



1800 MHz and 2 GHz bands – Review of planning arrangements outside of spectrum licensed areas

Public submission

9 September 2024

Executive Summary

Telstra appreciates the opportunity to comment on *1800 MHz and 2 GHz bands – Review of planning arrangements outside of spectrum licensed areas: Options paper (the options paper)*. These bands are close substitutes and play an important role in the provision of both public mobile services and private industrial use cases. Outside of the spectrum licenced areas, they also contain legacy fixed point-to-point (PTP) links which can hamper deployment of these PTS Apparatus licenced networks.

Our submission proposes a new option for the ACMA's and industry's consideration. While the ACMA's proposed options may provide some short-term relief to the challenges that are impeding greater utilisation and spectrum efficiency of the band, we recommend a more comprehensive approach to realise the true maximum utility of the band.

One of the most significant impediments to greater use of the 1800 MHz band is the presence of PTP links, and Telstra is the operator of 116 of the 146 PTP links in the band. In this submission, we propose to clear all the PTP links we own and operate, commensurate with concluding the Copper Continuity Obligation, which forms part of the delivery of the Universal Service Obligation (USO). The remaining 30 PTP links are held by only five licensees, and our proposal is for these links to migrate to a different band (or alternate technology).

Beyond clearance of all PTP links in 1800 MHz, the second key element of our proposed new option is that mobile network operator (MNO) and non-MNO licensees are separated into different bands. MNOs move to the 1800 MHz band, and non-MNOs move to the 2 GHz band. Industrial private networks and public mobile networks have different characteristics: mixing both network types together in the one band leads to inefficient use of spectrum, thereby denying it from its maximum utility. To help facilitate this arrangement, the preferred assignment in the 2 GHz band for MNOs would be removed, in exchange for expanded access to 1800 MHz.

Our new option also proposes the 1800 MHz band moves to national spectrum licences. We acknowledge the ACMA's consultation stated spectrum licensing is out of the scope for this consultation, however, we believe there is merit in moving to national spectrum licensing for the 1800 MHz band and propose this be brought into the conversation.

We are under no illusion that our proposal is simple to achieve; on the contrary, it will require planning and effort. There will also be cost involved, and it will take several years (at a minimum) to complete. However, mid-band spectrum is scarce, and demand continues to increase. Now is the right time, in the lead-up to the expiry of the 1800 MHz spectrum licences on 17 June 2028, to take a more comprehensive approach to improving the allocation efficiency of both bands before the end of this decade. Doing so will meet the ACMA's identified desirable outcomes, simplify the proposed arrangements, and obviate the need to introduce complex measures such as defining 'high demand areas', setting allocation quantum limits, or introducing an associates' test.

The ACMA's options 2, 3 and 4 would make achieving the outcome of maximising utility of the two bands far more difficult, especially in the long run. The current allocation approach mixes MNO, PTP and private infrastructure use, leading to inefficient allocation outcomes, and the ACMA's proposed options seek to introduce additional complexity within the confines of what is already a sub-optimal allocation arrangement in these bands. Clearing PTP links and segregating public mobile networks and private industrial networks into different bands, in a new, "top-down" approach to reconfiguring the bands, will optimise efficiency and deliver long-term benefits to all users of the bands.

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1 Introduction

Telstra appreciates the opportunity to comment on *1800 MHz and 2 GHz bands – Review of planning arrangements outside of spectrum licensed areas: Options paper (the options paper)*. These bands are close substitutes and play an important role in the provision of public mobile telecommunications services and private industrial use cases in the areas outside the spectrum licensed areas. Accordingly, considering planning arrangements for both bands together is appropriate.

We have taken the opportunity afforded by this consultation to review our current use of the band and would like to propose a fifth option (“Option 5”) that would see a nationally harmonised 1800 MHz band with a common spectrum licensing framework in exchange for releasing priority allocation assignments in the 2 GHz band. We note that some industry effort is required, including Telstra clearing a significant number of PTP links from the 1800 MHz band which to date have been required to fulfil an obligation to maintain copper networks in remote areas.

Option 5 would also see the three major Mobile Network Operators (**MNOs**) consolidate their 1800 MHz and 2 GHz operations into the 1800 MHz band for remote areas. We consider this option would simultaneously address the ACMA’s concerns about “supply” of readily usable spectrum, as well as meeting the ACMA’s objectives of allowing more users to access mid-band spectrum (in the 2 GHz band) and more efficient use of the bands.

We disagree with some of the conclusions of the ACMA’s analysis. In our view, the ACMA has arrived at conclusions we consider to be incorrect, in large part, because of an absence of some critical information to inform the analysis. To this end, our submission contains some information which was not available to the ACMA at the time it conducted its analysis and developed its four planning options.

Ultimately, planning and optimisation of the 1800 MHz and 2 GHz bands will require industry coordination, and as the consultation notes,¹ it is likely that a Technical Liaison Group (TLG) is required to bring together all stakeholders to improve allocation outcomes for these two important bands.

Our submission is structured as follows:

- **Section 2** provides commentary on how we understand the two bands are currently used, along with high-level details of Telstra’s ongoing use, especially PTP links in the 1800 MHz band.
- **Section 3** contains our response to each of the ACMA’s four proposed options.
- **Section 4** outlines an alternative option which Telstra believes would meet the ACMA’s desired outcomes with less complexity and greater effectiveness.
- **Appendix 1** contains specific answers to each of the ACMA’s consultation questions.

¹ Consultation paper, Table 2, p.12.

2 Analysis of spectrum usage

In this section, we review use of the 1800 MHz and 2 GHz bands. In particular, we explain Telstra's use of the bands, and examine how non-MNO use restricts our ability to use the bands in remote locations. Ahead of exploring Telstra's use of the two bands, we explore some of the misunderstandings about assessing demand.

2.1 It is not possible to infer demand by counting base stations

Public and private networks utilise spectrum in quite different ways, and these differences can lead to incorrect assumptions about demand if the two types of network are compared "like-for-like".

We observe that private networks, especially those used in industrial setting such as mining sites with automated machinery, typically require high reliability, low latency environments. Traffic on these networks can be quite deterministic and time sensitive, to support what are usually automation focused use cases (autonomous mining equipment, trucks, etc.). In contrast, public networks carry a wide range of traffic types, including voice, video, files, email, social media, etc. Public network traffic is characterised by diversity in intensity, variable delay tolerance and propagation distance to the base station. User traffic is multiplexed in a way that ensures efficient delivery and use of the spectrum across a population of users with diverse traffic types and needs.

This translates into different network deployment topologies. The private networks used in an industrial setting tend to deploy high-density, small radius cells, to ensure reliability and low latency around the mining site. This can look like the density of a public network in a metro setting, and creates the perception of a shortage of spectrum, whereas it is low path loss and low latency that is desired.

Public networks in remote areas, including for mining sites, have lower cell density, as larger-radius, high-power macro base stations are deployed. Their deployment often occurs in different locations within a mine site (camps, administration facilities, airports, transport interchange hubs etc). This does not imply a lesser demand for spectrum; on the contrary, it is the different traffic types and the locations where the traffic originates that means fewer base stations are required but in more diverse locations.

These observations are important in the context of this consultation because:

- The timeframes for developing new mines would today see industrial automation-based private networks likely leading mid-band spectrum acquisition requirements for public networks;²
- The distribution of transmission facilities to achieve public vs private coverage and reliability goals can be quite different; and
- The public network objective is wide area common coverage, versus a private network targeted single facility approach.

Should the dedicated set asides for MNOs on the 1800MHz band be removed, the chances are that the spectrum would be occupied by private networks prior to the public network demand arising. This risks public MNOs being blocked from delivering future capacity to these regions.

It is also worth noting that any attempt to compare this scenario to the 2 GHz band, where on face value it would appear the MNOs have successfully managed co-existence with the private networks, belies the fact that MNO spectrum acquisition on 2 GHz in this area pre-dated the rise of private networks. Much of the Telstra use of 2 GHz PTS licences was established to support the 3G network capacity in the area at a time when private networks were in their infancy. Today, we find that access to 2 GHz for capacity delivery for our public networks, or even for delivering our enterprise based private networks, is being restricted by other already granted private network licences. The current operation of the set aside,

² Note: Initially public networks are deployed on low-band spectrum (below 1 GHz). Public networks only need to access the mid-band spectrum later in the mining operation's development as traffic demand grows due to increased staffing in an area. By this time, it can be a "race" between public and private network operators to obtain mid-band spectrum.

particularly in the regional 2 GHz area, is resulting in increasing use of the nominated Telstra set aside by other parties.

In addition to not mistaking site count for demand, these differences mean that to get maximum public benefit from the spectrum and minimise wasted spectrum (due to spectrum re-use geographic buffer zones), a strategy where public network and private network use cases are separated is preferable. That way, the different time frames, different coverage delivery strategies, and different traffic profiles don't lead to conflicting spectrum allocations. Instead, public networks, with their set of characteristics can be grouped into one band, and private networks with a different set of characteristics can be grouped into the other band.

2.2 Usage in the 1800 MHz band

2.2.1 Telstra PTS Public Mobile Network Use in the 1800 MHz band

Telstra currently holds 110 PTS licences in the 1800 MHz band in remote Australia, as shown in Figure 1 below.

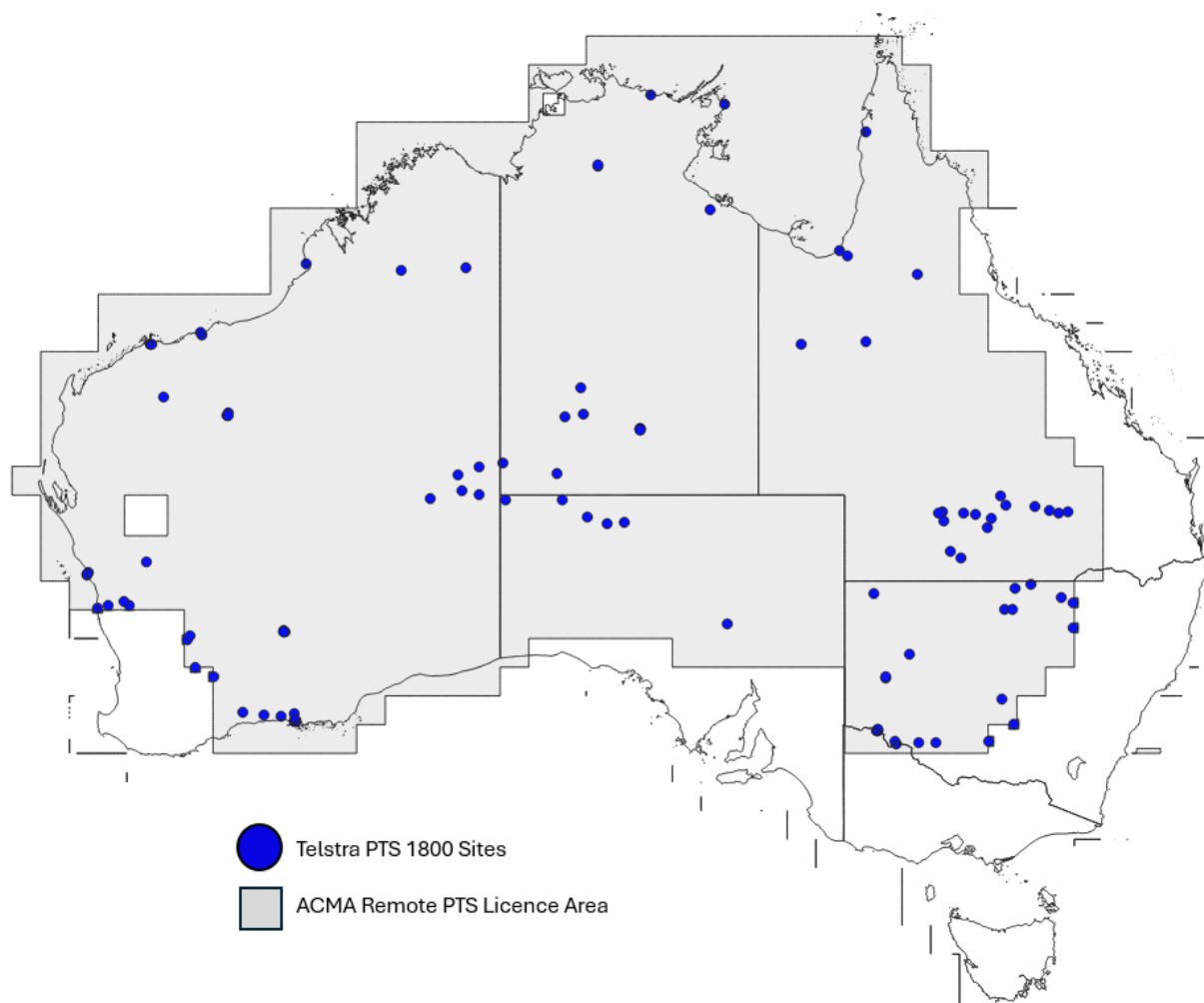


Figure 1: Telstra PTS licences in Remote Australia.

As can be seen from Figure 1, while we clearly do not achieve contiguous coverage across the entire landmass, the locations where we are using the 1800 MHz band in remote parts of Australia are fairly evenly spread.

Telstra expands its use of the 1800 MHz band as and where other low band 4G (LTE) bands become congested. Mid-band spectrum serves as a good “capacity” layer and complements low-band spectrum by offering capacity relief when low-band spectrum becomes congested. However, we have struggled to obtain 1800 MHz PTS licences due to “obstruction” from PTP licences, stifling our ability to deliver sufficient 4G capacity in some locations. We estimate that we are prevented (by 1800 MHz PTP links) from deploying 1800 MHz PTS base stations at more than 260 of our existing 4G (low-band) sites. This is almost 2½ times the number of operational 1800 MHz sites in remote Australia. We prefer 1800 MHz for capacity in regional areas with sparse sites, as opposed to other midband spectrum (e.g., 2.6 GHz, 3.4 GHz), is because it has better propagation characteristics which results in better customer experience in accessing higher data speeds further away from the base station.

2.2.2 Non-MNO PTS use of the upper 2x30 MHz of the 1800 MHz band

We are aware that there is substantial non-MNO use of the upper 2x30 MHz of the 1800 MHz band. Figure 2 below shows the 798 assignments in the upper 2x30 MHz of the 1800 MHz band.

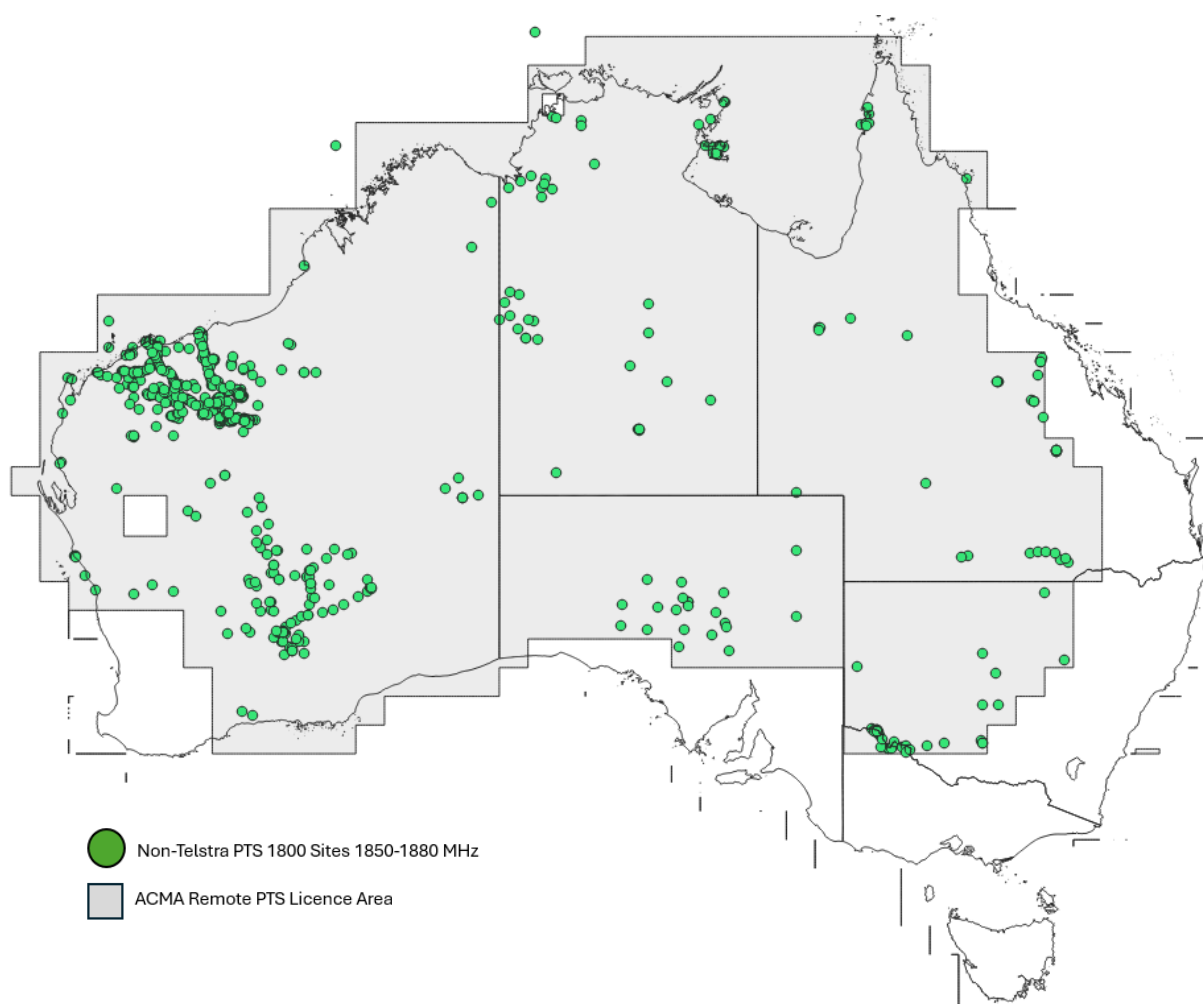


Figure 2: Non-MNO PTS licences in Remote Australia.

As with any band clearance proposal, we recognise that it will take time to migrate these users to the alternate band (and potentially alternate models of licensing). It will also involve cost to the private network operators, although if a longer time-period is allowed, some migration can be achieved through equipment lifecycle replacement. In any case, careful planning is required to achieve the migration of both MNO and non-MNO services between the two bands to achieve the final objective of separating public and private networks into different bands. Various approaches should be considered and need to

be linked to activities such as PTP clearance on 1800 MHz, staged releases of bands to each respective user community etc. as licences are migrated. As noted, there are costs associated in achieving the objective, however it is also fair to say there are costs that will be incurred by both public and private network operators, and this needs to be factored, and where possible minimised, in planning decisions to segregate the bands.

2.2.3 PTP Fixed Link Use in the 1800 MHz band

In total, there are 146 PTP links in the 1800 MHz band; we operate 116 of them, as shown in Figure 3 below. Most of the Telstra links must remain operational under the Copper Continuity Obligation to provide USO services. These links obstruct access seekers to the band, including Telstra; we are eager to clear these links, as soon as we obtain relief from the Copper Continuity Obligation.

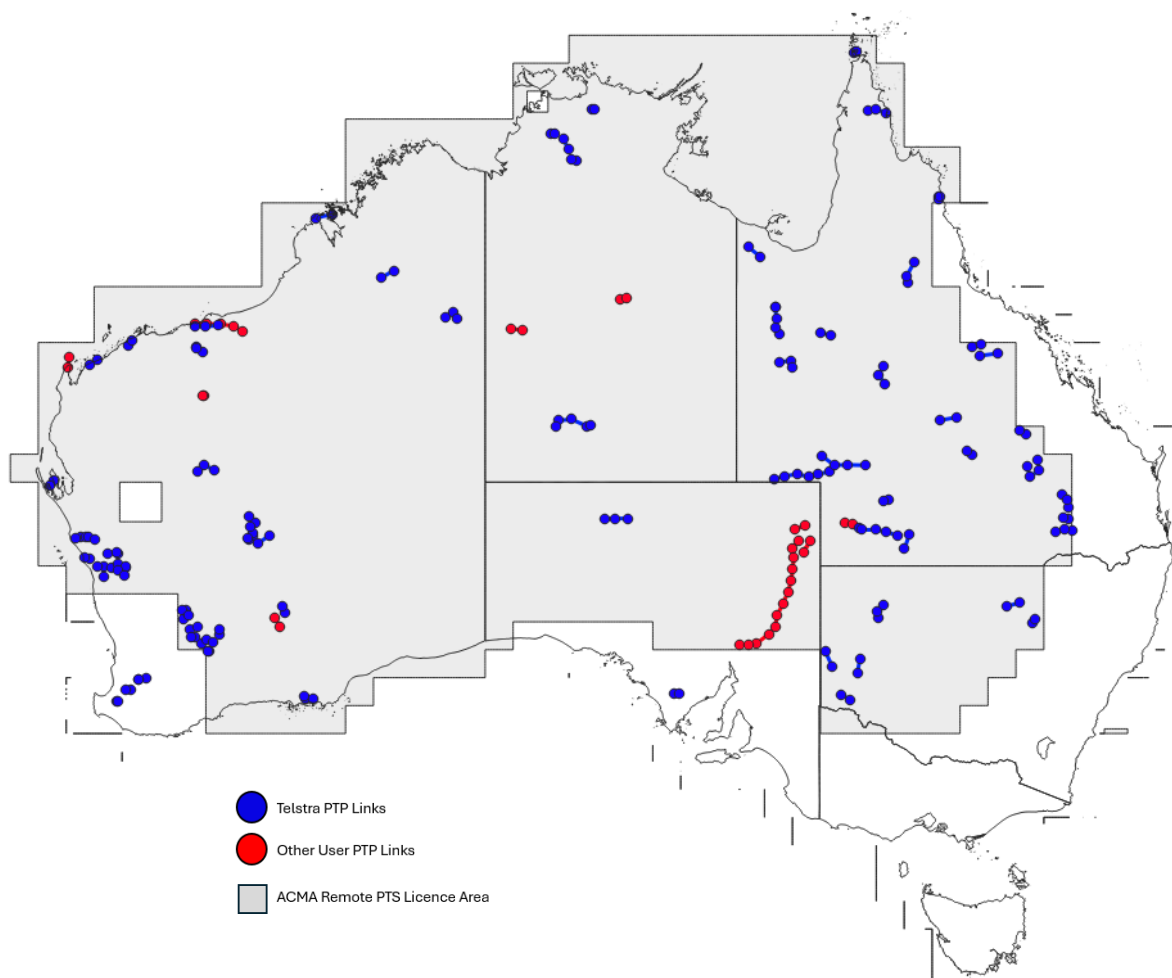


Figure 3: Fixed (PTP) links in the 1800 MHz band (all licensees).

Of the PTP links Telstra operates, the majority are used in the delivery of USO fixed telephony services. Where these links are associated with copper access, they will be decommissioned when we exit the copper network, clearing the 1800 MHz band of most of its PTP links.

Beyond the 116 PTP links operated by Telstra, there are a further 30 PTP links in operation, as shown in Table 1 below. It is part of our proposal that these links are also cleared from the 1800 MHz band. While clearing these links will require industry effort, the benefit will be improved allocation efficiency in the 2 GHz band.

Licensee	Links
Telstra	116
Santos Limited	16
BHP Billiton Iron Ore, Pty Ltd	9
Newmont Tanami, Pty Ltd	2
Woodside Energy Ltd	2
TEC Desert, Pty Ltd	1

Table 1: PTP links in the 1800 MHz band, by licensee

2.3 Usage in the 2 GHz band

2.3.1 Telstra PTS Public Mobile Network Use in the 2 GHz band

Telstra currently has 1304 PTS licences in the 2 GHz band across Australia (719 PTS licences in 2120-2130 MHz in regional Australia mostly within the 2 GHz spectrum licence footprint, and 579 PTS licences in the remote area in 2155-2165 MHz), as shown in Figure 4.

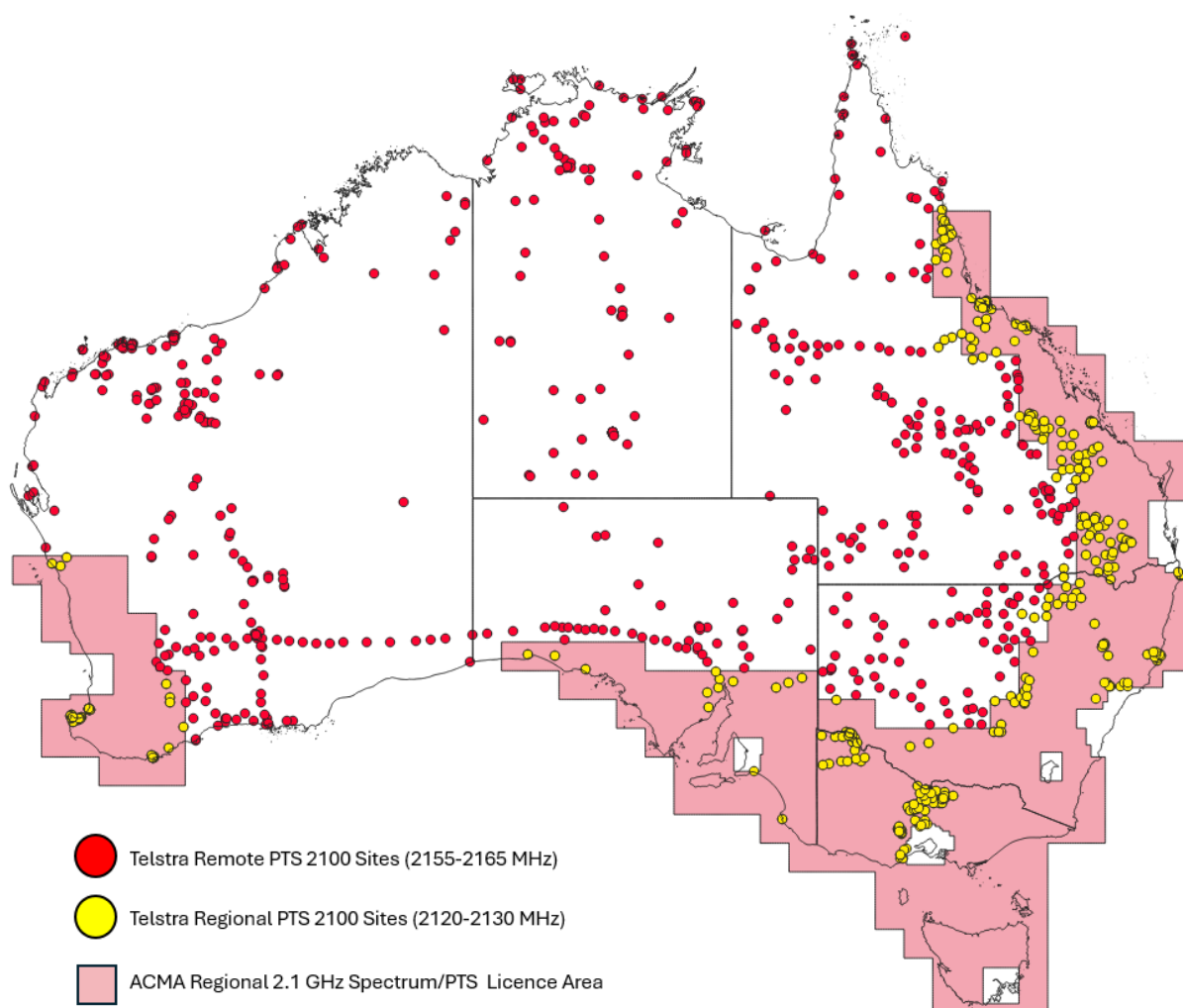


Figure 4: Telstra's PTS licences in the 2 GHz band.

Historically, Telstra used the 2 GHz band as a capacity layer for our 3G network (3GPP Band 1). This distorts the perception, however, of our relative interest of the 2 GHz band, compared to the 1800 MHz band. 3G technology was not developed for the 1800 MHz band (3GPP Band 3), which at the time was

being used for 2G GSM services. Therefore, our initial PTS licence acquisition in the 2 GHz band was made to enable 3G capacity layer deployment in regional and remote areas.

With 3G traffic steadily declining over the last decade, we are reassessing our use of the band, and are seeking, where appropriate, to migrate the bands we historically used for 3G over to 4G LTE or 5G. In doing so, our preference is for wider contiguous channels, which enhance the efficiency of our networks. This leads us in regional areas to favour our existing spectrum licences at 1800 MHz, followed by 2x10 MHz of our spectrum licence holdings on 2 GHz and only use our legacy 2x10MHz “ex 3G PTS” spectrum on 2 GHz last. In remote areas, we prefer to use our 2x15 MHz set aside on the 1800 MHz band over using the non-guaranteed 2x10 MHz allocation on the 2 GHz band, however, access to the 1800 MHz band is limited by existing PTP links.

Relative demand is also affected by the timing of various acquisition decisions. Access to the 2 GHz band for 3G services in regional and remote areas was mostly acquired by Telstra prior to mass industrial private network operations becoming popular with the mining industry.

In summary, it is challenging today for Telstra to make efficient use of apparatus PTS licensing in both 1800 MHz and 2 GHz in remote areas. This is a situation that could be substantially improved if the proposed strategy of band segregation by usage types was adopted. As such, we wish to improve allocation efficiency for access seekers, particularly non-MNOs, by foregoing MNO preferred assignment in the 2 GHz band. In return, the 1800 MHz band should become nationally harmonised by spectrum licensing the band in remote Australia.

3 Consideration of the ACMA's options

The ACMA proposes four options based on its understanding of the current utilisation of the bands, coupled with the (reasonable) assumption that in-use spectrum is required on an ongoing basis. Aspects of the ACMA's options have merit, and we recognise the ACMA had incomplete information (it was unaware of Telstra's willingness to consider clearing PTP links). In the absence of complete information, there are aspects of the ACMA's proposed options that are problematic and will not yield an optimal long-term outcome for access seekers and users of this spectrum.

As described in section 2.2.3, Telstra is willing to clear PTP links from the 1800 MHz band as part of USO reform, and the ultimate removal of the Copper Continuity Obligation. To this end, we propose a new option ("Option 5") for consideration, where the 1800 MHz band is spectrum licensed in exchange for MNOs foregoing preferred assignment in the 2 GHz band. This new Option 5 should be considered.

Telstra does not support any of the ACMA's proposed options, because the proposed options simply "work around" the incumbent services. In section 4, we explain our new "Option 5", and ahead of that, we describe our concerns about each of the four options proposed by the ACMA.

3.1 Option 1: Do Nothing

Maintaining the status quo does not improve the public benefit derived from the spectrum. It does not allow either MNOs or new entrants access to the spectrum in an efficient manner. In the consultation, the ACMA observes that in some areas, the demand from MNOs appears to be low.³ We don't agree with the ACMA's conclusion that the excess demand only applies to non-MNO organisations, since the demand from MNOs for spectrum to operate their networks in certain areas also exceeds the supply. The lack of evidence of the demand is due to the spectrum being blocked by incumbent fixed point to point (PTP) link licences and/or non-MNO organisations (private networks).

Further, the current allocation strategy mixes MNO, PTP and private infrastructure use, leading to inefficient allocation outcomes. Preferencing the 1800 MHz band for MNO use and the 2 GHz band for apparatus licences would reduce inefficiency and improve spectrum access. Concentrating MNO use in the 1800 MHz band would allow MNOs to operate fewer larger channels, increasing spectral efficiency.

Exclusive access to one of the bands for MNOs, with the other band made available for non-MNOs, would greatly improve spectrum efficiency and utility of both bands.

3.2 Option 2: Change assignment priority and spectrum quantum policies

While potentially delivering some short-term relief to allow non-MNOs into the 1800 MHz band, this option if taken alone is seen as a retrograde step by Telstra. It will lead to multiple negative outcomes including:

- Creating new inter-user boundary interferences that result in spectrum wastage.
- Exacerbating speculative spectrum acquisition.
- Setting up likely denial of access to spectrum that would otherwise have provided valuable capacity growth for the public mobile networks (over and above the denial already being experienced from the existing PTP links).
- Significantly degrading any future spectrum replanning opportunities.

We strongly recommend against any option that simply delivers a short-term benefit of allowing non-MNO private network operators greater access, particularly where it impacts the ability for public mobile

³ For example, consultation paper, p.1, paragraph 3. "... *there is an under- utilisation of spectrum reserved for Mobile Network Operators (MNOs) in the 1800 MHz band*";. As we have noted in section 2.2.1 of our submission, we are prevented from deploying PTS services in the 1800 MHz band by PTP links.

networks to manage cost effective capacity expansion. The existing 2x45 MHz MNO-only access provision in the 1800 MHz band (three lots of 2x15 MHz) should be seen as a minimum requirement to meet future demand.

Our proposed “Option 5” provides a better long-term outcome in terms of allocation efficiency for the Australian community.

3.3 Option 3: Option 2 plus clear PTP services from 1800 MHz high demand areas

The additional proposal introduced by the ACMA in “Option 3”, of moving to clear the PTP link services from the 1800 MHz band in high demand areas, is supported by Telstra, but not if coupled with Option 2.

Indeed, we feel that the “PTP clearance in high-demand areas” proposal does not go far enough. The ultimate goal should be complete clearance of all PTP services from the band. The considerations that will need to be addressed is how this clearance can be achieved in an equitable and cost-effective way. Noting that a large proportion of the links held by Telstra are used in the provision of legacy consumer access services in regional and remote Australia, we propose that clearance is undertaken in a way that minimises costs and is coordinated with concluding the Copper Continuity Obligation.

3.4 Option 4: Option 3 plus allow over-the-top licensing under specific conditions

Under Option 4, the ACMA proposes to issue licences “over-the-top” of other apparatus licences⁴ (i.e., not across spectrum licences) on a “no interference, no protection” (NINP) basis.⁵

Our long-held position is that licences should never be issued “across” other licences, even with mitigations such as NINP. The rationale is the potential for disputes such licensing schemes create. Even where the “over-the-top” licensee understands and agrees to the conditions, once a service is operational, it can be extremely disruptive to lose that service, even with notice, when the underlying licensee decides to utilise their (first-in-time) licence. From an MNO perspective, any such over the top licensing approach simply fails to provide the investment certainty necessary to support a decision to use the band for delivery of public network services.

We consider that an “over-the-top” licensing mechanism, even with specific conditions, will not

- a) address the fundamental spectrum speculation problem we observe on both 1800 MHz and 2 GHz bands; or
- b) provide a mechanism acceptable to Telstra that would enable the spectrum to be utilised.

The proposal by ACMA is not a workable solution.

⁴ We understand that because this consultation is only considering apparatus-licensed space (not spectrum-licensed space) in these two bands, thus, the ACMA is not proposing to issue “over-the-top” licences across spectrum-licensed space.

⁵ Consultation paper, Table 22, p.66.

4 Telstra's alternative proposal – “Option 5”

This section of our submission outlines our alternative proposal, “Option 5”. We start by outlining the principles we used to arrive at Option 5, and then outline the detail.

4.1 Principles

We have adopted the following principles.

1. **A holistic review across both bands is required to maximise utility.** A review of the current mixed use (mobility, PTP and private industrial networks) must be conducted, and a plan produced that optimises use across the two bands.
2. **Maximise allocative efficiency.** It is our view that shortage of spectrum is not the key impediment to increased use of the bands; rather, there is a problem with allocation efficiency. The current allocation approach mixes MNO, PTP and private industrial network use, leading to inefficient allocation outcomes. An approach that maximises allocative efficiency must be adopted.
- **Consolidate MNOs into 1800 MHz, freeing up 2 GHz for non-MNOs.** Our proposal to create a nationally harmonised 1800 MHz band by spectrum licensing the band in remote Australia in exchange for MNOs foregoing preferred assignment, will improve spectrum access for all parties.

4.2 Approach

The subsections below outline our proposed approach to optimising the two bands, by:

- clearing PTP links from the 1800 MHz band.
- spectrum licensing the 1800 MHz band.
- moving non-MNOs in remote parts of Australia into the 2 GHz band.

Importantly, our proposed Option 5 includes the MNOs relinquishing their preferred assignment allocation in remote areas in the 2 GHz band, increasing access for non-MNOs' use of the 2 GHz band in remote areas.

In the longer term, our proposed Option 5 will see the 1800 MHz band **spectrum licensed nationally**. We acknowledge the ACMA's consultation declared spectrum licensing to be out of the scope of this consultation, however, we believe there is merit in moving to national spectrum licensing for the 1800 MHz band. Nation-wide spectrum licences for the 1800 MHz band will afford MNOs the certainty they need to lift investment in remote parts of Australia in this band. We propose that reallocation of remote parts of Australia in the 1800 MHz band to spectrum licensing should occur on the expiry date of the existing 1800 MHz band spectrum licences, i.e., 17 June, 2028, which is a little under 4 years from now. While some may prefer a longer reallocation period, if planning commences quickly, we consider this timeframe to be achievable. The benefit of moving quickly, is that nation-wide spectrum licences for the 1800 MHz band can be issued as part of the renewal of the 1800 MHz spectrum licences.

4.2.1 Clear all PTP links and non-MNO PTS licences from the 1800 MHz band, nationwide

PTP services. As noted in section 2.2, we currently operate 116 of the 146 total PTP links in the 1800 MHz band. The majority of the 116 we operate are used for USO fixed services. Most of these links will be decommissioned when we exit the copper network, and as such, these PTP links must be maintained until such time as Copper Continuity Obligation relief is provided, and we have exited copper services in remote parts of Australia. Most submissions to the Government's current review of the USO support a technology-neutral approach, which implies broad support for removing the Copper Continuity

Obligation.⁶ The incumbency period for these links will need to be no later than 30 July 2032; acceleration of Copper Continuity Obligation relief will bring forward this date.

As noted in section 2.2.3, there are a further 30 PTP links in operation across five licensees. It is part of our proposal that these links are also cleared from the 1800 MHz band. We propose the ACMA work with the licensees to find suitable alternatives, within an appropriate reallocation period, notionally of just under 4 years, to align with a possible re-allocation of the remote 1800 MHz band to spectrum licensing, commensurate with the expiry of the 1800 MHz spectrum licences.

PTS services. In the 1800 MHz band, there are 1,097 PTS licences in remote locations across Australia (i.e., outside the spectrum-licensed geographies). The three main MNOs are responsible for 298 of the PTS licences (see Table 2 below), with the other 799 assignments operated by non-MNOs.

Licensee	Licences
Optus	189
Telstra	107
Vodafone/Hutchinson	2
Non-MNO	799

Table 2: PTS assignments in Remote Australia in the 1800 MHz band

We appreciate the significance of the reassignment task required to clear the 1800 MHz band of PTS licences by 17 June 2028. Nevertheless, the benefits to both MNOs and non-MNOs, the latter benefiting from better access to the 2 GHz band, should not be underestimated. Clear delineation with MNOs using the 1800 MHz band and non-MNOs using the 2 GHz band will improve allocation efficiency and open up new opportunities for non-MNOs.

We welcome the opportunity to work with the ACMA and all licensees in the 1800 MHz and 2 GHz bands to plan the restack of the bands to achieve this outcome.

4.2.2 Allow the MNOs to consolidate into the 1800 MHz band.

As noted in the previous subsection, consolidating the MNOs into the 1800 MHz band requires all non-MNO use, including PTS licences, to be cleared from the 1800 MHz band. We propose a reallocation period of just under 4 years, to coincide with the expiry of the 1800 MHz spectrum licences.

Once cleared, we propose MNOs would have access to *at least* 2x20 MHz channel pairs in the future, rather than the current arrangement of 2 x 15 MHz channel pairs per MNO. Further work is required to determine the allocation each MNO should receive, and AMTA's submission to this consultation proposes some options which should be considered. We look forward to engaging with the ACMA on this task.

4.2.3 Improved 2 GHz access for non-MNOs in remote areas

Our proposed Option 5 will see MNOs forego the preferred assignment in the 2 GHz band. However, Telstra proposes that existing **in-use** 2 GHz band MNO PTS assignments⁷ (i.e., in the 2x10 MHz preferred assignment frequencies at the top of the 2 GHz band) remain operating under the terms of apparatus licences. **[CIC Begins]** **[CIC Ends]**

4.2.4 Frequency agility in all future PTS licences

A final element of the plan to optimise the 1800 MHz and 2 GHz bands will be for all future and renewed licences to carry a condition that the licence could be required to move in the future, possibly into a

⁶ <https://www.infrastructure.gov.au/have-your-say/better-delivery-universal-services>

⁷ Of course, we are not proposing any changes to the spectrum-licensed allocations at the top of the 2 GHz band.

different band. We see that the ACMA is already doing this, presumably as a part of Embargo 77, as shown in Figure 5 below.

Advisory Notes applying to Station 1

The 1800 MHz band will be subject to re-planning in the future. This may require licensees to retune radiocommunication devices at their own cost to facilitate large contiguous channels for all licensees in an area.

Special Conditions applying to Station 1

The licensee must cooperate to the extent necessary to prevent its radiocommunications services from inhibiting the use of radiofrequency spectrum by other licensees operating under a public telecommunication service licence in the area surrounding the station location specified on this licence.

Figure 5: Image of Advisory Note and Special Conditions attached to a recently approved Telstra PTS licence.

We recommend the ACMA continue to include the Advisory Note and Special Conditions in all PTS licences going forward, while work is conducted to develop and execute a plan to optimise the two bands.

4.3 Next steps

Ultimately, planning and optimisation of the 1800 MHz and 2 GHz bands requires industry effort. We recommend a Technical Liaison Group (TLG) is formed to bring together all stakeholders to develop a plan to maximise the utility of these two important bands.

Appendix 1: Answers to the ACMA's consultation questions

Appendix 1 contains our answers to the nine questions contained in the consultation paper.

1. The ACMA invites comments on analysis of utilisation in the bands.

MNO demand for spectrum is not lower than the MNO supply in the 1800 MHz band. Using the number of registrations as a proxy for spectrum demand leads to incorrect results for two reasons:

1. Infrastructure use cases often involve dense networks, meaning more registrations are required than would be the case for a mobile PTS network covering the same area (see section 2.1 for details); and
2. MNOs are often hampered from deploying using the 1800 MHz band because of the presence of PTP links (see section 2.2.3 for details).

2. The ACMA invites comments on any other spectrum supply issues.

Spectral efficiency is achieved by having fewer, larger channels. For this reason, we support aggregating MNO use into the 1800 MHz band, rather a total quantity of spectrum being spread for MNO use across both bands.

[CIC Begins] [CIC Ends]

3. The case for action conclusion and the desirable planning outcomes.

Telstra strongly believes the current mixed-use cases in each of these bands has led to inefficiencies and to issues with accessing spectrum when there is demand. This is true for both MNOs and non-MNOs alike. We agree with the ACMA's desirable planning outcomes. We recommend these outcomes would best be achieved by clearing the PTP links and creating a nationally harmonised 1800 MHz band by spectrum licensing this band in remote Australia.

This approach serves to meet the ACMA's desirable planning outcome on "supply". In the long term there would be 2x60 MHz for non-MNOs in the 2 GHz band, significantly more than is currently designated to these users across both bands. This approach would also increase the efficiency of spectrum holdings for MNOs in the 1800 MHz band.

4. The identified policy elements, or others that could be considered.

The policy elements identified in the information paper would not be necessary if the ACMA decided on the approach Telstra (and AMTA) has suggested. While industry effort will be required over the next few years, managing this process would be less complex than the policy elements required under the ACMA's proposed options.

5. The analysis and preliminary views on the policy elements.

While we do not support the ACMA proceeding with its proposed options, should the ACMA choose to do so, we offer the following comments on the ACMA's policy elements.

- **Spectrum limits:** Under Telstra's proposed band consolidation approach, there is no need for cross-band spectrum Allocation Quantum Policy (AQP). The prescriptive assignment priorities will already limit how much an MNO can hold in the band until the transition is complete. A 2x10 MHz limit for

non-MNOs should be maintained for the duration of the 're-allocation period'. Once the migration is complete, the ACMA can assess whether limits are needed (and if so, what the appropriate limits should be).

- **Over-the-top (OTT) licensing:** Telstra is opposed to the issuance of OTT licences. A simpler approach would be to place a time limit on the deployment of devices. If a licensee has not deployed equipment within a specified period, the apparatus licence should be cancelled.

6. The need for an associates' test when applying spectrum limits and how it could be conducted.

Telstra has made extensive comments on the associates' test used in auction processes in the past. They are complex, time consuming and have only ever identified innocuous affiliates.

At a minimum, our proposed Option 5 negates the need for an associates' test for the 1800 MHz band, as this band would be exclusively for MNOs. Consideration could be given to introducing an associates' test for the 2 GHz band, although, we consider that unused apparatus licences is a larger problem for optimal utility of the band, rather than associated entities working to obtain more than a reasonable share of the available spectrum.

7. The ACMA invites comments on the proposed options, their assessment, and our conclusions.

In our view, none of the ACMA's four proposed options are optimal. MNOs need continued exclusive access to 2x15 MHz (and eventually to more than 2x15 MHz) in the 1800 MHz band.

We recommend long-term planning should see MNO use consolidated into the 1800 MHz band, and we are prepared to clear PTP links from the 1800 MHz. The 2 GHz band can be made available solely for non-MNO use cases. We call this "Option 5", and more detail can be found in section 4.

8. We seek views on the means to manage any initial high demand.

The need for management of 'initial high demand' is obviated if the Telstra's proposed option (so-called "Option 5") is adopted. See section 4 for details.

9. The ACMA invites comments on other aspects of the technical frameworks.

Telstra contributed to, and supports, the Australian Mobile Telecommunications Association (**AMTA**) response on all aspects of the technical framework.