


Mr Rod Sims
Chair
Australian Competition and Consumer Commission
GPO Box 3131
Canberra ACT 2601

ACMA2021/668

Dear Mr ~~Sims~~ 

Request for advice on allocation limits: 3.4 and 3.7 GHz bands spectrum licences

I am seeking formal advice from the Australian Competition and Consumer Commission (ACCC) on whether allocation limits should be imposed by the ACMA on the auction of spectrum licences in the 3.4 GHz and 3.7 GHz bands in metropolitan and regional areas of Australia and, if so, the nature of those limits.



This planned allocation is the second part of a multi-stage allocation for the 3.4–4.0 GHz spectrum. The ACCC has already provided advice on allocation limits for an administrative issue of apparatus licences in the 3.4–4.0 GHz band in remote Australia.

The ACMA's decisions will be guided by the object of the [Radiocommunications Act 1992](#) (the Act), which is to promote the long-term public interest derived from the use of the spectrum. Your advice is being sought in accordance with subsection 60(13A) of the Act.

As a result of the recent legislative amendments, there is an opportunity to streamline the spectrum allocation process by aligning the ACMA's public consultation on the spectrum reallocation declaration with the ACCC's consultation on allocation limits for spectrum licences.

A key benefit of this change is that any views arising from the ACCC's analysis can be better considered in subsequent ACMA decisions relating to auction format, lot configuration and other auction design matters. However, this streamlined approach requires that I seek ACCC advice at a slightly earlier point in the preparation of the allocation than previously. I understand that ACCC and ACMA staff have discussed this new streamlined process.

I note that the ACMA is also currently considering potential alternative planning options for the parts of the 3.4–4.0 GHz band subject to apparatus and spectrum licensing in regional areas. These options do not significantly alter the quantum of spectrum available under either licence type but would better optimise arrangements for apparatus and spectrum licences. Information on the options and broader arrangements across 3.4–4.0 GHz is attached.

To support an auction occurring in 2023, I would appreciate the ACCC's advice by 1 August 2022. The contact officer for this matter is  .

Yours sincerely



Nerida O'Loughlin PSM

14 December 2021

cc: Ms Anna Brakey, Commissioner, ACCC

Attachments

- A** **Background information to request**
- B** **Potential alternative planning options**
- C** **Geographic area definitions**
- D** ***Optimising arrangements for the 3400-3575 MHz band Planning decisions and preliminary views***
- E** ***Replanning the 3700–4200 MHz band – Outcomes paper***

Attachment A: Background information to request

Spectrum to be made available

Under the current planning arrangements, we are proposing to allocate relevant parts of the 3.4–4.0 GHz bands in 2022 and 2023 through a mixture of spectrum and apparatus licensing.

We 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 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
- > 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 area

75 MHz (3.4–3.475 GHz) will also become available in some inner metropolitan areas as a result of the freeing up unused spectrum from NBN in an ‘urban excise’ process. Class, apparatus and spectrum licensing arrangements are under consideration for this spectrum, and its allocation would be aligned with the relevant process in 3.7–4.0 GHz.

The ACMA is yet to consult on or make a re-allocation declaration and is currently considering some optionality to the parts of the spectrum to be made available under spectrum and apparatus licensing respectively. This consideration is aiming to optimise uses within the band by addressing some potential underutilisation arising from the fragmentation of existing licence holdings, and the inclusion of restricted use bands which are used to manage interference but may limit utility in some frequency segments (see **Attachment B**).

We will provide ACCC staff with updates on the consideration of both licensing arrangements for the urban excise spectrum and the potential alternative planning options.

Overview of planning and licensing arrangements for the 3.4-4.0 GHz bands

Planning and licensing in the 3.4–4.0 GHz band has a complex history, with arrangements in different segments and areas being developed and introduced at different times. This has resulted in fragmented holdings across the band.

Figure 1 identifies the current (as of December 2021) planning arrangements for the 3.4–4.0 GHz band, including existing spectrum and apparatus licensed areas, as well as areas planned for future allocations. Regional definitions are available at **Attachment C**.

Figure 1: Planning arrangements for the 3.4 – 4.0 GHz band

AM = Amateur services, AWL = area wide licence, ESPZ = earth station protection zone, FSS = Fixed satellite service, PMP = Point-to-multipoint services, PTP = point-to-point services, SL = Spectrum licence, RB = restricted use band

FREQUENCY (MHz)>	3400	3425	3442.5	3475	t.b.d.	3492.5	t.b.d.	3510	t.b.d.	3542.5	3575	3600	3700	3800	38xx	4000				
Australian waters	radiolocation																			
ESPZ	FSS (except SL)		FSS (except Quirindi) SL								FSS									
Remote	AWL, AM, FSS, existing PMP																			
Major regional centres 3.4 GHz	SL		RB		AWL, FSS, existing PTP, PMP								New SL		RB		AWL, FSS, PTP			
Regional area 1	New SL		SL		RB		AWL, AM, FSS, existing PMP								New SL		RB		FSS, PTP	
Regional area 2	SL		RB		AWL, AM, FSS, existing PMP								New SL		RB		AWL, FSS, PTP			
Regional area 3	SL		RB		AWL, AM, FSS, existing PMP								New SL		RB		AWL, FSS, PTP			
Metro 3400-4000 MHz	SL																			
urban excise 3.4 GHz	urban excise			SL																

Historical planning arrangements and allocations

Between 2000 and 2004, spectrum licences were auctioned in the 3.4–3.575 GHz band in metropolitan and regional areas.¹ These licences were subsequently renewed in 2015 for 15 years and will expire in December 2030.

In 2018, the ACMA auctioned spectrum licences across metropolitan and regional Australia in the 3.575–3.7 GHz band. These licences will also expire in December 2030.

Due to differing geographic lot configurations between the spectrum licences allocated in 2000 and 2018, there is considerable geographic misalignment between these groups of licences.

Parts of 3.4–4.0 GHz located outside of spectrum licensed geographical areas, and spectrum above 3.7 GHz, has historically been apparatus licensed to support a variety of services including defence, fixed satellite services (FSS), point to point (PTP) and point to multipoint (PMP) fixed services, the amateur service, and public telecommunications services (PTS).

Notably, in 2014, the Minister made the [Australian Communications and Media Authority \(3.5 GHz frequency band\) Direction 2014](#) which required the ACMA to complete all necessary steps to enable allocation of apparatus licences to NBN in 3.4 – 3.425 GHz and 3.4925 – 3.542.5 GHz. The ACMA originally issued PTS licences to NBN in these frequencies in 2016 and 2018.

¹ All spectrum licences can be found on the [Register of Radiocommunications Licences](#).

Table 1: Total quantum of spectrum historically planned for each licensing type in 3.4 – 4.0 GHz by region

Licence type	Remote	Major regional centres	Regional area 1 and 2	Regional area 3	Metro
Spectrum	0 MHz	225 MHz	190 MHz	265 MHz	225 MHz - 300 MHz ²
Apparatus³	600 MHz	375 MHz	410 MHz	335 MHz	300 MHz

Current planning arrangements

3.4 – 3.7 GHz

In 2019, the ACMA explored options to optimise arrangements in the 3.4–3.575 GHz band, releasing the [Optimising arrangements for the 3400-3575 MHz band Planning decisions and preliminary views \(Attachment D\)](#). Key planning decisions for 3.4–3.575 GHz included making:

- > Between 25 MHz and 42.5 MHz of spectrum available under spectrum licensing in regional areas, with the quantum available varying per area.
- > Between 35 MHz and 67.5 MHz of spectrum available under apparatus licensing in regional areas, with the quantum available varying per area.

The release of the decisions paper also initiated a band optimisation process aimed at improving spectrum utilisation and efficiency for current and future licensees and reducing network deployment costs for NBN and Optus. As a result of this process, NBN’s apparatus licences were converted to spectrum licences. NBN then surrendered their licences in some urban areas on 26 August 2021 (‘urban excise’ spectrum).

We intend to allocate the 75 MHz urban excise spectrum, with licensing arrangements still under consideration.⁴ This could potentially include spectrum or apparatus licences, in which case its allocation would be aligned with the respective allocations of 3.4 GHz and 3.7–4.0 GHz in the same geographical areas.

We note that, if the urban excise spectrum is spectrum licensed, it will likely have different utility compared to spectrum to be allocated in 3.4 GHz and 3.7–3.8 GHz. This is due to the small size of the urban excise areas and need to protect nearby NBN services. The use cases supported will also affect utility, this includes whether arrangements are optimised for large cell deployments or highly localised private and enterprise uses.⁵

3.7 – 4.2 GHz

In January 2021, we released the [Replanning the 3700–4200 MHz band: Outcomes paper \(Attachment E\)](#), which communicated the planning decisions following a review of the 3.7–4.2 GHz band. Key planning decisions included:

² Variation in quantum depends on whether area was subject to urban excise process (i.e. 225 MHz areas are where urban excise has occurred). A decision has not been made on the licence type that will apply to urban excise areas.

³ While planned for apparatus licensing generally, segments of this spectrum may be available for specific services (e.g. FSS, PTP, Amateur, etc) on an exclusive or shared basis.

⁴ We [recently consulted](#) on options for the use of the ‘urban excise’ spectrum.

⁵ Once a decision has been made on the use cases supported in urban excise areas, we will work to finalise technical arrangements for urban excise areas.

- > making 100 MHz of spectrum available in the 3.7–3.8 GHz frequency range for spectrum licensing in metropolitan and regional areas
- > introducing apparatus licensing arrangements in 3.7–4.0 GHz in remote areas to support wireless broadband (WBB) use on a shared basis with existing FSS and PTP users (and aligning with arrangements for remote areas in 3.4–3.7 GHz)
- > making 200 MHz available in the 3.8–4.0 GHz band for apparatus licensing in metropolitan and regional areas
- > maintaining 200 MHz in 4.0–4.2 GHz available under existing apparatus licensing arrangements which provide for shared, coordinated, ‘first-in-time’ use by FSS and PTP services on an Australia-wide basis.

Alternative planning options

We are also currently considering potential alternative planning options for which parts of 3.4–4.0 GHz should be subject to apparatus and spectrum licensing (see **Attachment B**). The options under consideration would not fundamentally alter the overall quantum of spectrum available under either licensing option but alter which parts of the bands are licensed as a means of addressing fragmentation.

Planned process for allocating relevant parts of the spectrum

We are currently proposing to proceed with a staged approach to allocating spectrum across the 3.4–4.0 GHz frequency range.

The first allocation will be the administrative issue of apparatus licences in the 3.4–4.0 GHz in remote areas, scheduled to occur in Q2 2022.

This will be followed by the auction of spectrum licences in the 3.4 GHz and 3.7–3.8 GHz bands in metropolitan and regional areas, intended to occur in 2023.

The spectrum licence auction will then be followed by the allocation of apparatus licences in metropolitan and regional areas in 3.4 GHz and 3.8–4.0 GHz.

There is less available spectrum and higher expected demand from both local area WBB (LA WBB) and wide area WBB (WA WBB) use cases in metropolitan and regional areas than in remote areas. There are therefore additional complexities in determining the most appropriate allocation arrangements for apparatus and spectrum licences in metropolitan and regional areas, compared to remote areas.

Decision making frameworks and desirable planning outcomes

As we progress preparations for allocation of this mid band spectrum, our decisions will be guided by the object of the [Radiocommunications Act 1992](#) (the Act), which 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:

- (a) facilitates the efficient planning, allocation and use of the spectrum; and
- (b) facilitates the use of the spectrum for:
 - (i) commercial purposes; and
 - (ii) defence purposes, national security purposes and other non-commercial purposes (including public safety and community purposes); and
- (c) supports the communications policy objectives of the Commonwealth Government.

We note that there are not currently any band-specific Government policy objectives concerning the allocation of this band as there has been with other recent allocations.

Planning decisions and desirable planning outcomes

As part of the reviews of 3.4–3.575 GHz and 3.7–4.2 GHz, planning decisions were intended to support a set of desirable planning outcomes for each band.

One of the key planning outcomes for both bands was to support a range of services, which included the introduction and expansion of arrangements to facilitate both LA WBB and WA WBB services across the 3.4–4.0 GHz and different geographic areas.

WA WBB refers to wide-area networks typically deployed by mobile network operators (MNOs) but also some fixed wireless access providers, such as NBN.

LA WBB generally refers to local area networks. Examples of some LA WBB use cases include:

- > a university campus, farm or industrial site deploying its own private network to facilitate services or applications for itself
- > a WISP providing internet services directly to customers
- > a neutral host that provides both wholesale services to other operators, but also potentially bespoke enterprise solutions to customers.

The preliminary view was that spectrum licensing was generally suited to supporting WA WBB, while apparatus licensing was generally suited to supporting LA WBB.

Ability to impose allocation limits on the allocation of spectrum licences and ability to re-allocate the spectrum

As a result of changes made to the Act by the [Radiocommunications Legislation Amendment \(Modernisation and Reform\) Act 2020](#), the ACMA may now determine procedures for the allocation of spectrum licences that impose a limit without direction from the Minister.⁶

However, under subsection 60(13A) of the Act, prior to determining procedures for the allocation of spectrum licences, the ACMA is required to consult with the ACCC about whether to impose limits and, if so, the nature of those limits.

The ACMA is now also responsible for re-allocating the spectrum under section 153B of the Act.

This provides the opportunity to align the ACCC's consultation on allocation limits with the ACMA's consultation on a draft re-allocation declaration, streamlining the spectrum licence allocation process.

Substitutable spectrum holdings and alternative spectrum

It is likely that some auction participants will each hold licences in various geographic configurations within substitutable spectrum. We note that parts of 3.4–3.7 GHz have been spectrum licensed in metropolitan and some regional areas, with 13 extant licences currently held by Telstra, Optus, TPG Telecom, NBN Co, and related entities.

However, the extent of geographic misalignment in existing licence holdings within the 3.4–3.7 GHz band is far greater than in previous allocations.⁷ ACMA staff will engage with ACCC staff extensively throughout the forthcoming process to determine the best way forward to apply limits (should they be considered necessary).

⁶ Per subsection 60(10) of the Act, the Minister may, by notifiable instrument, give written directions to the ACMA in relation to the exercise of the power to determine procedures imposing a limit as mentioned in subsection 60(5) of the Act.

⁷ See https://web.acma.gov.au/rrl/spectrum_search.show_table?pSV_ID=85&pSS_ID=861

We also intend to allocate parts of the adjacent 3.8–4.0 GHz band in regional and metropolitan areas, as well as parts of 3.4 GHz in regional areas, through apparatus licences, with the desirable planning outcome of facilitating LA WBB on a shared basis with existing FSS and PTP users. There is currently limited mid-band spectrum available under apparatus licensing for LA WBB in regional areas, and none available in regional centres or metropolitan areas, compared to the significant quantum of spectrum already made available under spectrum licensing in these areas.

The technical framework for the apparatus licensed segments has yet to be finalised and it is feasible that this spectrum could also be used for WA WBB use cases. Existing or prospective spectrum licence holders may potentially also seek to obtain parts of the apparatus licensed spectrum, to the detriment of LA WBB users. The appropriate allocation arrangements for the apparatus licensed spectrum (e.g. whether administratively issued or auctioned) is under ongoing consideration.

We note that there is likely to be considerable interest in this mid-band spectrum under both apparatus and spectrum licensing arrangements due to its harmonisation for 4G and 5G services, as well as use in other proprietary technologies. We expect demand for this mid-band spectrum from multiple kinds of operator, including:

- > MNOs
- > Fixed wireless providers, including both large scale operators such as NBN, and smaller operators such as WISPs
- > Enterprise service providers and aggregators
- > Individual users, such as industry verticals (i.e. private networks)

With respect to the ACCC's advice, in addition to whether allocation limits should be imposed on the allocation of spectrum licences in 3.4 and 3.7–3.8 GHz, we would be particularly interested in views on the minimum and desirable quantum of spectrum for different use cases and users.

Attachment B: Potential alternative planning options

Development and implementation of planning arrangements for the band has occurred at different times, resulting in fragmented holdings across 3.4–4.0 GHz.

Recent consideration of technical arrangements for the bands and alignment between the 3.4–3.7 GHz and 3.7–4.2 GHz processes has provided an opportunity for a holistic assessment of arrangements across the band.⁸ We are therefore reconsidering some of the planning arrangements across 3.4–4.0 GHz in regional areas and have developed several alternative options.

Under these options, the total quantum of spectrum available under spectrum and apparatus licensing in regional areas will remain broadly consistent with the current planning arrangements (and remain unchanged for metropolitan areas), but the location of available spectrum within the band will vary.

We intend to consult on these options in February 2022 in connection with the consultation on the draft re-allocation declaration.

Please note that these options do not include the quantum of spectrum to be made available because of the urban excise. The quantum of spectrum available in some metropolitan areas under either apparatus or spectrum licensing, under any of the following options, could therefore increase by 75 MHz.

Table 2: Total quantum of 3.4–4.0 GHz spectrum by region to be allocated through apparatus licensing and spectrum licensing under each option (excluding urban excise spectrum)⁹

Options	Licence type	Remote	Regional area 1 and 2	Regional area 3	Major regional centre	Metro
1 (current)	Spectrum	0 MHz	142.5 MHz	100 MHz	125 MHz	100 MHz
	Apparatus	600 MHz	267.5 MHz	235 MHz	250 MHz	200 MHz
2	Spectrum	0 MHz	145 MHz	100 MHz	130 MHz	100 MHz
	Apparatus	600 MHz	265 MHz	235 MHz	245 MHz	200 MHz
3	Spectrum	0 MHz	160 MHz	85 MHz	125 MHz	100 MHz
	Apparatus	600 MHz	250 MHz	250 MHz	250 MHz	200 MHz

Table 3: Total quantum of 3.4–4.0 GHz spectrum (including already allocated spectrum) subject to apparatus and spectrum licensing under each option (excluding urban excise spectrum)

Options	Licence type	Remote	Major regional centres	Regional area 1 and 2	Regional area 3	Metro ¹⁰
1 (current)	Spectrum	0 MHz	350 MHz	332.5 MHz	365 MHz	325 MHz - 400 MHz
	Apparatus	600 MHz	250 MHz	267.5 MHz	235 MHz	200 MHz
2	Spectrum	0 MHz	355 MHz	335 MHz	365 MHz	325 MHz - 400 MHz

⁸ Particularly, the frequency and quantum of restricted use bands (RB) that are used to manage interference in adjacent bands may limit the utility of spectrum that fall within the RB.

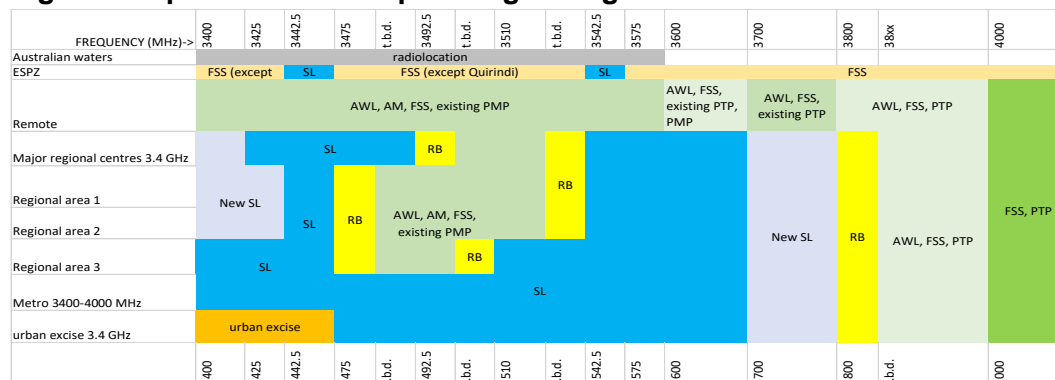
⁹ There are incumbent services in parts of the areas indicated for apparatus licensing. There is therefore less total spectrum available for new apparatus licences in some areas.

¹⁰ Variation in quantum in metro areas is due to urban excise process where 75 MHz in inner metro areas was surrendered to the ACMA. In metro areas outside of the urban excise areas, 400 MHz is subject to spectrum licensing arrangements under current planning arrangements. A decision has not been made on the licence type that will apply to urban excise spectrum.

	Apparatus	600 MHz	245 MHz	265 MHz	235 MHz	200 MHz
3	Spectrum	0 MHz	350 MHz	350 MHz	350 MHz	325 MHz - 400 MHz
	Apparatus	600 MHz	250 MHz	250 MHz	250 MHz	200 MHz

Option 1 (current planning arrangement)

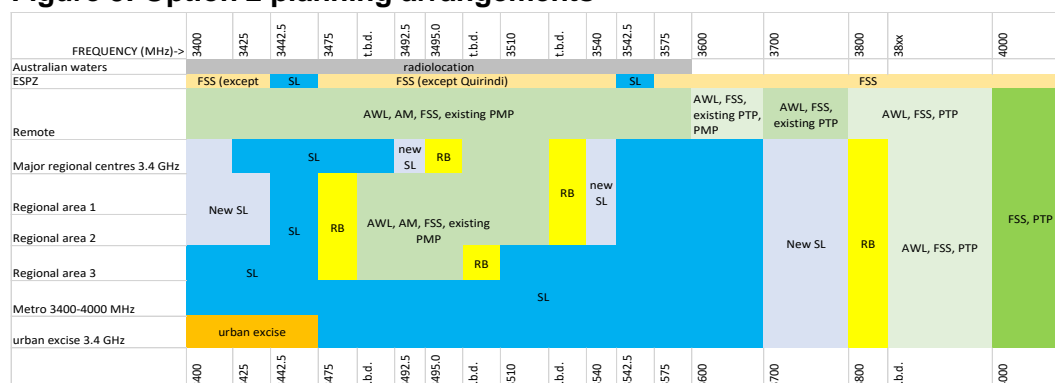
Figure 2: Option 1 - current planning arrangements



- > Spectrum licensing
 - o 42.5 MHz (3.4 – 3.4425 GHz) in regional area 1 and 2
 - o 25 MHz (3.4 – 3.425 GHz) in major regional centres
 - o 100 MHz (3.7 – 3.8 GHz) in metropolitan and regional areas
- > Apparatus licensing
 - o 600 MHz (3.4 – 4.0 GHz) in remote areas
 - o 35 MHz (3.475 – 3.510 GHz) in regional area 3
 - o 67.5 MHz (3.475 – 3.5425 GHz) in regional area 1 and 2
 - o 50 MHz (3.4925 – 3.5425 GHz) in major regional centres
 - o 200 MHz (3.8 – 4.0 GHz) in regional and metropolitan areas

Option 2

Figure 3: Option 2 planning arrangements

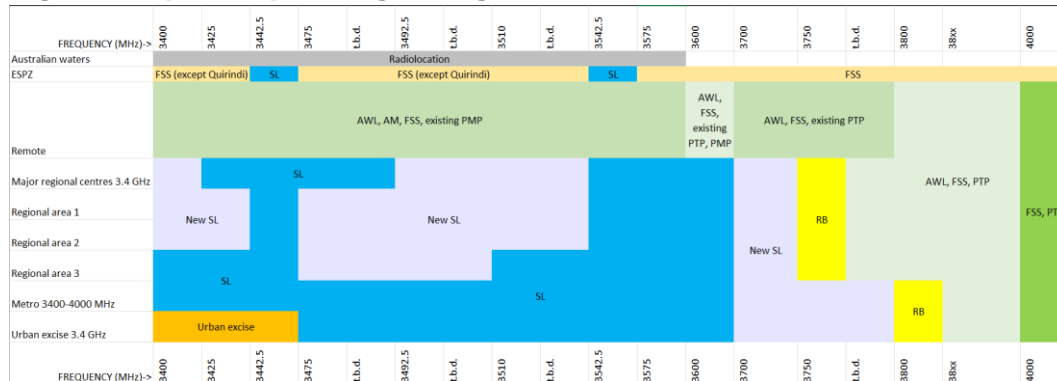


- > Spectrum licensing
 - o 42.5 MHz (3.4 – 3.4425 GHz) in regional area 1 and 2
 - o 25 MHz (3.4 – 3.425 GHz) in major regional centres
 - o 2.5 MHz (3.4925 – 3.495 GHz) in major regional centres
 - o 2.5 MHz (3.54 – 3.5425 GHz) in regional area 1 and 2 and major regional centres
 - o 100 MHz (3.7 – 3.8 GHz) in metropolitan and regional areas
- > Apparatus licensing
 - o 600 MHz (3.4 – 4.0 GHz) in remote areas
 - o 45 MHz (3.495 – 3.54 GHz) in major regional centres

- 35 MHz (3.475 – 3.51 GHz) in regional area 3
- 65 MHz (3.475 – 3.54 GHz) in regional area 1 and 2
- 200 MHz (3.8 – 4.0 GHz) in metropolitan and regional areas

Option 3

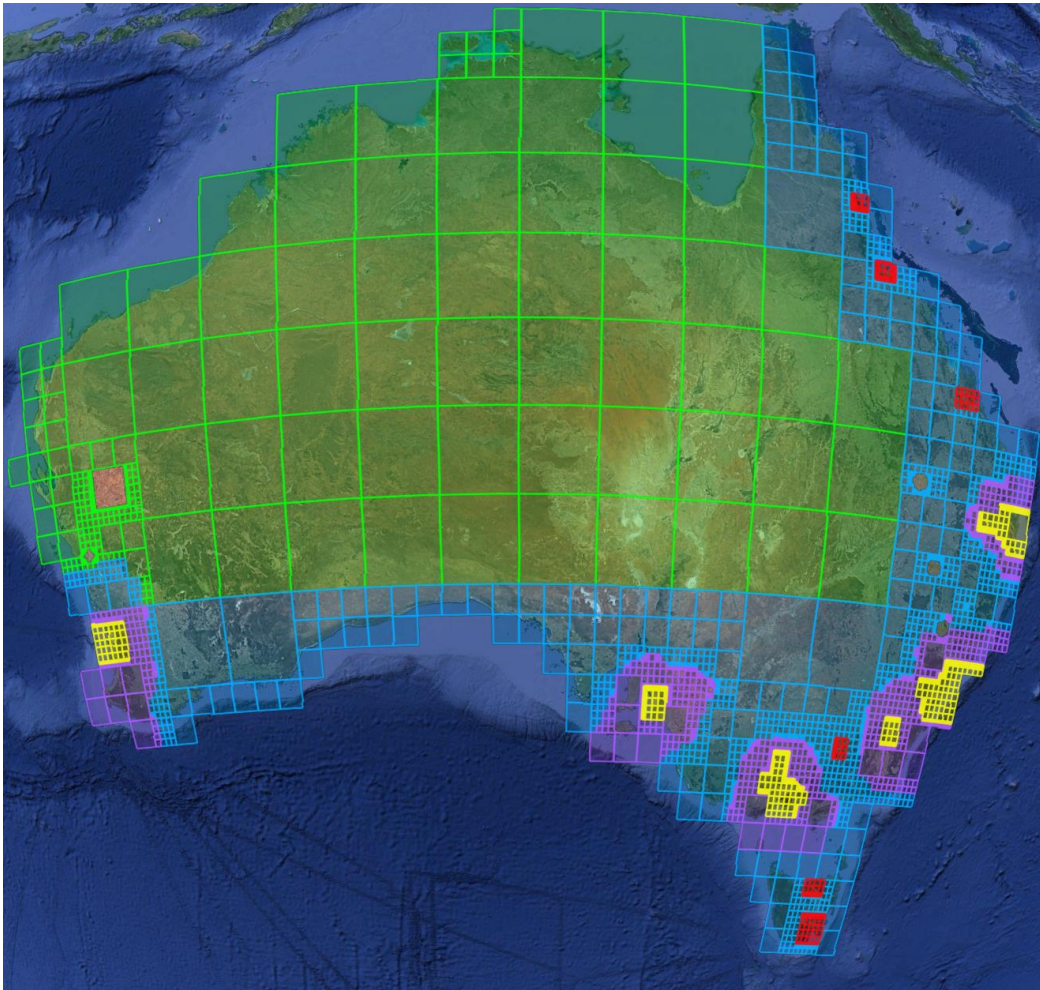
Figure 6: Option 3 planning arrangements



- > Spectrum licensing
 - 42.5 MHz (3.4 – 3.4425 GHz) in regional area 1 and 2
 - 25 MHz (3.4 – 3.425 GHz) in major regional centres
 - 67.5 MHz (3.475 – 3.5425 GHz) in regional area 1 and 2
 - 35 MHz (3.475 – 3.51 GHz) in regional area 3
 - 50 MHz (3.4925 – 3.5425 GHz) in major regional centres
 - 50 MHz (3.7 – 3.75 GHz) in regional areas
 - 100 MHz (3.7 – 3.8 GHz) in metropolitan areas
- > Apparatus licensing
 - 600 MHz (3.4 – 4.0 GHz) in remote areas
 - 250 MHz (3.75 – 4.0 GHz) in regional areas
 - 200 MHz (3.8 – 4.0 GHz) in metropolitan areas

Attachment C: Geographic area definitions

Figure 7: Pictorial display of regional areas



- > **Metro:** yellow areas
- > **Major regional centres:** red areas
- > **Regional areas 1 and 2:** Currently not defined but combined will encompass the blue areas. Regional area 1 will include areas that will be allocated at the same time as metro and major regional centres.
- > **Regional area 3:** purple areas
- > **Remote:** green areas

Note: areas may be subject to change.