

The logo for Optus, featuring the word "OPTUS" in a bold, teal-colored, sans-serif font.

Submission in response to
ACMA Options Paper

**Replanning of the
1880-1920 MHz band**

Public Version

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COMMENTS ON REPLANNING THE 1880-1920 MHz BAND

1. Optus welcomes the opportunity to provide feedback to the Australian Communication and Media Authority's (ACMA) Consultation Paper: *Replanning of the 1880-1920 MHz band* (the Options Paper).
2. The 1880-1920 MHz band is subject to a mix of apparatus and class licensing arrangements across Australia, with current regulatory arrangements optimised for class-licensed digital enhanced cordless telecommunications (DECT) devices in 1880-1900 MHz Australia-wide; apparatus-licensed point-to-point (PTP) and point-to-multipoint (PMP) links in 1900-1920 MHz in regional and remote areas; and various low interference potential class-licensed devices Australia-wide.
3. Any licencing regime to apply in this band should be appropriate for its intended use and provide the required levels of protection, coordination and rights to enable efficient utilisation of spectrum.
4. The ACMA has outlined four options for consideration in the 1880-1920 MHz band, while also noting several desirable planning outcomes consistent with maximising the overall public benefit from using the spectrum. These include:
 - (a) Maintain regulatory arrangements for existing services within the 1.9 GHz band.
 - (b) Expand arrangements for short range wireless broadband (SR WBB) services.
 - (c) Introduce arrangements for new railway mobile radio (RMR) services.
 - (d) Maintain coexistence with 1.9 GHz band services.
 - (e) Maintain coexistence with adjacent band services.
5. Notably, the options largely seek to support ongoing arrangements for existing users in the band, while also enabling for the extension of arrangements in the band to accommodate the increasing interest for short range (SR) WBB and railway mobile radio (RMR) technologies.
6. To this end, the ACMA's preliminary view is to support the option that provides for SR WBB and RMR uses in all areas while retaining use for existing PTP and LA WBB.
7. This will no doubt require the need to balance the various considerations required to support multiple and flexible uses against the complexity of technical and licensing frameworks to support such increased utilisation.
8. Optus does not oppose the expansion of band arrangements to accommodate for RMR users, however, remains strongly of the view that any coexistence measures should remain the responsibility of the new entrant. It would not be appropriate for existing licensees, particularly in adjacent bands, to be required to introduce any interference mitigations in order to accommodate changes in arrangements to the 1.9 GHz band.
9. Optus' views on the ongoing band planning considerations are set out below.

Considerations for current and future uses in the band

Q1 – The ACMA invites comments on the proposed desirable planning outcomes.

Q2 – The ACMA seeks stakeholders' views on any other applications we have not identified that could be accommodated under SR WBB.

10. Optus welcomes the opening of the 1.9 GHz band for RMR uses between 1900-1910 MHz frequency range, while allowing for parts of the band to continue to be used for the range of current services.

The case for action and desirable planning outcomes

11. The ACMA has identified several desirable planning outcomes from this review of the band. Central to this is the ability to introduce RMR uses with suitable frameworks, while also recognising the continuation of some arrangements for existing services to remain largely unchanged.
12. Optus supports this stated intent. Optus also strongly supports recognition that any changes should ensure coexistence with adjacent band services. Specifically, where it applies to spectrum licensed services in both the 1800 MHz and 2100 MHz bands.

Considerations for the proposed replanning options

Q3 – The ACMA invites comments on the replanning options, especially the preliminary preferred option presented in this paper, and any alternative options.

13. The ACMA has provided four options for future arrangements in the 1880-1920 MHz band:
 - (a) Option 1 – Maintaining existing arrangements. Regulatory arrangements in the 1880–1900 MHz frequency range may require minor amendments to ensure some new SR WBB technologies can be accommodated in this segment;
 - (b) Option 2 – Expanding SR WBB arrangements from exclusive use in 1880-1900 MHz to include shared use in the 1900–1920 MHz frequency range Australia-wide, with no other changes to current arrangements;
 - (c) Option 3 – Introducing arrangements to allow for RMR in the 1900–1910 MHz frequency range on an Australia-wide basis, with no change to current arrangements in the other segments; and
 - (d) Option 4 – Extending arrangements for SR WBB to the 1880–1920 MHz frequency range to allow shared use of the 1900–1920 MHz frequency range Australia-wide. Introducing arrangements to allow for RMR in the 1900–1910 MHz range Australia-wide, on a shared and coordinated basis with other services while maintaining arrangements for LA WBB and PTP in regional and remote areas.
14. In general, Optus agrees with the approach to introduce arrangements for RMR uses between 1900-1910 MHz. Optus also reiterates the importance of co-existence considerations, particularly where there is the potential risk of interference with adjacent

spectrum-licensed bands (such as the 1.8 GHz and 2.1 GHz bands) which continue to be heavily used by MNOs for mobile services.

The introduction of RMR arrangements, as well as operation of existing services should respect coexistence with adjacent spectrum-licensed bands

15. Optus reiterates its previous views on the importance of respecting co-existence considerations with adjacent spectrum-licensed bands. Notably, that the coexistence of TDD systems in the 1.9 GHz band with the adjacent FDD systems will present challenges to effective interference management and Optus submits that any such proposals require thorough consideration and planning.
16. To date, Australia currently allocates spectrum in the 1.8 to 2 GHz frequency range based on ITU-R Recommendation M.1036-3 B4 frequency arrangements. That is, according to the following 3GPP band plans:
 - (a) Band 1: 2.1 GHz (1920–1980 MHz): FDD mode, uplink.
 - (b) Band 3: 1.8 GHz (1805–1880 MHz): FDD mode, downlink.
 - (c) Band 39: 1.9 GHz (1880–1920 MHz): TDD mode
17. Optus submits that any significant deployment of high-power base stations and services in the 1.9 GHz band has the potential to undermine the utility of the adjacent spectrum-licensed 1.8 GHz and 2.1 GHz bands. If the new 1.9 GHz band plan results in interference or restrictions in either of the 1.8 GHz or 2.1 GHz bands, the impacts on the existing mobile networks and services will be significant.
18. Accordingly, Optus submits that any new assignment in the 1.9 GHz band should not:
 - (a) Cause any interference with the adjacent bands, particularly with the 2.1 GHz Uplink; nor
 - (b) Mandate any new deployment restrictions in the adjacent bands, i.e., 1.8 GHz and 2.1 GHz bands.
19. Existing licensees should not be required to introduce additional filtering, or other mitigation measures, to accommodate the entry of other licensees in adjacent channels. As is current standard practice, the onus should remain on new entrants (in this case the FRMCS users) to ensure that their equipment does not cause undue interference.

Maintaining arrangements for existing services and shared access approach

20. Optus notes that future band arrangements will also need to ensure that current users in the band can continue to operate, and co-exist alongside the introduction of RMR services between 1900-1910 MHz frequency range.
21. As previously noted, the 1900-1910 MHz frequency range is currently being considered internationally (particularly in Europe) for Future Rail Mobile Communication System (FRMCS). As such, Optus considers it can be allocated to FRMCS (or RMR) systems in Australia as well, if:
 - (a) The two conditions mentioned under paragraph 18 above are satisfied; and

- (b) The Railway industry considers this frequency as a replacement for their existing 1.8 GHz spectrum, and thereby vacate all or part of their current 1.8 GHz holdings.

Comments on the ACMA's preferred Option 4

22. Figure 1 below sets out the ACMA's preliminary preferred option.

Figure 1 Illustration of Option 4

1880 MHz	1900 MHz	1910 MHz	1920 MHz
Australia-wide Planned uses: SR WBB Licence type: Class licence	Metropolitan area Planned uses: SR WBB Licence type: Class licence		
	Planned uses: RMR Licence type: Apparatus licence		
	Regional and remote Australia Planned uses: LA WBB, PTP Licence type: Apparatus licence Planned uses: SR WBB Licence type: Class licence		
	Planned uses: RMR Licence type: Apparatus licence		

Source: ACMA

23. In general, Optus supports the ACMA adopting Option 4 as its initial starting point for developing any changes to arrangements in the band.

Coexistence considerations

Q6 – The ACMA invites comments on coexistence considerations, and analysis on coexistence issues for the proposed options in this band.

24. The ACMA Options Paper acknowledged that:¹

The European Telecommunications Standards Institute (ETSI) technical committees identified ongoing challenges in FRMCS, including the integration of rail frequency spectrum for the use of 3GPP radio technologies, and other

¹ ACMA, Replanning of the 1880-1920 MHz band, Options Paper, November 2022, p.17

spectrum issues related to FRMCS. FRMCS will rely on the defined Mission Critical (MCX) Service functionality. CEPT Report 74² answers to the mandate from the European Commission to CEPT on FRMCS. The 2020 ECC Report 314³ considered the possibility of introducing a 10 MHz TDD channel in the 1900–1910 MHz band for FRMCS, using either 4G LTE or 5G NR technology.

25. FRMCS is based on 3GPP 4G LTE or 5G NR, which means that the Base Stations (BS) and cab-radios should meet the relevant 3GPP requirements such as 3GPP TS 36.101 (for 4G UE), 3GPP TS 36.104 (for 4G BS), 3GPP TS 38.101 (for 5G UE), and 3GPP TS 38.104 (for 5G BS). However, adhering to the 3GPP requirements does not necessarily result in a successful coexistence of 3GPP Band 1 and Band 39.
26. As demonstrated in ECC Report 318⁴, FRMCS in 1900–1910 MHz could interfere with the WBB services in the 2 GHz band. More specifically, the report showed that in some deployment scenarios (e.g., high power BS and shorter site-to-site distances) more than 20 dB of extra isolation is required to protect the 2 GHz uplink signals from the FRMCS BS.
27. To this end, Optus welcomes the ACMA statement:⁵

The expansion of RMR does not include any intention to change the coexistence environment with services adjacent to the 1.9 GHz band. Any potential interference has been mitigated by limiting the allocation to 1900–1910 MHz. Any further analysis that indicates an increase to the adjacent channel interference environment will be mitigated by assignment rules to the RMR allocation.
28. Optus reiterates that any coexistence issues that may arise from the introduction of RMR should therefore be addressed only by imposing adequate requirements (e.g., in-band power and unwanted emissions limits) on the 1.9 GHz transmitters. No new requirements should be imposed on WBB services in the adjacent 1.8 and 2.1 GHz spectrum-licensed bands.
29. Optus notes, notwithstanding any new coexistence studies, that based on these preliminary coexistence considerations, it would be appropriate to limit the introduction of a 10 MHz channel for RMR arrangements at this stage.
30. Expanding the current proposal to allow for RMR users beyond 1900-1910 MHz will likely add additional technical complexity for consideration. This can also lead to increased resourcing and costs for managing interference – which Optus considers should be a relevant consideration in determining the appropriate balance in the development of technical and licensing arrangements.

² CEPT Report 74.

³ ECC Report 314: Co-existence between Future Railway Mobile Communication System (FRMCS) in the frequency range 1900–1920 MHz and other applications in adjacent bands.

⁴ ECC Report 318: Compatibility between RMR and MFCN in the 900 MHz range, the 1900-1920 MHz band and the 2290-2300 MHz band

⁵ ACMA, Replanning of the 1880-1920 MHz band, Options Paper, November 2022, p.34

Opportunity for RMR arrangements to move to 1.9 GHz band in the long term

31. Optus welcomes the ACMA's consideration to support a longer term view for the relocation of RMR services to the 1.9 GHz band. As noted in the Options Paper,⁶

The 1.9 GHz band could potentially complement 1800 MHz band spectrum licences in the short term and perhaps replace them in the longer term. ... [where] the 1.9 GHz band could allow access to rail corridors Australia-wide.

32. By moving to 1.9 GHz band, RMR can therefore benefit from access to nationwide spectrum in 1900-1910 MHz, which is aligned with global standards, and thereby gain access to a wider choice of suppliers and user equipment.

Other issues

Q4 – Is personal handy phone system (PHS) technology still required to be included in the cordless communication devices class licence?

Q5 – The 1900-1920 MHz frequency band plan will sunset on 1 April 2023. Is the band plan still required, or can the band plan still be allowed to sunset?

33. No comment.

⁶ ACMA, Replanning of the 1880-1920 MHz band, Options Paper, November 2022, p.19