX19, as well as a document describing proposed changes to RALI FX3, are included in this consultation package and we welcome views on any element of the technical framework.

## Background to the proposed 3.4–4.0 GHz technical arrangements

As well as outlining planning decisions and preliminary views on how they could be implemented, the 2021 outcomes paper also indicated preliminary views on some technical framework aspects, as they would relate to remote areas:

Technical parameters for LA WBB use should align with those under the future spectrum licensing framework in the band as much as is practicable.

Any AWL framework proposed should ideally attempt to accommodate WBB, FSS and PTP services within the one framework if practicable.

Future consideration of low-power or indoor deployment WBB arrangements is desirable.

PTP arrangements should be consolidated to the 3.8–4.2 GHz frequency range Australia-wide.

Earth station protection zone areas should not be identified for any spectrum licensing or apparatus licensing in the band other than for FSS receivers.

Arrangements for radiolocation services in the 3.1–3.5 GHz band should not change, nor those permitted in the 3.7–4.2 GHz band under clause 10 (7) of the *Australian Radiofrequency Spectrum Plan 2021* (ARSP).

Arrangements for existing low interference potential devices permitted in the   
3.4–4.2 GHz band should not change.

Arrangements for amateur services are not proposed to change in 3.4–4.0 GHz in remote areas, in parts where they are currently permitted to operate.

## Technical Liaison Group (TLG)

A TLG is a short-term advisory body convened by us which offers an informal discussion forum between us, industry and other stakeholders with an interest in the technical aspects of licences. Its purpose is to provide advice on the development of, or possible changes to, a licencing technical framework.

To facilitate development of apparatus and spectrum licence arrangements, we formed the 3.4–4.0 GHz TLG to review and develop spectrum and apparatus licensing technical frameworks for the 3.4–4.0 GHz band. The scope of the TLG was initially aimed to resolve issues relevant to all potential parts of the technical framework and possible allocation processes, in all spectrum spaces. After TLG discussion and feedback, it was apparent that it was not practical to reach consensus on all TLG issues in time for the possible allocation of AWLs in remote areas by the second quarter of 2022.

Consequently, the focus of the TLG temporarily narrowed to those aspects of the technical framework that will allow the remote area allocation to continue as planned. Consideration of the draft technical framework by the TLG for AWLs in the 3.4–4.0 GHz band in remote areas was largely completed in December 2021. The remote TLG discussions have been released simultaneously with this consultation paper.

While the documented TLG outcomes were ‘frozen’ to allow the proposed remote allocation process to proceed, further discussions have been held on compatibility between WBB and radio altimeters, including the technical framework to support such compatibility. Work in the TLG will continue in relation to AWLs and spectrum licensing in metropolitan and regional areas and the radio altimeter issue. The outcomes of the 3.4–4.0 GHz remote TLG are now available on the [ACMA website](https://www.acma.gov.au/spectrum-licence-technical-liaison-groups). The published TLG document largely represents the status of the TLG as at December 2021, with minor corrections. Updated draft technical framework documents are included in this consultation package.

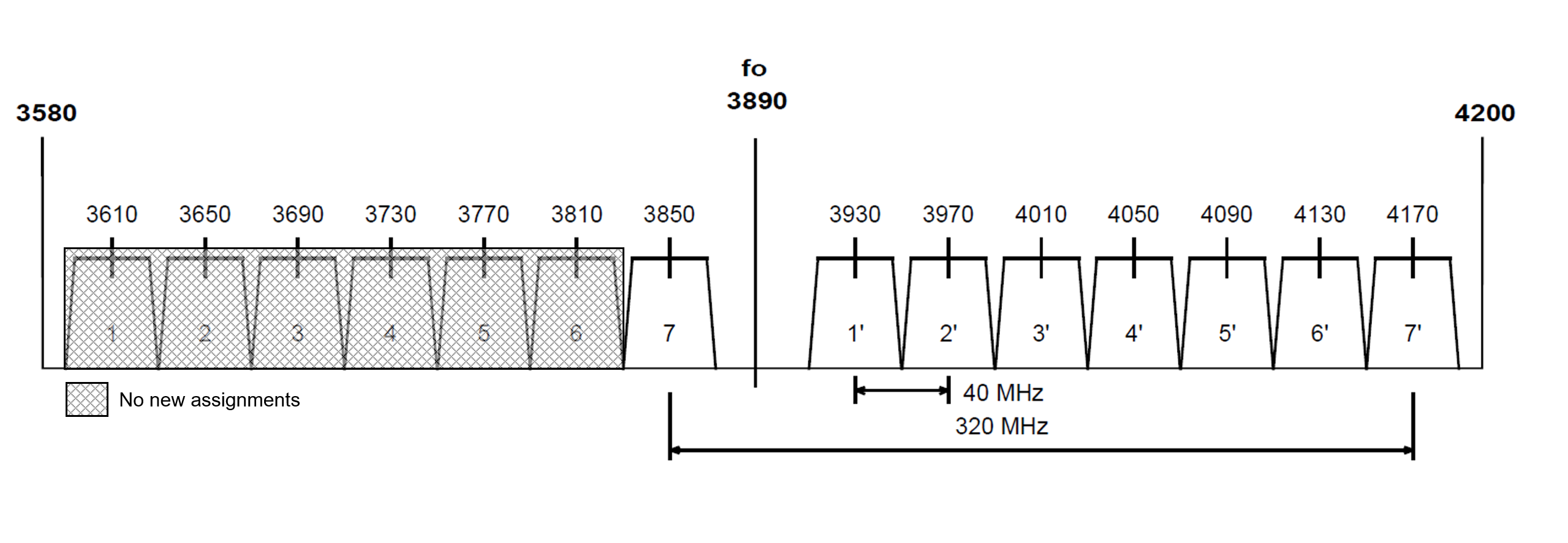
The draft technical framework proposed for AWLs in these bands is informed by TLG discussions. It contains approaches for comment on particular issues relevant to the remote areas addressing issues raised within the TLG. Some views relevant to remote areas were received after the TLG discussions were frozen. There was not sufficient time to properly consider these views prior to finalisation of the technical framework for public comment. Consequently, the draft technical framework has not been updated to address these views. We encourage those stakeholders to re-submit those views in response to the consultation and draft technical framework.

## Summary of proposed arrangements

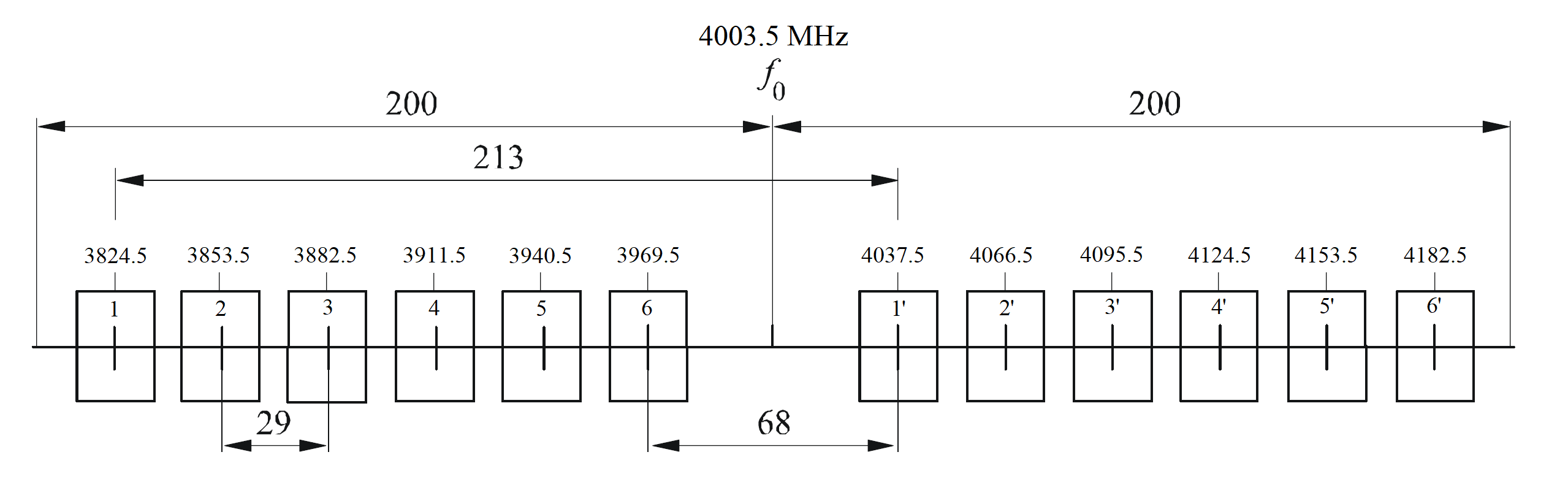
### PTP services

New PTP services will be restricted to the 3.8–4.2 GHz range, based on flexible use of the remaining channels of the current channel raster (see Figure 1). To manage some issues in non-remote areas, we are seeking feedback on whether it should instead adopt an alternate raster based on ITU-R F.382-8, described by Figure 2. Our preliminary view is that there should be only one channel raster for new PTP services. We are interested in views on the PTP channel plan options.

**Figure 1: Restricted existing channel raster**



**Figure 2: Channel raster based on ITU-R F.328-8**



Coordination requirements for PTP services are proposed to remain the same as described in the current [RALI FX3](https://www.acma.gov.au/publications/2019-09/instruction/rali-fx3-microwave-fixed-services), but with flexibility on channel assignment if a restricted version of the existing raster is maintained. Elements based on those from [RALI MS39](https://www.acma.gov.au/ralis-frequency-coordination), proposed to be suppressed, have been included in the draft RALI MS47, to coordinate non-registered customer premises equipment operating under an AWL with PTP links. As RALI FX3 is a very large document and only relatively small changes are currently proposed, a list of proposed clause changes to RALI FX3 is included in this consultation package.

### FSS

The proposed framework for apparatus licensed FSS in remote areas in the band remains the same, except for the inclusion of elements in RALI MS47. These elements extend those related to FSS in the existing 3.4 GHz spectrum licensing technical framework, to describe coordination requirements of AWL WBB services with FSS that may now be below, co-channel or above FSS services.

### Point-to-multipoint (PMP) services

As incumbent PMP services may continue to operate in the band, elements have been included in RALI MS47 to coordinate between PMP and AWL services. These are largely taken from RALI FX14, which is proposed to be suppressed, as is RALI MS39.

### AWL services

A new schedule is proposed for the AWL LCD, structured similarly to the schedule that imposes conditions on 26/28 GHz AWLs. Many of the conditions to be imposed on AWLs in the 3.4–4.0 GHz band are similar to those in the 3.4 GHz spectrum licence core conditions, including total radiated power limits, unwanted emission limits, use of a fallback synchronisation scheme and device registration requirements.

The draft proposed RALI MS47 provides information on licensing, frequency coordination and registration of devices under AWLs. The main coordination mechanism between AWL transmitters is the use of a device boundary criteria (DBC), a concept taken from spectrum licensing technical frameworks which, in conjunction with conditions proposed to be included in the AWL LCD, prevents the operation of a device if the device does not meet the DBC. Different DBC are proposed to apply between 2 AWLs and from an AWL to an adjacent spectrum licence, recognising that AWL time division duplex frame structures may not be the same as those used in spectrum licences.

Coordination of co-channel AWL transmitters with AWL receivers is implicit in the use of the DBC and in the synchronisation fallback requirement proposed to be included in the AWL LCD. Draft proposed RALI MS47 also deals with DBC for transmitters that are authorised by apparatus licences other than AWLs.

To facilitate a simplified legal framework for AWLs in the band, certain performance requirements of registered AWL receivers, similar to the 3.4 GHz spectrum licensing technical framework, have been included in the RALI MS47 as pre-registration requirements rather than as conditions in the AWL LCD. For future allocations in areas other than remote, where AWL use for FSS receivers is being considered, the AWL LCD and AWL RALI are likely to be structured differently.

Among other assignment instructions described in RALI MS47, a nominal assignment priority scheme is proposed so that potential licensees have some scope to obtain licences contiguous in frequency and geography with any existing holdings in the band, either via spectrum or apparatus licensing. The assignment scheme also proposes a minimum allocated bandwidth of 10 MHz, as this aligns with the existing 3.4 GHz spectrum licensing technical framework, and also the minimum usable bandwidth for technologies likely to be used in the band.

### AWL coexistence with radio altimeter

The issue of compatibility of WBB services with radio altimeters in the adjacent   
4.2–4.4 GHz band was explored within the TLG. Consequently, 2 approaches are identified for comment on how to manage coexistence of AWLs with radio altimeters in the 4.2–4.4 GHz band:

**Approach A:** No additional mitigations above the proposed 200 MHz guard band[[3]](#footnote-4) between WBB AWL services and radio altimeters and normal technical framework restrictions such as limits on transmitting device in-band and out-of-band power.

**Approach B:** A range of potential mitigations to apply above 3700 MHz, derived from ACMA and overseas technical studies and arrangements implemented by overseas regulators. They include exclusion zones and restricted zones around airports, power flux density limits at heliports and effective isotropic radiated power limits elsewhere. These are currently contained in section 4.6 of the draft RALI MS47, so they can be seen in context, indicated in square brackets as an option only.

We have not identified a preferred approach. We are interested in views of the potential mitigation options and elements within them, including for Approach B, how to identify appropriate airports and/or heliports where some of the mitigations should apply. The intent is that we will work further with the TLG and redevelop any implemented mitigations as required if more knowledge on the issue is gained in time to support future allocations. Consequently, any mitigations may be temporary or subject to future change.

### Other incumbent services

RALI MS47 also outlines coordination arrangements with other incumbent services in the band, including amateur services and radio-determination services in the   
3.1–3.5 GHz range.

### Restricted and protected areas

RALI MS47 also outlines specific coordination arrangements that apply in certain geographic areas. These are based on arrangements in other RALIs for the same areas, with some additional restrictions due to the expected ubiquitous nature of AWL WBB services. The geographic areas are:

Radiolocation services referred to in subsection 10(7) of the Australian Radiofrequency Spectrum Plan 2021 (ARSP).

Darwin and Geraldton coordination zones.

The Woomera Protected Area.

Coordination arrangements under RALI MS47 for Earth Station Protection Zones (ESPZ) and the Australian Radio Quiet Zone in Western Australia (ARQZWA) are the same as for these areas in other RALIs.

During the TLG, the satellite sector proposed that we establish an additional ESPZ in remote South Australia. This is still under consideration and consequently has not been included in the draft technical framework. We are seeking views on this, or any other restricted or protected areas that should be considered, perhaps managed in the interim by establishing a pre-emptive spectrum embargo until the issues are fully resolved.

## Future changes

It is expected that the technical framework will need to be updated for the future proposed allocation processes in the band:

In some spectrum spaces subject to future allocations, fixed satellite receive services are proposed to be authorised under an area-wide arrangement. Significant changes may be needed to enable this.

Some elements in RALI MS47 have been included temporarily until changes in the 3.4 GHz spectrum licensing technical framework can be updated. This will need to occur before any future spectrum licensing allocation.

Future work on the coexistence of WBB with radio altimeters may result in changes to any mitigations currently being considered. Possible approaches are currently outlined in RALI MS47. Once decided, these revised requirements may be relocated to the AWL LCD.

As discussions progress further in the TLG on non-remote areas, there may be a need to revise some elements of the remote technical framework to achieve the best outcomes across the whole 3.4–4.0 GHz band.

# Allocation process

## Allocation quantum policy

Under section 102G of the Act, we have the ability to impose allocation limits via a legislative instrument, on the administrative issue of apparatus (transmitter) licences, subject to consultation with the Australian Competition and Consumer Commission (ACCC).

We also have the power, under subsection 100(4C) of the Act to, when deciding whether to issue an apparatus (transmitter) licence, have regard to the aggregate of the parts of spectrum that may be used by an applicant under apparatus and spectrum licences. We can, through an administrative allocation quantum policy, provide guidance to the decision-maker when considering whether to issue a licence, including in relation to the maximum aggregate of spectrum that may be used by a licensee.

Either mechanism can be used to manage risks associated with an administrative allocation, such as monopolisation of spectrum, but each mechanism is likely suited to different contexts. A section 102G allocation limit is inflexible, meaning that we cannot deviate from the limit once established, and is better suited to allocations with a limited quantum of available spectrum and where there is reasonable certainty about the likely demand for spectrum in the allocation. An allocation quantum policy is more flexible and is better suited to allocations where there is a significant quantum of available spectrum and less certainty around the level of demand and whether there may be differential demand expressed in different areas.

We wrote to the ACCC in August 2021 to seek advice in relation to the imposition of allocation limits under section 102G of the Act on the issue of apparatus licences in the 3.4–4.0 GHz band in remote Australia.

Following public consultation, the ACCC advised us that it did not consider there was a sufficient basis to recommend allocation limits that would promote competition in the relevant markets. However, the ACCC considered ‘the risk of spectrum monopolisation in this allocation merits further consideration by the ACMA in developing its allocation process in issuing apparatus licences in the 3.4–4.0 GHz band in remote areas’.[[4]](#footnote-5)

Taking into account the ACCC advice, we have noted the current level of uncertainty about current and future demand for a variety of use-cases, as well as the overall quantum of available spectrum. In that context, we formed a view that it was inappropriate to establish allocation limits under section 102G of the Act. Such limits may be overly restrictive, with a risk that spectrum becomes underutilised, leading to a suboptimal allocation and use of the spectrum.

To support the objectives that apply to this allocation through the Act and the MPS, we consider that there is a case to restrict any one user from monopolising the spectrum, and indeed, facilitate multiple users of the spectrum.

We consider that an allocation quantum policy will likely facilitate a more efficient allocation, compared to an allocation without such a policy, and better facilitate the policy objectives of the MPS, supporting the deployment of new and innovative technology, a range of use-cases and users, and promoting competitive markets. An allocation quantum policy also provides greater flexibility to respond to demand and use-cases as they emerge.

We are proposing to develop an administrative allocation quantum policy in relation to the licensing of spectrum in the 3.4–4.0 GHz band in remote areas.[[5]](#footnote-6)

This allocation quantum policy would provide guidance to the decision-maker when considering an application for a licence, including in relation to the maximum aggregate of spectrum that may be used by a licensee under an AWL in any HCIS level 0 cell. A HCIS level 0 cell size was chosen as the best balance reflecting the signal propagation characteristics in the band and the policy objective to support a wide variety of use-cases and users.

However, we note that licensees may seek a quantum of spectrum in excess of the policy such as to facilitate a ‘consolidated’ network with multiple use-cases (for example, a combined mine site and rail network). Where an applicant applies for a quantum of spectrum in excess of the allocation policy, we will consider any other relevant matters cited by the applicant and whether those matters justify issuing a licence for a larger quantum of spectrum.

The allocation policy would only be considered by us in relation to an application to issue a licence and would apply until the policy is otherwise amended or revoked.

We do not intend to apply a similar restriction on licensees at renewal or in the transfer of licences, as the allocation policy will likely achieve the intended outcome of deterring monopolisation of the spectrum, and there is no clear evidence to support intervention in the secondary trading market.

We have considered 2 potential options for a maximum aggregate of spectrum within a HCIS level 0 cell in the 3.4–4.0 GHz band in remote areas:

100 MHz – facilitates a minimum of 6 licensees[[6]](#footnote-7)

150 MHz – facilitates a minimum of 4 licensees.

A smaller quantum is expected to accommodate most likely use-cases and facilitate a greater number of licensees and arguably preserves spectrum availability in the longer term compared to a larger quantum. This may facilitate uptake in the spectrum by smaller and enterprise operators whose demand for spectrum generally arises on an ‘as needs basis’ and noting that current equipment availability or a preference to use 4G or proprietary equipment (which only support operation in part of the band) may be a limiting factor in some cases. This would also be consistent with the objectives in the MPS, supporting a range of use-cases and users, as well as competitive markets. We also note that a quantum of 100 MHz reflects submissions made to the ACCC about the likely required quantum of spectrum for use-cases.

A quantum of 150 MHz (in any one HCIS level 0 cell) is expected to accommodate most likely use-cases and facilitate multiple licensees, while also providing an excess that may capture potential edge use-cases that require a larger quantum of spectrum. This somewhat greater quantum is consistent with the ACCC’s advice to minimise the risk of monopolisation of the spectrum, and the objectives of MPS, supporting a range of use case and users, and competitive markets.

We invite views from stakeholders about the application of an allocation quantum policy, and its relevant quantum (that is, 100 or 150 MHz) to the issue of apparatus licences in 3.4–4.0 GHz in remote areas.

## Allocation principles

While the use of allocation quantum policy will facilitate multiple operators, there still may be scenarios where demand will exceed supply in the immediate term, such as higher density towns (for example, Broome) and areas of higher economic activity within the remote area. A first-in-time approach would involve the risk that, in circumstances where demand exceeds supply, the allocation outcome would ultimately be decided by the sequence of applications.

To enhance the efficiency of allocation, we intend to adopt an ‘allocation window/allocation principles’ approach. An allocation window provides for a staged approach to considering applications, depending on whether there are competing applications and sufficient spectrum to fulfil all applications.

Where the ACMA receives valid applications for spectrum that do not exceed the available supply, a licence will generally be issued to the respective applicants (subject to any allocation quantum policy). Where the ACMA receives applications for AWLs and the aggregate quantum of spectrum applied for across all applications exceeds the available supply in a particular geographic area, we will generally decide which applicants are issued AWLs, and the quantum of spectrum covered by the AWLs, based on assessment of the contending applications.

Use of an allocation window necessitates the development of allocation principles to provide the decision-maker with guiding criteria when considering whether to issue an AWL if there is excess demand from competing applications.

For decisions about licence issues (and the allocation principles themselves), we would rely on the object of the Act, the MPS, any related government policies, and the desirable planning outcomes we have identified for the band. In all decisions whether to issue an apparatus licence, we must take into account the matters in subsections 100(4) and (6) of the Act. Other parts of section 100 may also be relevant to a decision.

In circumstances where there is competing demand for spectrum in a geographic area within the allocation window, we intend to consider applications in accordance with the following allocation principles:

1. The geographical area of each licence issued should be consistent with the proposed use-cases of the application received.
2. Each licence issued should promote the efficient use of spectrum in a manner consistent with the technical arrangements supporting planned uses.
3. As far as possible or reasonable, accommodate all applications.
4. Consider for each applicant the extent to which a denial of the spectrum in question would affect the ability of the applicant to deploy services.

In addition to the principles, each application would need to be considered on its own merits with respect to any other relevant matters that apply to a decision whether to issue a licence. This could include consistency with any allocation quantum policy, assignment rules (for example, assignment priority), and other requirements under the Act.

# Tenure and renewal

## Licence duration

The Act enables us to issue apparatus licences for a period of up to 20 years and includes processes to guide the renewal of apparatus licences (including renewal statements and public interest tests). Our [licensing and allocation information paper](https://www.acma.gov.au/publications/2021-03/rules/our-approach-radcomms-licensing-and-allocation) provides an overview of our approach to licence duration.

Because a high number of users and mixed-use-cases is anticipated in the band, we consider that AWLs in the 3.4–4.0 GHz band in remote areas best satisfy the criteria for medium term (up to 10 years) licence duration. This would also provide users a higher degree of investment confidence in deploying equipment and utilising the spectrum (compared to short term licence duration), likely an important factor for encouraging MNOs (who have experience with longer-term spectrum licences and generally seek considerable investment certainty), as well as smaller users to deploy within the band.

By supporting investment certainty through tenure arrangements, we have also had regard to the relevant objectives of the MPS. In particular, longer licence durations are useful in supporting investment in regional areas and deployment of new and innovative technology, by promoting investment confidence.

We propose to limit the duration for these AWLs to 31 December 2030, aligning with the expiration of spectrum licences in the 3.4 GHz band to facilitate potential replanning or defragmentation activity. This would limit the initial maximum duration of licences issued in 2022 to approximately 8 years; licences issued in 2023 to approximately 7 years, and so forth. It will still be open for applicants to seek a licence of a shorter duration (for example, annual licences). However, such shorter duration licences would generally not be renewed beyond a date that aligned with replanning timeframes.

The expiry date will be specified on the licence. Applicants may specify a preferred shorter licence period, for example one year, in the application form.

As licensees will have the option of being issued shorter term licences, we consider it appropriate for licensees to have the option to pay transmitter licence tax upfront or in annual instalments. The option to pay by instalment is only available for licences with a duration of more than one year, and should the licensee choose this option it will need to pay tax annually.

## Licence renewal

The Act also includes processes to guide the renewal of apparatus licences, including renewal statements and a public interest test. We do not propose to include renewal statements or apply a public interest test for AWLs being issued in the 3.4–4.0 GHz band in remote areas, and renewal will be at our discretion. We consider that there is limited additional utility and added complexities in setting conditions upon whether we will consider whether to renew a licence in this context (for example, whether spectrum is being used). However, if there is indication that there is excess demand in some areas, we may take level of use under a licence into consideration when deciding whether to renew a licence.

The extent of demand for AWLs in the band remains uncertain at this time, reflecting the early development of business cases for service deployment. To address the risk that initial licence allocations may not ultimately be used as planned, and the potential that licence holders may not have adequate incentive to return unused licences or unused portions of licences to the market, we are considering including an advisory note on each AWL that notes that when deciding whether to renew a licence, we may have regard to whether the spectrum has been used and if there is unmet demand in the 3.4–4.0 GHz band.

We may decide not to renew an area-wide licence, or to renew the licence with different conditions (including a reduced quantum of spectrum).

Our policy will be to not renew a licence for any period that would take the licence term beyond 2030 for remote AWLs. This policy will apply until such a time that plans regarding defragmentation of the 3.4–4.0 GHz band and potential impact on AWLs   
are known.

We will monitor allocation and use of the band over time. If we feel that unmet demand in 3.4–4.0 GHz in remote areas will require a consideration of spectrum use at renewal, we propose to communicate this to licensees no less than 3 months before the expiry date of the licence.

We would also like to review the tenure policy for AWLs in remote areas in line with consideration of whether to renew expiring 3.4 GHz spectrum licences. Consideration is expected to begin in 2025.

More information about [apparatus licence renewal](https://www.acma.gov.au/policy-apparatus-licence-renewals) is available on our website.

We are proposing to apply the default renewal application and decision-making periods. The default renewal application period for apparatus licences begins 6 months from expiry and ends 60 days after the licence expires. The default decision-making period is 90 days.

# Pricing

## Transmitter licence tax arrangements

### Proposed AWL[[7]](#footnote-8) tax arrangements

The ACMA is proposing a transmitter licence tax rate of $0.0041/MHz/pop for AWLs in the 3.4–4.0 GHz band. The proposed tax rate takes into account the circumstances relevant to implementing AWLs in remote areas only. It should not be assumed that the same pricing arrangements would apply for AWLs in regional or metropolitan areas that may become available as part of the replanning of the 3.4–4.0 GHz band.

Total annual transmitter licence tax is calculated as follows:

AWL tax = $/MHz/pop price × bandwidth (MHz) × population of geographic area

where:

* ‘$/MHz/pop price’ is the tax rate for one MHz of spectrum per head of population (in this case, the proposed $/MHz/pop price is $0.0041).
* ‘bandwidth’ is the total amount of spectrum in MHz authorised by the licence

‘population’ (based on the 2016 Census[[8]](#footnote-9)) is the population of the geographic area authorised by the licence. The area will be defined in terms of the Hierarchical Cell Identification Scheme (HCIS).[[9]](#footnote-10) The population is based on the aggregate population of all the geographic cells to be authorised by the licence. The effective population of a single HCIS 0 cell (the minimum cell size) for the purposes of tax calculations will be determined by taking the average population of all HCIS 0 cells in the broader HCIS 1 cell that the particular HCIS 0 cell is located within. There are 25 HCIS 0 cells within one HCIS 1 cell. We maintain on our website a document that sets out the population of each HCIS cell or block.[[10]](#footnote-11)

The transmitter licence tax for licences with durations less than a year will be adjusted on a pro rata basis.

Where the tax calculated using the method above is less than the minimum annual tax, the tax will be the minimum annual tax of $41.37.

It is proposed that these tax arrangements be included in the [Radiocommunications (Transmitter Licence Tax) Determination 2015](https://www.legislation.gov.au/Series/F2015L00322) (Transmitter Licence Tax Determination).

As it is not expected that area-wide receive licences will be required, the ACMA is not proposing to determine a specific tax rate in the [Radiocommunications (Receiver Licence Tax) Determination 2015](https://www.legislation.gov.au/Series/F2015L00321) (Receiver Licence Tax Determination).

For those services that will continue to operate under existing apparatus licensing arrangements like point-to-point services, the apparatus licence tax arrangements will be as specified in the Transmitter Licence Tax Determination or Receiver Licence Tax Determination.

### Context to the taxation arrangements

The AWL taxation arrangements differ from most apparatus licence tax arrangements, which are typically based on the number of stations or spectrum accesses included in the licence. AWL licensing permits any number of stations or spectrum accesses to be used within any given area, as long as these comply with licence conditions and otherwise satisfy the technical framework. Accordingly, the tax rate for AWLs is not based on the number of stations, but rather is based on the amount of spectrum and the population of the geographic area authorised. Similar $/MHz/pop taxation arrangements have already been implemented for AWLs in the 26 GHz and   
28 GHz bands.

The proposed tax formula is similar to that for PMTS Class B licences, which also use a $/MHz/pop construct to determine the tax.[[11]](#footnote-12) The proposed tax rate for AWLs in the 3.4–4.0 GHz band of $0.0041/MHz/pop is the same as the tax rate for PMTS Class B licences in the 3.5 GHz and 3.6 GHz bands. Given that similar services will be using AWLs across the broader spectrum range, we consider that a similar tax rate to that for PMTS Class B licences should apply.

### Examples of taxes

To illustrate the proposed tax arrangements for AWLs, the following examples are provided using 3 locations, based on 20 MHz of bandwidth and 4 geographic areas of different sizes (one HCIS 0 cell, 4 HCIS 0 cells, one HCIS 1 block[[12]](#footnote-13) and one HCIS 2 block[[13]](#footnote-14)). The locations chosen have relatively large populations at the HCIS 1 level to highlight how to calculate the taxes. Other locations will have lower populations and therefore taxes will be lower.

The following examples use the $0.0041/MHz/pop tax rate in several different regions located in remote areas proposed to be included in this allocation:

HCIS 1 cell HS4L8 is the most populated cell in Alice Springs, NT. It has a population of 21,974 (average population per HCIS 0 cell is 879). It falls within HCIS 2 cell HS4L, which has a population of 23,222.

HCIS 1 cell CR4G5 is the most populated cell in Port Hedland, WA. It has a population of 7,716 (average population per HCIS 0 cell is 309). It falls within HCIS 2 cell CR4G, which has a population of 13,851.

HCIS 1 cell LU7D6 is the most populated cell in Bourke, NSW. It has a population of 1,692 (average population per HCIS 0 cell is 68). It falls within HCIS 2 cell LU7D, which has a population of 1,847.

Table 1 details the potential annual tax amounts for the examples above, noting that the taxes are rounded to the nearest dollar and the minimum annual tax of $41.37 will also apply.

$/MHz/pop annual transmitter licence taxes (using 20 MHz) in various remote locations

|  |  |  |  |
| --- | --- | --- | --- |
| **Price ($0.0041/MHz/pop)** | **HCIS 1 cell** | | |
| **HS4L8 (Alice Springs)** | **CR4G5 (Port Hedland)** | **LU7D6 (Bourke)** |
| 1 HCIS 0 cell | $72 | $41\* | $41\* |
| 4 HCIS 0 cells | $288 | $101 | $41\* |
| 1 HCIS 1 block (equivalent to 25 HCIS 0 cells) | $1,802 | $633 | $139 |
| 1 HCIS 2 block\*\* (equivalent to 225 HCIS 0 cells) | $1,904 | $1,136 | $151 |

\* Tax amounts were lower than $41.37 minimum tax, causing the minimum tax to be applied (rounded to the nearest dollar). The calculated amounts were $25.37 for one cell in Port Hedland, $5.55 for one cell in Bourke, and $22.20 for 4 cells in Bourke.  
\*\* Tax amounts based on population of the HCIS 2 cell within which the HCIS 1 cell is located – i.e., HS4L for Alice Springs (pop: 23,222), CR4G for Port Hedland (pop: 13,851) and LU7D for Bourke (pop: 1,847).

Population information for the HCIS system can be found on the [ACMA website](https://www.acma.gov.au/convert-hcis-area-description-placemark).

We have also developed a fee calculator to help work out how much tax would be paid under the proposed arrangements for the combination of spectrum and geographic area wanted.

## Charging arrangements

We are proposing to charge for the issue of an AWL licence based on the general service charge, which currently stands at $202 per hour. The charging arrangements are outlined in the [Radiocommunications (Charges) Determination 2017](https://www.legislation.gov.au/Series/F2017L00328). We anticipate separately consulting on updates to charging arrangements in the near future. We expect those proposed charging arrangements would apply to applications being considered in the 2022–23 financial year.

# Issues for comment

We welcome comment from interested stakeholders on any aspect of the consultation package. In addition, we invite comments on these specific questions:

**Technical framework**

Do you have any comments, and supporting additional information, on the proposed technical framework, including the revised AWL LCD, draft RALI MS 47, and updated RALI FX3 and FX19?

1. Do you have any comments on the other issues referred to in the technical framework that have not been resolved in the TLG, such as WBB coexistence with radio altimeters?

**Allocation process**

Do you have any comments on our proposal to use a multi-stage administrative allocation for apparatus licences in the 3.4–4.0 GHz band in remote Australia? Please provide any additional information in support of your views.

Do you have any views on the appropriateness of an allocation quantum policy? If an allocation quantum policy is adopted, do you have any views on whether that quantum should be 100 MHz or 150 MHz or some other quantum per single HCIS level 0 cell?

**Tenure and renewal**

Do you have any comments on our licence tenure and renewal policy for AWLs in the 3.4–4.0 GHz band in remote areas?

**Pricing**

We are proposing $/MHz/pop tax arrangements for AWLs in this band, similar to AWLs in the 26/28 GHz band, and similar to other area-based licences such as PMTS B apparatus licences, because we believe it to be a simple pricing arrangement well-suited to area-based licences no matter the size of the licence or where it is located. Do you have any other pricing alternatives, or suggestions that may improve upon our proposal?

# Invitation to comment

## Making a submission

The ACMA invites comments on the issues set out in this consultation paper.

[Online submissions](https://www.acma.gov.au/have-your-say) can be made by uploading a document. Submissions in PDF, Microsoft Word or Rich Text Format are preferred.

Submissions by post can be sent to:

The Manager

Licence Allocation Section

Australian Communications and Media Authority

PO Box Q500

Sydney NSW 1230

The closing date for submissions is **COB, Wednesday 27 April 2022**.

Consultation enquiries can be emailed to [licensingdesign@acma.gov.au](mailto:licensingdesign@acma.gov.au).

#### Publication of submissions

The ACMA publishes submissions on our website, including personal information (such as names and contact details), except for information that you have claimed (and we have accepted) is confidential.

Confidential information will not be published or otherwise released unless required or authorised by law.

#### Privacy

View information about our policy on the [publication of submissions](https://www.acma.gov.au/publication-submissions), including collection of personal information during consultation and how we handle that information.

Information on the *Privacy Act 1988,* how to access or correct personal information, how to make a privacy complaint and how we will deal with the complaint, is available in our [privacy policy](https://www.acma.gov.au/privacy-policy).

1. Exact amount of spectrum available for spectrum licensing in regional areas may differ in different regional areas. [↑](#footnote-ref-2)
2. The action of allowing existing services to continue under current arrangements while new arrangements are put in place for new services is known as ‘grandfathering’. [↑](#footnote-ref-3)
3. The guard band is 4.0–4.2 GHz. [↑](#footnote-ref-4)
4. [*Allocation limits advice for the 3.4–4.0 GHz remote spectrum allocation*](https://www.accc.gov.au/regulated-infrastructure/communications/mobile-services/spectrum-competition-limits/request-for-advice-34-40-ghz-remote-allocation), public version, November 2021. [↑](#footnote-ref-5)
5. Which can be a relevant matter taken into account by the decision maker in considering whether to issue a licence to a person under section 100 of the Act (see subsection 100(4C)). [↑](#footnote-ref-6)
6. While 600 MHz will generally be made available across the remote area, there may some areas where a smaller quantum is available due to incumbent services or coordination with incumbent services. As such, a lower maximum may apply to some locations. This also applies to the minimum number of licensees possible under other options. [↑](#footnote-ref-7)
7. Where other apparatus licence types are permitted in the 3.4-4.0 GHz range, the existing tax arrangements are detailed in the Radiocommunications (Transmitter Licence Tax) Determination 2015and the apparatus licence fee schedule. [↑](#footnote-ref-8)
8. We will update population data for the HCIS with 2021 Census data after the ABS releases relevant datasets, expected after June 2022. In updating for the new population data, we will propose amendment to the Transmitter Licence Tax Determination. [↑](#footnote-ref-9)
9. The HCIS is the system used to define geographic areas for radiocommunications licensing and is based on the Australian Spectrum Map Grid (ASMG). HCIS is a naming convention developed by the ACMA that applies unique ‘names’ to each of the cells that make up the Australian Spectrum Map Grid (ASMG). More information is on our website: <https://www.acma.gov.au/australian-spectrum-map-grid>. [↑](#footnote-ref-10)
10. See [‘Hierarchical Cell Identification Cell Identification Scheme (HCIS) - List of Population Data’](https://www.acma.gov.au/convert-hcis-area-description-placemark) document. [↑](#footnote-ref-11)
11. The taxation arrangements for PMTS Class B licences that use the $/MHz/Pop pricing construct assume a population from at least an HCIS 2 cell. If more than one HCIS 2 cell is authorised, then the populations from those cells are added together to estimate the population in the tax calculation. HCIS 2 cells are larger than HCIS 0 cells, which are the proposed minimum for AWLs in the 3.4–4.0 GHz band. [↑](#footnote-ref-12)
12. Equivalent to 25 HCIS 0 cells. [↑](#footnote-ref-13)
13. Equivalent to 225 HCIS 0 cells [↑](#footnote-ref-14)