



# REALLOCATION OF 3.4-3.7 GHZ AND APPARATUS LICENCES IN REMOTE

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**Editor's note:** FSG is making a single submission to both the 'Proposal to re-allocate 3.4-3.7 GHz reallocation' consultation, and the 'Apparatus licences in 3.4-4.0 GHz band in remote Australia' consultation. The same document has been submitted to each consultation.

FSG would like to thank the ACMA for the opportunity to respond and engage in part of the planning process, and specifically call out our appreciation for the inclusion of a KML in addition to the usual HCIS code designations. We hope this is a continued inclusion in all future consultations that concern matters of geography.

### Reallocation declaration and Planning Arrangements

FSG in general supports simplification of the arrangements across the entire 3.4 to 3.7 GHz band, and as such would prefer a modified option 3. To provide the simplest end state, we would prefer that the Metro/Urban excise areas be allocated the same amount of 'New Spectrum Licence' as the various regional areas.

FSG questions the requirement to spectrum licence (SL) 100 MHz in Metropolitan areas whilst only 50 MHz in regional areas - The main preference be that the value be identical in both regions as further fragmentation of the band into different regions and licence types, with different interactions to consider across frequency ranges would be undesirable. Having the mixture of licence types across frequency and geographical boundaries would result in having to worry about co and adjacent channel interactions, to both SL and AWL recipients. FSG's preferred outcome is for there to be only 50 MHz of 3.7 GHz SL offered, with 250 MHz of AWL available in Metro, Regional and the urban excise area. This would result in an overall band configuration as detailed in Figure 1.

	3400	3425	3442.5	3475	3542.5	3575	3600	3700	3750	4000	4200
Australian Waters	Radiolocation										
ESPZ	FSS		SL		FSS	SL	FSS				
Remote	AWL										PTP
Metro/Regional	SL				AWL					PTP	
Urban Excise	Urban Excise				SL					AWL	PTP

Figure 1 - Simplified end state based in FSG submission (modified option 3)

### Licence Type

Following the preference of option 3 and simplification of the band, FSG would prefer that the 3.4 areas be allocated for SL only.

### Licence Term

FSG supports the commencement of licences shortly after the auction with the incumbent protection. It would be preferential for the tenure of any new licences be aligned with the existing licences to facilitate defragmentation; or if they are to issued for a longer period

to contain a defragmentation condition. FSG would also seek that AWL applications in the 3.8-4.0 GHz be available immediately as well.

The 3.4 GHz SL should be aligned to expire with the existing licences (short option). However, if the 3.7 GHz SL are allowed to operate for 20 years (Hybrid or Long) - Given the large number of various SL due to expire in 2028-2030, extending 3.7 GHz may be in the interest of all parties; or restricting to the same period may allow for a wider reconsolidation effort. FSG does not have a standing on which would be preferred as there are benefits to either - but suggests that the AWLs adjacent to the 3.7 GHz SL should be allowed to be in place for the same period as the 3.7 GHz SL.

### Frequency Bandwidth Configuration

To resolve the issue of left-over lots in 3.4 GHz, FSG proposes that the residual bandwidth be assigned during the assignment stage of an ESMRA auction. For example, the lowest frequency lot comes with an additional 2.5 MHz.

### Technical framework

FSG supports AWL and SL using the same technical framework, with series of potential step-backs for interference management, including synchronisation and pre-determined frame-structures; but that these should be used only as a last resort, particularly as they are not guaranteed to resolve interference issues. It should be encouraged for licence holders to in the first instance find a workable solution that best fits the environment at hand. There should not be a hierarchy in terms of licence type having priority over another (Eg. AWL should not be mandated to match the SL, or vice versa).

### Radio altimeter coexistence

FSG prefers Approach A, with a 200 MHz guard band being more than sufficient for the protection of radio altimeters. Whilst it is early days, implementation of a similar guard band by the FCC seems to be sufficient. With further real-world implementation and data, further expansion of the LA WBB into 'indoor only' deployments in the 4.0-4.05 GHz range could also be considered.

### Geographical areas

Given the highly fragmented nature of the 3.4-3.8 GHz band, a 'one size fits all' approach may not be best for the band as it is - Attempting to consolidate the band into a more simplified arrangement in small steps may have the unfortunate opposite effect of increasing the number of arrangements. Ideally, simplification towards the end of tenure where a more complete 'retrofit' of the whole of band can be undertaken would be preferable. Having regions of the band simplified within themselves would make a whole of band simplification a less monumental task (option 3).

FSG proposes that any new spectrum licence areas be intersected with the previous boundaries in the same part of the band to form products (3.4 GHz with 3.4 GHz, 3.7 GHz with 3.6 GHz), but that this does not have to be the only division. An area that was previously one large regional area, can be split into two whilst maintaining the same outer boundary.

For example, the area of ‘Regional Southern NSW’ as defined in the 3.6 GHz auction could be split North-South to form a ‘Coastal Southern NSW’ and an ‘Inland Regional Southern NSW’ (Figure 2). This would allow greater ability for regional players to tailor spectrum acquisition to their network footprint, and more accurately represent the demand from a ‘metropolitan’ standpoint.

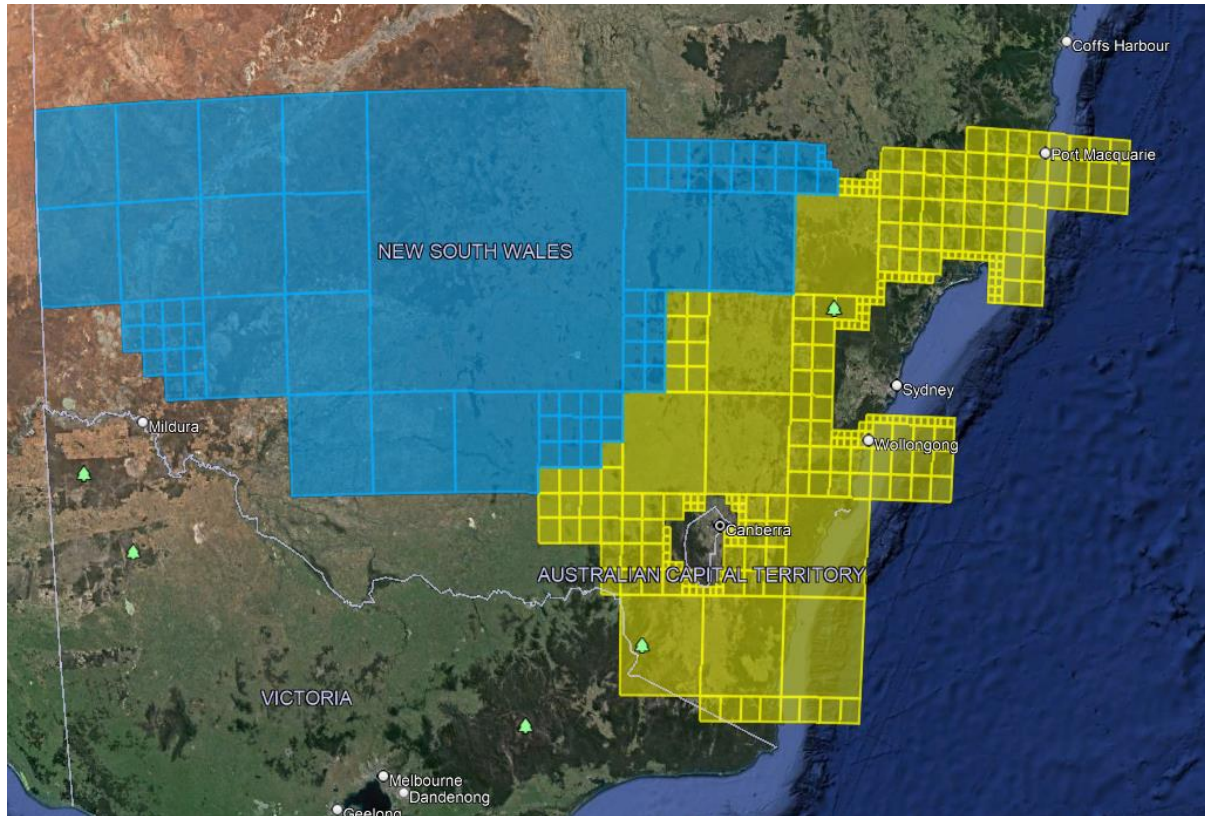


Figure 2 An example of how an existing boundary (Regional Southern NSW - Entire coloured region) could be 'subdivided' into two parts (Yellow - Coastal Southern NSW, Blue - Inland Regional Southern NSW)

It is likely that auction participants that bid on metropolitan lots are likely to also bid on regional ones in their current form. We suggest further increasing the metropolitan area to include major regional towns and the major roads connecting them, as can be accomplished via the example given. This would also allow an opportunity to move towards more standard boundaries, as the example given uses the 850/900 MHz coastal/regional split as a subdivision, and for the same reasons as previously proposed (and accepted by the ACMA) by FSG<sup>1</sup> makes a suitable boundary.

As existing spectrum licences *can be* traded by quanta limited by only by the HCIS grid and the MCB<sup>2</sup>, existing licence holders could elect to further divide their licences to meet these contiguous boundaries if they wish to use or trade them in a substitutable manner.

Many of the various disaggregated regions that currently exist in 3.4 GHz would only be of use to existing licence holders in the same area in the adjacent frequency and to make the most efficient use of the spectrum these regions should be consolidated to the same owners. These could be offered as ‘set aside’ lots (ala 850/900 MHz auction), or as ‘residual’ lots (ala residual multi-band auction) to the existing licence holders to aggregate and simplify prior to allocation. It would be a disappointing situation if the 3.7

<sup>1</sup> FSG’s 850 response to ACMA’s draft instruments consultation, 28/05/2021 - Confidential

<sup>2</sup> Radiocommunications (Trading Rules for Spectrum Licences) Determination 2012

GHz spectrum was inefficiently allocated to the same licence holders in another part of the band in the same region, whilst spectrum adjacent to their holdings went unutilised - to ensure the good of the spectrum commons, spectrum licence holders should be required to acquire adjacent to their existing holdings prior to acquiring new disaggregated allocations.

With simplification of the boundaries, the allocation limits also become easier to assess. Regarding the 3.4/3.7 GHz overlap, the same method used for assessing existing 3.4 GHz holdings in the 3.6 GHz auction can be used.

### Allocation limits

FSG supports a whole of band allocation limit - regardless of licence type (Including AWL). This would support additional operators across the already spectrum licenced geographic areas. Pending the results of the ACCC consultation, given previous allocation limits set by the Minister for the 3.6 GHz auction of 60 MHz in metropolitan areas and 80 MHz in regional, and the introduction of ~100-150 MHz of additional SL, a proportional increase to 100 MHz in all areas is recommended.

As the maximum channel size available in 5G FR1 is limited to 100 MHz, any greater sizes result in decreases in effective spectrum utilisation efficiency unless 200 MHz is acquired. A 100 MHz limit would also allow up to six separate licence holders in any area, and help prohibit 'spectrum squatting', and allow more numerous smaller players (enterprise) to acquire spectrum where their neighbour may have also acquired it.

### Allocation method

FSG proposes that the quanta for AWLs be increased from ACMA's proposed HCIS level 0, to a minimum of a HCIS level 2, with scope for additional area(s) at a HCIS level 1. This will be more representative of the area that will be unavailable to other users wishing to acquire spectrum, as a 50% propagation model as used in the draft RALI can leave a lot of variances between predicted and experienced. This also brings the AWL in line with tax arrangements for existing apparatus licences that cover an area (PMTS) in their minimal allocation. The proposal to utilise HCIS level 0 quanta is presumably driven by the desire to support use cases that fit within the 'restricted cell' LA WBB - however any of the given 'highly localised' use cases may be better supported by a less stringent class licence, with suitably lower powered transmitters and as such could be potentially deployed as indoor only within the bottom 50 MHz of the 200 MHz of altimeter guard band - and paired with the LIPD class licence for 24 GHz operation.

### AWL allocation

FSG supports using a similar method to the 26/28 GHz AWL allocation method for the initial allocation of the 3.7 GHz AWLs, with licensees making proposals to the ACMA for where and how much spectrum they wish to acquire under the AWL, with any overlaps being managed on a case by case basis and assessed for their scope and intended use-case.

### SL allocation

FSG supports the use of the ESMRA auction methodology for SL allocation but would suggest that the 3.4 GHz and 3.7 GHz frequencies should be offered as different products with different boundaries as discussed in this submission, and preferably that existing licence holders of 3.4 GHz spectrum licences be required to acquire adjacent to their existing holdings before further fracturing the spectrum with new holdings at 3.7 GHz.