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## **TELSTRA CORPORATION LIMITED**

# **Proposal to remake instruments for the 700 MHz, 1800 MHz, 2.5 GHz and 2.5 GHz mid-band gap spectrum-licensed bands**

**Public submission**

**2 Dec 2022**



## 01 Introduction

We welcome the opportunity to provide our views on the ACMA's proposal to **remake instruments for the 700 MHz, 1800 MHz, 2.5 GHz and 2.5 GHz mid-band gap spectrum-licensed bands**, as outlined in ACMA consultation IFC 36/2022. We agree with the ACMA that 12 of the 13 sunseting instruments should be remade before they sunset. The one exception is the Radiocommunications Advisory Guidelines (Additional Device Boundary Criteria – 1800 MHz Lower Band) 2012, where we also agree with the ACMA that this instrument should now be repealed.

In the majority, we agree with and support the changes the ACMA proposes to make when re-issuing the sunseting instruments. One change we don't agree with is the introduction of Part 6 and Part 7 in the 700 MHz Tx RAG, which address the approach to frequency coordination with land mobile, point-to-point and point-to-multipoint services operating in the 804–809 MHz frequency range. Coordination between International Mobile Telephony (IMT) and these adjacent services is a complex matter that is best addressed on a site-by-site basis by employing a notification protocol as explained in section 03 of our submission. We submit that this represents a way to ensure efficient use of the available spectrum, as opposed to the approach suggested in the draft instruments which could result in spectrum denial up to several kilometres around 800 MHz sites.

We also note the amendments being made are uncontroversial changes for each of these bands, which given the context of sunseting instruments is appropriate, and we support the ACMA's approach. However, these bands are still due a proper TLG review of matters such as the introduction of 5G and device registration exemption threshold. While we support the ACMA's approach to introduce the uncontroversial changes while remaking the instruments, we respectfully remind the ACMA that industry expects a full TLG will be held for these bands in the near future.

## 02 Non-band specific changes

The Tx RAG for each of the 700 MHz, 2.5 GHz and 2.5 GHz Mid-Band Gap bands all reference the [Radiocommunications \(Mid-West Radio Quiet Zone\) Frequency Band Plan 2011](#) (ARQZWA band plan) which sunsets on 1 April 2023, and is the subject of another consultation. Telstra has provided a supportive response to that consultation and thus also supports the changes put forward here.

The consultation also proposes to update some aspects of the **Radiocommunications (Unacceptable Levels of Interference) (ULoI) Determinations for each of the 700 MHz, 2.5 GHz and 2.5 GHz Mid-Band Gap bands**.

Specifically, the proposed changes are as follows:

- **Adopt a higher resolution digital elevation model (DEM).** This change is consistent with the changes already agreed for other spectrum licence bands and will lead to more accurate assessment of propagation losses. Telstra supports this proposal.
- **Include provisions for Device Boundary Condition (DBC) failures over ocean paths.** ACMA has proposed changes that address specific circumstances where the current rules unnecessarily restrict the deployment of some base-stations where there is no real interference risk (i.e., where the failures occur over ocean paths). These changes are consistent with those adopted for other spectrum licences and are therefore supported by Telstra.



- **Introduce a transitional clause.** This proposal is administrative in nature and simply provides for seamless transition from the previous version of the ULol to the updated version proposed in this consultation. Telstra supports this proposal.
- **Correct/update Vincenty's direct formulae.** Vincenty's formula is used in the DBC calculation. This proposed change is simply to correct any typographical errors that may have been made in the previous instruments. Telstra supports this proposal.

### 03 700 MHz band

The current 700 MHz spectrum licence technical framework instruments are:

- [Radiocommunications Advisory Guidelines \(Managing Interference from Transmitters – 700 MHz Band\) 2012](#) (700 MHz Tx RAG)
- [Radiocommunications Advisory Guidelines \(Managing Interference to Receivers – 700 MHz Band\) 2012](#) (700 MHz Rx RAG)
- [Radiocommunications \(Unacceptable Levels of Interference – 700 MHz Band\) Determination 2012](#) (700 MHz ULol).

ACMA have proposed the following changes to the 700 MHz Tx RAG as follows:

- The removal of Part 4 since it relates to digital television receivers operating in the 700 MHz band. This part is no longer required as broadcast services have been re-located from the 694–820 MHz band. Telstra supports this change.
- The addition of a new section Part 5, Item 14 which clearly states that wireless microphones shall not cause interference to primary services such as 700 MHz spectrum licenced devices, nor are the associated receivers afforded any protection. Telstra supports this proposed additional text.
- ACMA have added Part 6 and Part 7 providing guidance on the management of interference with land mobile, point-to-point and point-to-multipoint services operating in the 804–809 MHz frequency range. Arrangements for these services have been put in place as part of the implementation of outcomes to the [803–960 MHz band review](#). As a result, apparatus licences affected by this replanning decision have been progressively re-locating into the 804–809 MHz band. ACMA take the view that these apparatus licences are a primary service, and as such, the ACMA propose that a first in time principle be applied to this when considering coordination with spectrum licenced services in the adjacent 700 MHz band.

Telstra is strongly opposed to this approach, as it potentially leads to inefficient use of available spectrum – both in the 700 MHz spectrum licenced band, and the adjacent 800 MHz blocks. Modelling suggests the proposed approach could create 'exclusion zones' up to several km around 800 MHz sites. This situation is unacceptable to Telstra (and the mobile industry) as it effectively diminishes the long-term value that was attributed to such Australia-wide spectrum licences when they were purchased at auction in 2013. The level of investment in such licences is based on an expectation that all rights as defined in the various auction instruments, RAGs, RALIs and issued licences themselves would remain for the duration of the licence tenure. Changes to the 'ground rules' such as those that are proposed here introduce an unacceptable level of uncertainty into network rollout investment plans, and could mean that future network roll-out is compromised in a



way that was never disclosed or foreshadowed when the spectrum was sold. This proposal effectively confers equal status to both spectrum-licensed base stations and apparatus-licensed stations despite the hugely disparate capital investment.

Telstra believes that the above situation could be alleviated by the adoption of a notification protocol whereby if an Accredited Person (AP) identifies that a frequency coordination issue exists between services in the 700 MHz spectrum licenced band, and the adjacent 800 MHz blocks, then the second in time service needs to advise the first in time licensee of their intentions to deploy. In these cases, the apparatus licensee can choose to take appropriate interference mitigation measures such as additional RF filtering or moving to another band. We emphasise there must be no circumstances where the spectrum licensee is prevented from operating their network. Should this solution be adopted then Part 6 clause 15(2), and Part 7 clauses 17(2), 18(2) and 18(3), of the Tx RAG, need to be amended such that the clauses only refer to notification requirements.

## 04 1800 MHz band

The current 1800 MHz spectrum licence technical framework instruments are:

- [Radiocommunications Advisory Guidelines \(Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band\) 2012](#) (1800 MHz Tx RAG);
- [Radiocommunications Advisory Guidelines \(Managing Interference to Spectrum Licensed Receivers – 1800 MHz Band\) 2012](#) (1800 MHz Rx RAG);
- [Radiocommunications Advisory Guidelines \(Additional Device Boundary Criteria - 1800 MHz Lower Band\) 2012](#) (1800 MHz RAG DBC); and
- [Radiocommunications \(Unacceptable Levels of Interference - 1800 MHz Band\) Determination 2012](#) (1800 MHz ULol).

ACMA have proposed the following changes to the 1800 MHz Tx RAG as follows:

- ACMA are seeking to amend Part 2 clause 2.2 (Point-to-point fixed service receivers) of the existing Tx RAG which offered protection to 1800 MHz Point to Point Fixed Receivers (so called, “Category 3” receivers) during the reallocation period, which ended in June 2017. Telstra supports the removal of Part 2 Clause 2.2 pertaining to Category 3 receivers, since it is no longer of any relevance.
- ACMA are seeking to remove Part 7 (‘Use of Mobile Communications systems on-board Aircraft (MCA)’) as it does not provide guidance to spectrum licensees on the management of interference in respect of these picocell-jammer devices deployed on aircraft. While Telstra accepts the ACMA’s view that Part 7 does not properly belong in the Tx RAG, the information contained in the Part does helpfully consolidate existing recommendations in regard such deployments. Telstra recommends that this information continue to be made available by the ACMA, but in another format outside of the RAG (such as on its website) as it is likely that any party wishing to deploy such a system would approach the ACMA for information on licensing arrangements.

ACMA have proposed the following changes to the 1800 MHz ULol as follows:

- ACMA are seeking to have the [Radiocommunications Advisory Guidelines \(Additional Device Boundary Criteria - 1800 MHz Lower Band\) 2012](#) (1800 MHz RAG DBC) incorporated into the



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[Radiocommunications \(Unacceptable Levels of Interference - 1800 MHz Band\) Determination 2012](#) (1800 MHz ULol). This is common practice for the other spectrum licence bands, therefore Telstra supports this proposal.

- As with the other bands covered by this consultation, ACMA also proposes to adopt a higher resolution digital elevation model (DEM). This change is consistent with the changes already agreed for other spectrum licence bands and will lead to more accurate assessment of propagation losses. Telstra supports this proposal.

## 05 2.5 GHz band

The current 2.5 GHz spectrum licence technical framework instruments are:

- [Radiocommunications Advisory Guidelines \(Managing Interference from Transmitters – 2.5 GHz Band\) 2012](#) (2.5 GHz Tx RAG);
- [Radiocommunications Advisory Guidelines \(Managing Interference to Receivers – 2.5 GHz Band\) 2012](#) (2.5 GHz Rx RAG); and
- [Radiocommunications \(Unacceptable Levels of Interference – 2.5 GHz Band\) Determination 2012](#) (2.5 GHz ULol).

ACMA have proposed to update the Tx RAG by providing a reference to Recommendation ITU-R M.1849 'Technical and operational aspects of ground-based meteorological radars' in Part 7 of this document. Telstra observes that while this recommendation provides some information regarding the technical and operational characteristics of meteorological radars, it is informational (rather than prescriptive) and does not materially assist spectrum licensees in protecting Bureau of Meteorology weather radars.

ACMA have also proposed to add some additional detail to the Rx RAG to add some clarity to the way in which the receiver intermodulation response rejection is specified. Telstra supports the addition of this information.

Lastly, ACMA propose to update the 2.5 GHz ULol by specifying a new protection level that would apply to receivers using advanced antenna systems (AAS) as are being deployed with NR (5G) technologies. Telstra supports this proposal, but makes the observation that there is also scope to update the spectrum licence core conditions to accommodate such antenna technologies.

## 06 2.5 GHz mid-band gap

The current 2.5 GHz mid-band gap spectrum licence technical framework instruments are:

- [Radiocommunications Advisory Guidelines \(Managing Interference from Transmitters – 2.5 GHz Mid-Band Gap\) 2012](#) (2.5 GHz MBG Tx RAG);
- [Radiocommunications Advisory Guidelines \(Managing Interference to Receivers – 2.5 GHz Mid-Band Gap\) 2012](#) (2.5 GHz MBG Rx RAG); and
- [Radiocommunications \(Unacceptable Levels of Interference – 2.5 GHz Mid-Band Gap\) Determination 2012](#) (2.5 GHz MBG ULol).



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There are no substantive changes proposed for the 2.5 GHz Tx MBG RAG.

In the case of the 2.5 GHz Rx MBG RAG, ACMA have noted that there is an error in Schedule 1 (Receiver Blocking) where the frequency limits are incorrectly specified. ACMA propose to update these values as well as adding some clarity to the way in which the receiver intermodulation response rejection is specified. Telstra supports the addition of this information.

ACMA also propose to update Schedule 2, Item (3) of the 2.5 GHz MBG ULol to improve the accuracy of propagation modelling for the device boundary calculation in this band by referring to a set of ITU-R Recommendations. Telstra supports this proposal.



## 07 Answers to consultation questions

This section contains our answers to the specific questions asked by the ACMA in the consultation.

### 7.1. 700 MHz band

- 1. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 700 MHz Band).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 700 MHz Band), and the proposed changes, except for the inclusion of Parts 6 and 7. Telstra is strongly opposed to these inclusions for the reasons outlined earlier in this submission.

- 2. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 700 MHz Band).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 700 MHz Band), and the proposed amendments.

- 3. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications (Unacceptable Levels of Interference – 700 MHz Band) Determination.**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 700 MHz Band), and the proposed amendments.

### 7.2. 1800 MHz band

- 4. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 1800 MHz Band) and the proposed amendments. Telstra recommends that the information contained in Part 7 which is to be deleted, instead be made available by the ACMA in another format such as on its website.

- 5. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 1800 MHz Band).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 1800 MHz Band) and the proposed amendments.



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**6. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination.**

Telstra supports the remaking of the Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination and the proposed amendments.

**7. The ACMA seeks comment on the decision to revoke the Radiocommunications Advisory Guidelines (Additional Device Boundary Criteria – 1800 MHz Lower Band) 2012 and include relevant provisions into the remade Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination.**

Telstra supports the revocation of the Radiocommunications Advisory Guidelines (Additional Device Boundary Criteria – 1800 MHz Lower Band) 2012 and the inclusion of the relevant provisions into the remade Radiocommunications (Unacceptable Levels of Interference – 1800 MHz Band) Determination.

### **7.3. 2.5 GHz band**

**8. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.5 GHz Band).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.5 GHz Band) and the proposed amendments.

**9. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 2.5 GHz Band).**

Telstra supports the remaking of the Radiocommunications Advisory (Managing Interference to Receivers – 2.5 GHz Band) and the proposed amendments.

**10. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications (Unacceptable Levels of Interference – 2.5 GHz Band) Determination.**

Telstra supports the remaking of the Radiocommunications (Unacceptable Levels of Interference – 2.5 GHz Band) Determination and the proposed amendments. As mentioned earlier in this submission, Telstra also observes there is scope to update the spectrum licence core conditions to accommodate AAS technologies at a suitable time.





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#### 7.4. 2.5 GHz mid-band gap

**11. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.5 GHz Mid-Band Gap).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.5 GHz Mid-Band Gap) and the proposed amendments.

**12. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 2.5 GHz Mid-Band Gap).**

Telstra supports the remaking of the Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 2.5 GHz Mid-Band Gap) and the proposed amendments.

**13. The ACMA seeks comment on the proposed amendments in the remaking of the Radiocommunications (Unacceptable Levels of Interference – 2.5 GHz Mid-Band Gap) Determination.**

Telstra supports the remaking of the Radiocommunications (Unacceptable Levels of Interference – 2.5 GHz Mid-Band Gap) Determination and the proposed amendments.