Spectrum for Wireless Broadband
- an update

Andrew May

Spectrum Engineering Australia

spectrumeng.com.au

Spectrum for Wireless Broadband

- The Challenges

- Licence Types

- Update - 3 GHz

- Update - 1.8 and 2 GHz

Spectrum Challenges

Availability	Complexity
• Usually reserved for **Spectrum Licensing**	• Diverse Licence Types each with unique implementation of processes, rules and fees
• Contention for the limited **Apparatus Licensing** options	• Incongruous area definitions and area naming between bands
• Further limitations due to embargoes, restrictions, coordination between non homogenous services	

Licence Types

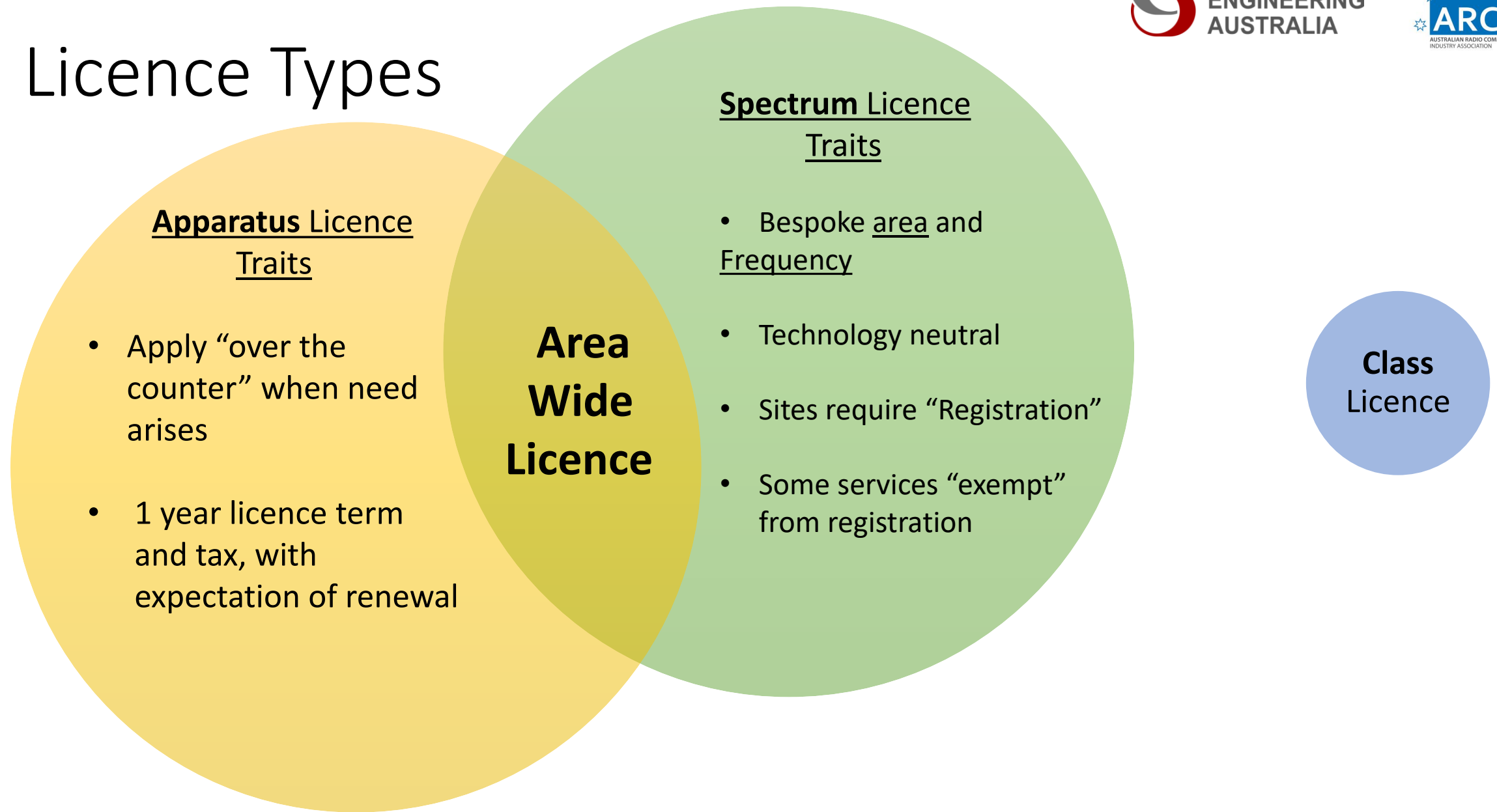| Apparatus Licence	Spectrum Licence	Class Licence
• Usually specific licence type for specific purpose (e.g. "Point to Point") • Each device or system requires a licence • Over the counter / quick	• Legislated 'rights' to a spectrum block • Expensive, lengthy process, usually auction based, long term	• Existing instrument permits 'all' to operate • e.g. Wifi, ISM

Licence Types

Apparatus Licence Traits

- Apply "over the counter" when need arises

- 1 year licence term and tax, with expectation of renewal

Area Wide Licence

Spectrum Licence Traits

- Bespoke area and Frequency

- Technology neutral

- Sites require "Registration"

- Some services "exempt" from registration

Class Licence

Licence Types – Area Wide Licence

Step 1

"Licensing"
Area
Frequency (range)

Step 2

"Device Registration"
Record details (location, power, antenna, frequency, emission, azimuth, height etc.)
Requires frequency coordination, device boundary, and other checks

or

if "Registration Exempt"
Operate without registration or device boundary check
Still must meet Licence Conditions
May even require "detailed coordination"

Area Wide Licence Documents

- The "LCD"

    [Radiocommunications **L**icence **C**onditions (Area-Wide Licence) **D**etermination 2020](#)

- RALIs called up by the LCD

    [RALI MS 47](#)

The above are not simple documents to read and understand. But important to note that they apply irrespective of whether registration is needed or not.

Licence Types

Apparatus Licence Types

- Public Telecommunications Service (PTS)
- Point to Multipoint (PMP)
- Area Wide Licence (AWL)

Apparatus Licence Restrictions

| Spectrum Licences	Embargoes

• These typically prevent access to Apparatus Licensing
 	
• Maps available from ACMA
    • RALI SM26
    • acma.gov.au/publications/2021-05/instruction/rali-sm26-restrictions-apparatus-licensing-spectrum-licensed-spaces
	Map and explanations readily available from ACMA
	    • RALI MS03
	    • acma.gov.au/publications/2019-10/rules/rali-ms03

Apparatus Licence Bands
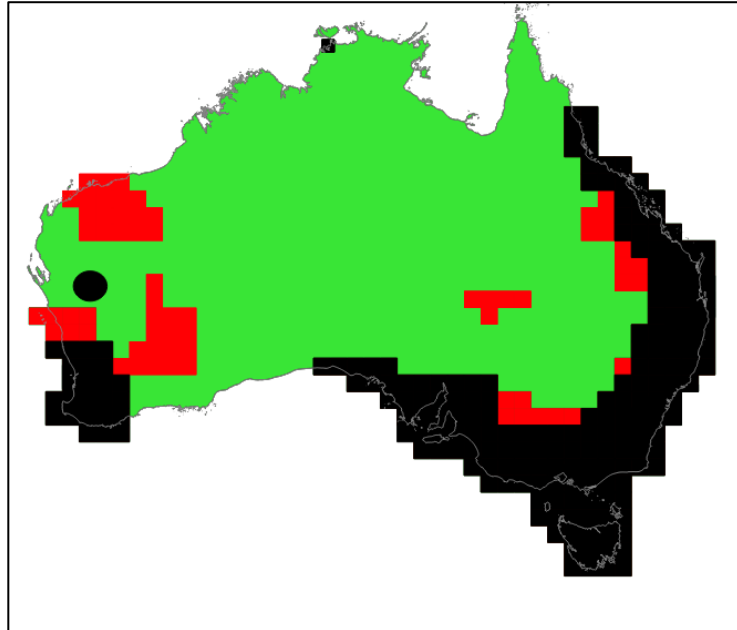
1.8 GHz

10 MHz channel
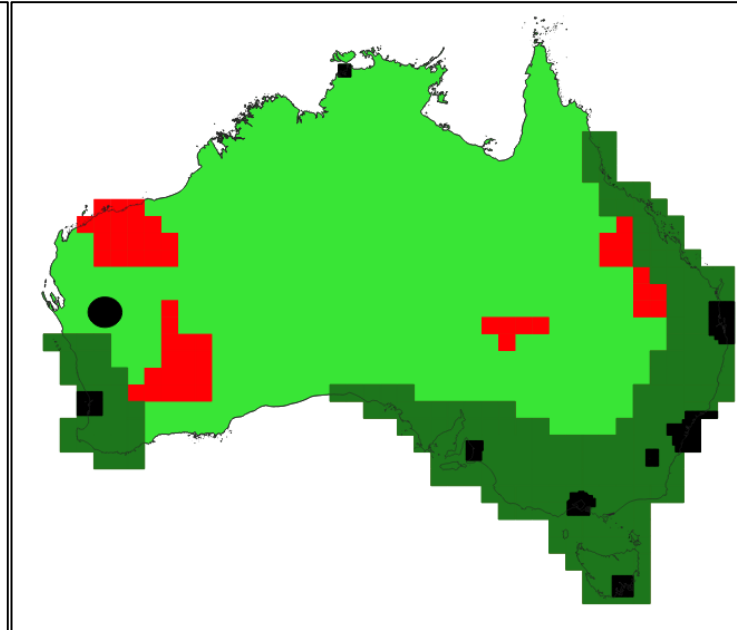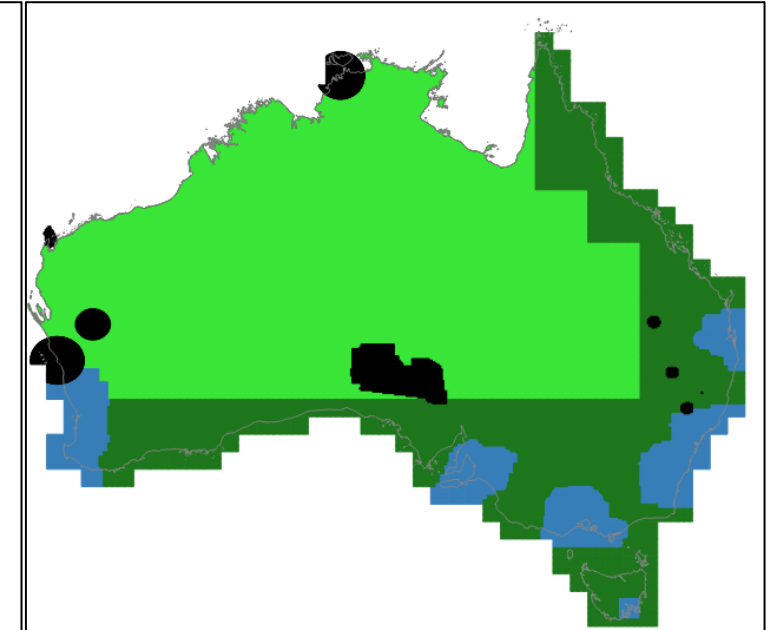
Embargo 77
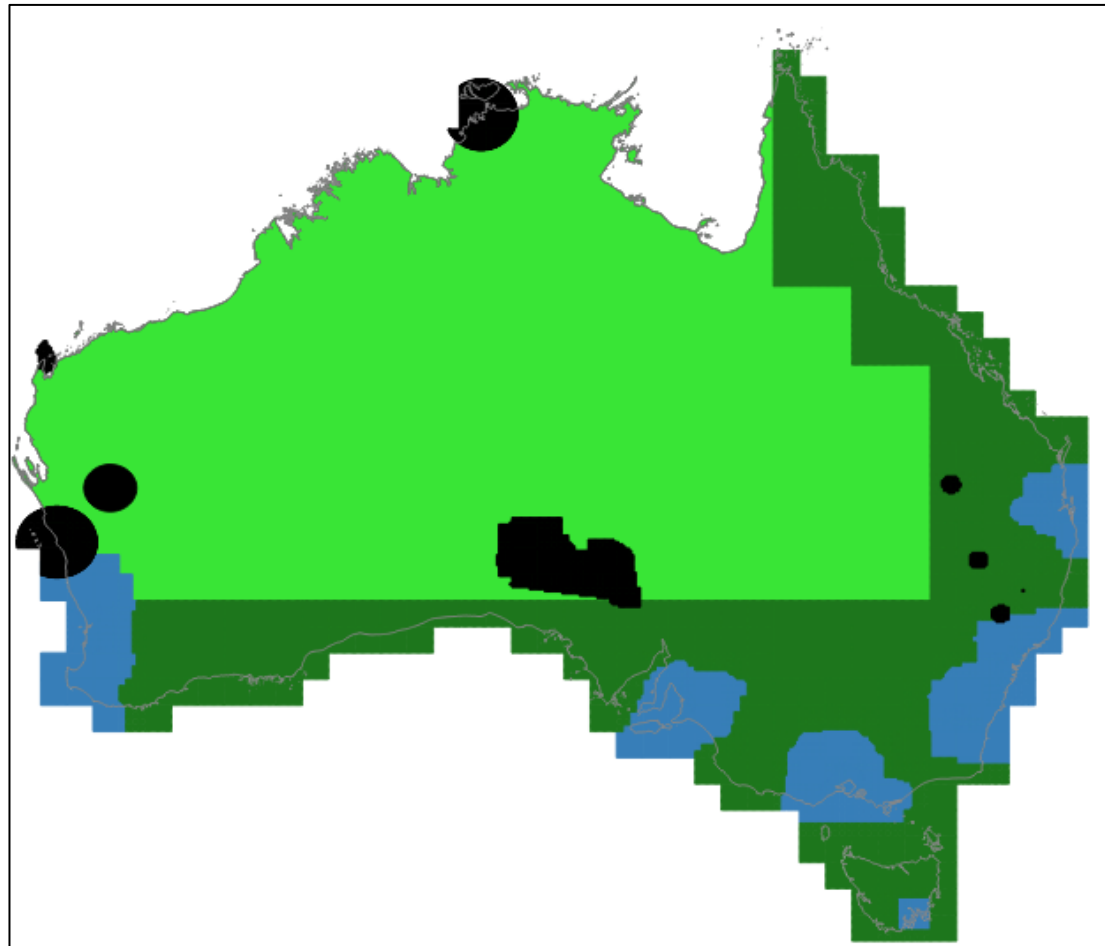
2 GHz

10 MHz channel

Embargo 77

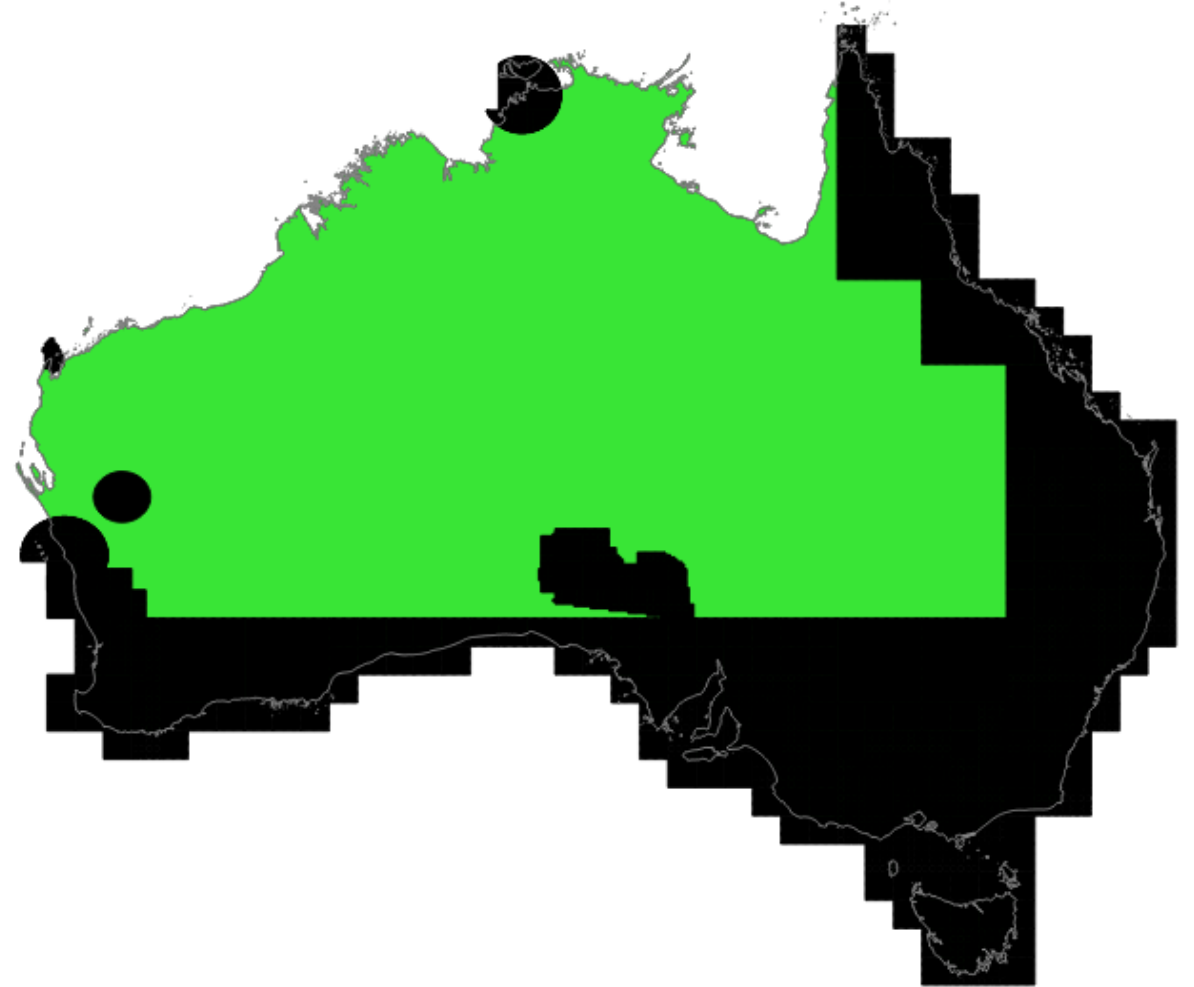**3 GHz**

10-100 MHz channel

Apparatus Licence Bands

3 GHz Area Wide Licence

- **Remote**
  3400-4000 MHz

- **Rural**
  3750-3950 MHz

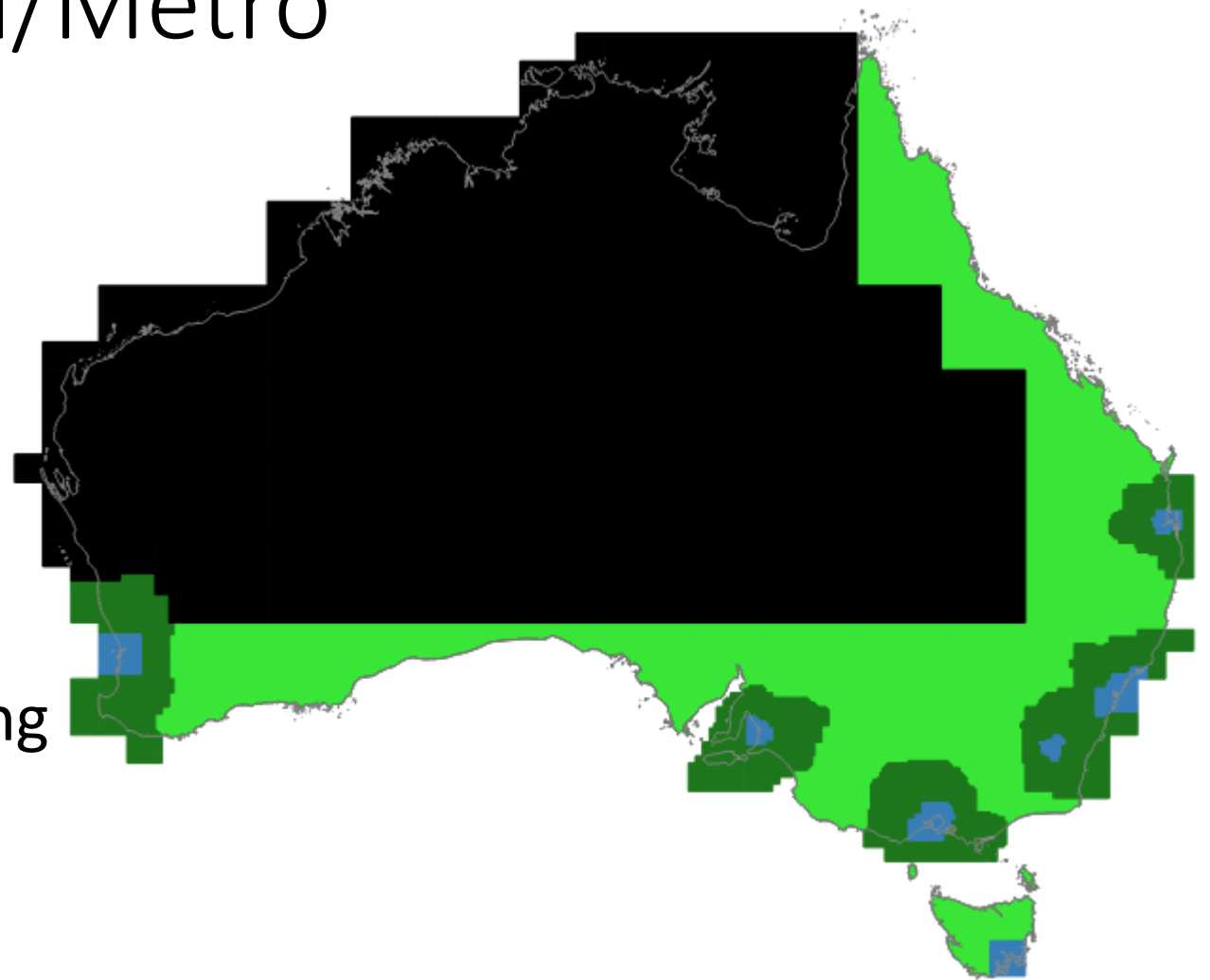- **Metro and Regional**
  3800-3950 MHz

3 GHz Remote

- 3400 to 4000 MHz
- Some opportunities exist
- Over the counter applications open
- 20 MHz limit per application

3 GHz Rural/Regional/Metro

- 3750/3800 to 3950 MHz

- 50 MHz limit per applicant

- Over the counter applications
now open

- Stage 1 applications still pending
so availability is unknown

3 GHz Risks

An application does not guarantee AWL will be granted

A granted AWL doesn't guarantee right to transmit. Requires either;

A) Device Registration
- Subject to 'Device Boundary', frequency coordination etc.

B) An "exempt" transmitter
- May still require "detailed coordination" within 20 km of other services.

3 GHz coordination

- Incumbent Coordination
  - Point to Multipoint / Point to Point / Radioaltimeters / Earth Station
- Interference mitigation - Synchronisation
- Active Antenna Systems (AAS)
- Total Radiated Power (TRP)

Point to Multipoint

- Remote area PMP
  - Grandfathered operation only
  - No operational changes permitted
- Convert to AWL?
  - _Might_ be possible

3 GHz takeaways

Initial "licensing" requires

- Frequency range

- Area

Later, "registration" requires more detailed information. Only possible if the area is appropriately sized.

Your licence area may need to be larger than your operational area!

More Info

- ## Main 3 GHz Page

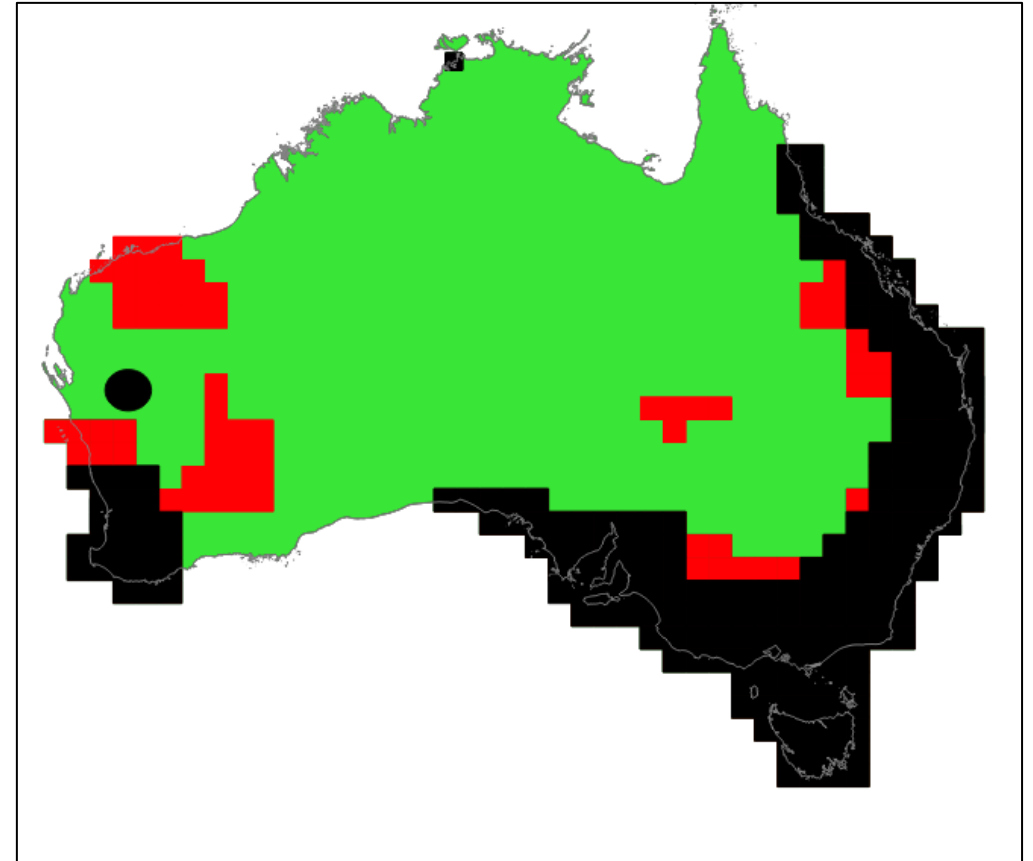https://www.acma.gov.au/allocating-34-40-ghz-band

- ## Remote 3.4 GHz

https://www.acma.gov.au/area-wide-apparatus-licensing-34-40-ghz-band

- ## Rural/Regional/Metro 3.8 GHz

https://www.acma.gov.au/area-wide-licence-allocation-38-ghz-band

1.8 GHz

Channel priority (Enforced)	Bandwidth
Mobile Network Operators (45 MHz)	15 MHz
	15 MHz
	15 MHz
Industry (30 MHz)	10 MHz
	10 MHz
	10 MHz

2 GHz

Channel priority (suggestion only)	Remote	Regional
Mobile Network Operator	10 MHz	10 MHz
	10 MHz	10 MHz
Industry (10 MHz)	10 MHz	10 MHz
Mobile Network Operator	10 MHz	10 MHz
	10 MHz	
	10 MHz	
	10 MHz	
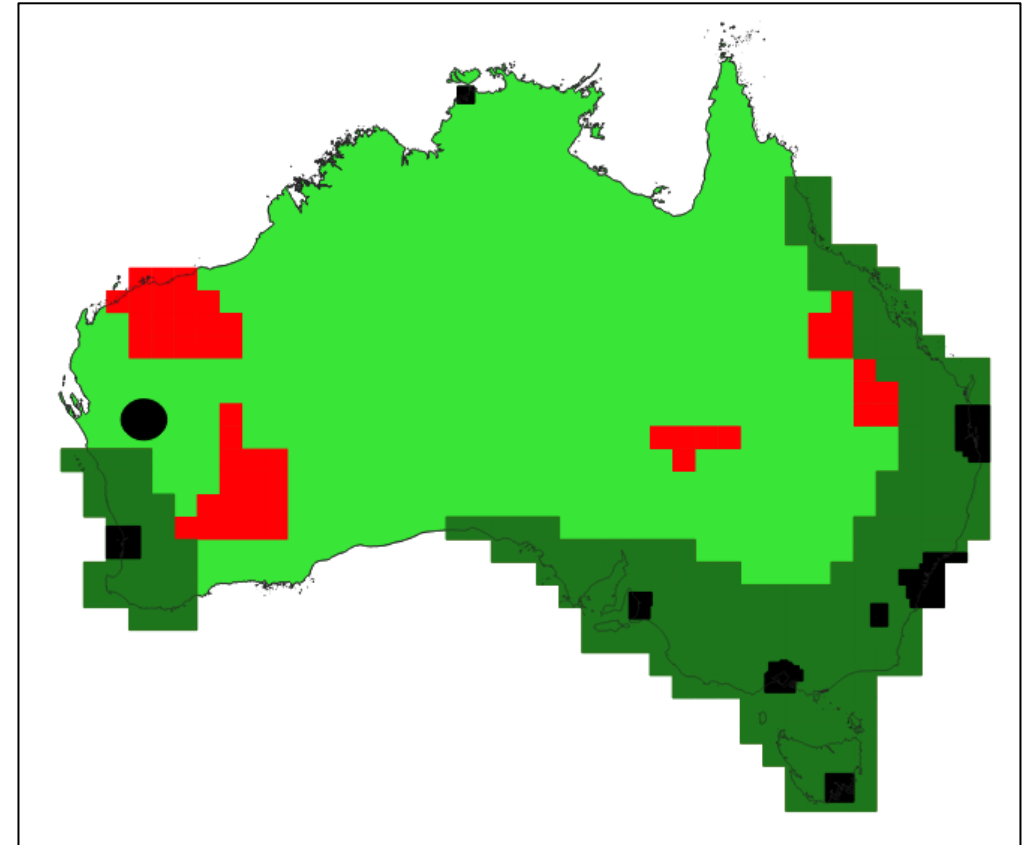
1.8/2 GHz Review

- Underutilised by mobile network operators

- Shortage of spectrum for others

- Spectrum denial causes

1.8/2 GHz Review - possibilities

- Increased channel size

- "Cross band" channel limits

- Increased channel limits

- Tighter channel reuse

- Relaxed channel priority

1.8/2 GHz Review - possibilities

- Replan 1.8 GHz point to point

- Associates test

- 'Over the top' licensing

"Have your say"

https://www.acma.gov.au/consultations/2024-06/1800-mhz-and-2-ghz-bands-outside-spectrum-licensed-areas-review-arrangements