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AMTA Submission

Australian Communications & Media
Authority

1800 MHz and 2 GHz bands—Review of
planning arrangements outside of
spectrum-licensed areas:
Options Paper



About AMTA

The Australian Mobile Telecommunications Association (AMTA) is the peak industry body representing Australia's mobile telecommunications industry. Its mission is to promote an environmentally, socially and economically responsible, successful and sustainable mobile telecommunications industry in Australia, with members including the mobile network operators and service providers, handset manufacturers, network equipment suppliers, retail outlets and other suppliers to the industry. For more details about AMTA, see <http://www.amta.org.au>.



Executive Summary

AMTA welcomes the opportunity to provide feedback to the ACMA's Options Paper on the 1800 MHz and 2 GHz bands outside areas that are currently spectrum-licensed. AMTA appreciates the work that the ACMA has undertaken to set out the options and explain its approach to arrangements for use of this important apparatus-licensed spectrum in regional and remote Australia.

In our view, the ACMA's proposed options currently focus on short-term gains for increased access to spectrum for those wishing to operate Private LTE and 5G networks, referred to in this response as "Non-MNOs". Instead of this approach, AMTA recommends that the ACMA focus on identifying a configuration for the bands that will promote the public interest derived from their use *over the long-term*. The ACMA should also use a series of mechanisms to help deliver this band configuration thereby promoting efficient spectrum use in the transition period. MNOs' use of this spectrum for public mobile services should not be compromised by replanning of the band.

We recognise that the issues in both bands are complex and there is no immediate solution to achieving an ideal band configuration. We also recognise the changes proposed by the ACMA may open up access to additional spectrum for Non-MNOs. However, we are concerned the changes proposed by Option 2 (and Options 3 and 4 which build upon Option 2) may lead to even higher fragmentation in, and more inefficient use of, the bands.

While we do not support the changes proposed under Option 2, we do support some of the additional objectives under the subsequent options: i.e. clearance of PTP links from the 1800 MHz band and the introduction of policy elements to address inefficient use.

In remote areas, there is a total of 2 x 135 MHz apparatus-licensed spectrum available, consisting of 2 x 75 MHz in the 1800 MHz band and 2 x 60 MHz in the 2 GHz band. This is sufficient to develop a framework which supports the ACMA's objectives in delivering both public and private services to Australians and businesses in the remote areas.

We note that the ACMA's current intention to facilitate access to more spectrum for Non-MNOs is to a large degree based on the ACMA's view that there is an *"imbalance between spectrum demand and supply"* between MNOs and Non-MNOs, particularly in the 1800 MHz band. However, we challenge this view and believe that the demand and supply metrics presented by the ACMA do not accurately reflect the current state of the 1800 MHz band. A low number of registrations by MNOs in some areas is not due to a lack of demand. Rather it is due to an inability to deploy services there due to being blocked by fixed point to point (PTP) links.

It follows that there is a critical need to remove PTP links from the 1800 MHz band, particularly near key population centres, including areas not identified as “high demand areas” (HDA) by the ACMA. The spectrum channel mapping for wireless broadband (WBB) services and the channel mapping for fixed links are not compatible, due to the misalignment in channel sizes and duplex spacing. This results in each duplex PTP link denying much more spectrum to WBB services than just the 2 x 28 MHz channel pair. As such, ongoing support for both types of services in the 1800 MHz band does not promote the long-term public benefit to be derived from the spectrum.

A summary of key objectives in the 1800 MHz and 2 GHz bands for AMTA is as follows:

1. In regional areas in the 2 GHz band: no change.
2. In remote areas, long-term consolidation of MNO spectrum holdings into the 1800 MHz band—including the possibility of future re-allocation to spectrum licences—and of Non-MNO spectrum holdings into the 2 GHz band, hereafter “**Band Consolidation Approach**” (BCA).
3. Maintenance of prescriptive assignment priority in the 1800 MHz band, prohibiting new assignments for Non-MNOs in the top 2 x 30 MHz.
4. Clearance of PTP links from the 1800 MHz band over time.
5. Mechanisms to ready the band for migration and defragmentation activities.
6. Unwanted emission limits to be aligned with 3GPP.
7. Flexibility in the coordination requirements of RALIs MS 33 and MS 34 to facilitate more efficient spectrum use where supported by good engineering practice.

In order to facilitate better band utilisation and as an interim mechanism as introduced in point 5 above, AMTA strongly supports the adoption of an ACMA policy that will facilitate frequency changes of apparatus licences both across bands (in support of migration) and within bands (in support of defragmentation), and that will allow the ACMA to enforce those changes if necessary.

As part of this, it should be clearly communicated to all PTS licensees—via Advisory Notes and guidance in the RALIs—that equipment should be capable of deployment in either of the 1800 MHz or 2 GHz Bands and should be capable of responding to requests to retune in an agile manner. This could also be complemented by the use of renewal statements to ensure that the ACMA can refuse to offer renewal of a PTS licence where it considers that renewal of that licence hinders the move towards the ideal band arrangements, or if it unduly hinders use of the spectrum by an allotted user. Without such mechanisms, we are concerned that the current state of the bands will not be improved.

Finally, while we acknowledge that re-allocating the 1800 MHz band for spectrum licensing in remote areas is out-of-scope for this consultation, any proposed framework changes should not preclude the possibility of spectrum licensing in the future. Nor should any changes increase fragmentation within the 1800 MHz band.

AMTA views on spectrum arrangements

1800 MHz band

Ideally, MNOs would have access to *at least* 2 x 20 to 2 x 30 MHz channel pairs in the future rather than 2 x 15 MHz channel pairs as is currently the case. In this sense, we appreciate the ACMA has sought to identify 2 x 20 MHz allotments in the 1800 MHz band. However, the answer is not in the re-shuffling of allotments as the ACMA has suggested; mainly because of the high number of incumbent Non-MNO PTS licences. These incumbent licences would then affect the top 2 x 10 MHz of Optus' allotment and all of TPG's allotment (in the ACMA's proposed assignment priority). Further fragmentation would result from all the new Non-MNO PTS assignments which will be made within MNO allotments if a 'preferred' assignment priority is adopted in the band as suggested by the ACMA.

Rather—and with a view to keeping spectrum arrangements in the band efficient—we **believe that the solution is to consolidate the MNO holdings in the 1800 MHz band, and to consolidate Non-MNO holdings in the 2 GHz band, in remote areas**. In this response, we refer to this as the “band consolidation approach” (BCA). To be clear, we only support changes to the order and quanta of allotments in the 1800 MHz assignment priority in conjunction with the BCA, and we oppose a change from a prescriptive to a preferred assignment priority in the 1800 MHz band. As such, we do not support the ACMA's proposed changes for this band (i.e. those that form the basis of Option 2).

To achieve the BCA, it is critical to maintain a prescriptive assignment priority in the 1800 MHz band, and we **strongly oppose** the 1800 MHz band assignment priority being changed to 'preferred'. The ACMA's current prescriptive assignment priority in RALI MS 34 means that PTS registrations in the 1800 MHz band in remote areas have been made in an orderly fashion, with each 'allotment' containing PTS licences for which the licensee is the 'allotted' user. A change would need to be made to either/both the assignment priority in RALI MS 34 or/and Embargo 77 such that no further assignments will be made to entities other than the three MNOs. Note: the revised prescriptive assignment priority should have flexibility for an MNO to make an assignment in the allotment of another MNO, with the agreement of that MNO. This flexibility will be required to facilitate defragmentation activities later without having to make changes to the RALI.

We **support** a clearance of PTP links from the 1800 MHz band, to allow greater utility of the existing allotments in remote areas. To be absolutely clear, we believe that this clearance shouldn't be limited to the “high demand areas” identified by the ACMA, but rather applied to the whole of Remote Australia. Noting that many of Telstra's links are currently providing USO connectivity over the copper network, we believe that the clearance of PTP links could be expedited if Government reviewed these obligations.

With the long-term solution being a consolidation of MNO networks in the 1800 MHz band (remote areas only), this would facilitate a potential future option of re-allocating the band for

spectrum licensing. While we understand that such a re-allocation is beyond the scope of this Options Paper, it's important for the ACMA to consider the ideal band configuration at this point so that the changes to the RALIs and Embargo 77 (if any) support a move towards that configuration. We believe that this ideal configuration in the long-term is for spectrum licensing in the 1800 MHz band in remote areas, and this can only be facilitated by (a) maintaining a prescriptive assignment priority, (b) prohibiting new assignments to Non-MNOs from being made in the 1800 MHz band, and (c) clearing FFTP links from the band.

2 GHz band

In the 2 GHz band, we propose the following:

- **no change in regional areas**, except for the assignment priority to become prescriptive; and,
- **in remote areas**, to allow 2 GHz spectrum in remote areas to be made available for Non-MNOs, including by removing the preferred allotments to MNOs in the 2 GHz band, and by eventually requiring them to migrate their licences to the 1800 MHz band.

In regional areas, we agree with the ACMA that there should be no change to the order and sizes of the allotments in the assignment priority. However ideally, the assignment priority would be changed to prescriptive to prevent the allotments from being fragmented any further. Additional defragmentation activities may be considered in the future (although outside the scope of this particular RALI-review exercise).

In remote areas, we do not agree with the ACMA's proposed allotment changes, as in practice, they don't solve any of the problems in the band. Arrangements should either remain unchanged for now or be reviewed in line with the BCA introduced above.

Under the BCA,

- The Non-MNO allotment in the 1800 MHz band would be removed, requiring a clearance of all Non-MNOs from 1835-1865/1740-1770 MHz.
- All three MNOs would be required to clear the 2 GHz band in Remote areas, leaving the 2 GHz Remote spectrum space for Non-MNOs.

To be clear and, similar to our view on the 1800 MHz band, we also oppose any changes to the order and quanta of the allotments in the assignment priority if not in conjunction with the BCA.

1800 MHz spectrum demand vs supply analysis

We don't disagree that in certain areas, demand for *apparatus licences* exceeds the available 'supply' of spectrum needed to meet that demand. Note that we say demand for apparatus licences as opposed to demand for spectrum—to satisfy an actual technical requirement or to operate an actual system—since we are aware of speculative licensing where the trading of licences itself appears to be the ultimate goal (or contingency plan) of the original licensee, as opposed to the actual operation of a system or network.

However, 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—and thereby serve the populations in those areas—also exceeds the supply, due to being blocked by incumbent fixed point to point (PTP) link licences.

In the 1800 MHz band, the ACMA concluded that there was a “demand vs supply imbalance” between MNOs and Non-MNOs due to a difference in device registrations in remote areas. Notably, the ACMA identifies a large number of device registrations held by Non-MNO entities: **806 in 1800 MHz in Remote areas**. However, that difference is concentrated in the outlier cases of the Pilbara and the Goldfields in WA. Outside of these areas, that difference does not persist.

Within 294 km of -22.3906, 117.9926, there are 584 PTS registrations, **494 of which are Non-MNO (Pilbara)** (excluding 9 for Telstra, 81 for Optus). The vast majority of these are all within the ACMA's proposed HDA for Pilbara. Within 430 km of -29.5530, 122.5505, there are 129 PTS registrations, **108 of which are Non-MNO (Goldfields)** (excluding 4 for Telstra, 13 for Optus, 4 for TPG). This area is considerably larger than the ACMA's proposed HDA for the Goldfields.

Therefore, the 806 registrations are whittled down to just **204 (Non-MNO outside Pilbara and the Goldfields)**. On the other hand, outside the areas defined above, Optus has 86 registrations and Telstra has 93 registrations. Therefore, outside the areas of the Pilbara and the Goldfields, which represent extreme cases, Non-MNOs have 204 registrations within their 2x30 MHz allotment, while Telstra & Optus have 179 registrations within their 2x30 MHz combined allotment. This shows that a supply versus demand imbalance doesn't exist once you remove the extreme cases of Pilbara and the Goldfields.

Furthermore, the fact that the ACMA raises the concern of inefficient spectrum use and speculative registrations means that it must have received reports of such behaviour from within the Non-MNO camp. As such, it's likely only a portion of the 205 Non-MNO registrations outside the Pilbara and Goldfields are actually legitimate, which would bring the Non-MNO number of registrations more in line with (or even below) the Telstra + Optus number.

We are aware of situations where Non-MNOs are taking out licences as part of tendering processes from mining companies, or even in a speculative fashion at mining tenements—evidence of this is clear and part of the discussion on “efficiency” policy elements. MNOs have an interest in serving *populations* in the staff centres and villages; that demand materialises later. By the time the MNO is aware of the demand to serve population, the spectrum is already blocked by non-MNOs (or by incumbent PTP links) and the local communities are denied improved public mobile network services.

Discussion of policy elements

Contiguity policy elements

The “contiguity” policy element can only be supported by prescriptive assignment priorities being adopted. At this late/progressed stage of deployment in the band, the preferred assignment priority does little to keep particular segments designated for particular users, and is further fragmenting spectrum holdings in the band.

This is evidenced by the considerable number of registrations that are not held by the designated user in the 2 GHz band in Remote areas, as shown in the table below. While this would be a very challenging band to defragment, making the assignment priority prescriptive may help to avoid the situation worsening further until the appropriate band consolidation and/or defragmentation process is complete.

Allotted user	Lower sub-band	Upper sub-band	# of reg. held by allotted user	# of reg. held by other licensees
TPG	1920-1930	2110-2120	4	311
Telstra	1930-1940	2120-2130	36*	157
Non-MNO	1940-1950	2130-2140	199	0
Optus	1950-1960	2140-2150	259	178
Optus	1960-1965	2150-2155	0*	49
Telstra	1965-1975	2155-2165	1145	19
TPG	1975-1980	2165-2170	2	51

* low numbers due to the 2x10 MHz spectrum limit

Note: numbers of registrations as at 26 July 2024.

The current fragmented state of the 2 GHz band is a warning against changing the prescriptive assignment priority in the 1800 MHz band to a ‘preferred’ assignment priority, and we are strongly opposed to such a change.

Facilitating migration and defragmentation

In order to facilitate better band utilisation and as an interim mechanism to ready the band for migration and defragmentation activities, AMTA strongly supports the adoption of ACMA policy that will facilitate frequency changes of apparatus licences both across bands (in support of migration) and within bands (in support of defragmentation), and that will allow the ACMA to enforce those changes if necessary. Below we present a number of regulatory tools which could be adopted by the ACMA.

Future migration and defragmentation clearly communicated to licensees

If and when the ACMA makes a decision about the long-term re-planning of the 1800 MHz and 2 GHz bands in remote areas, it should set and clearly communicate firm timeframes/deadlines by when existing licensees need to migrate out of bands or frequencies within which they are not allotted.

Recommendation for frequency-agile equipment and setups

At this point, licensees in the 1800 MHz and 2 GHz bands should be made aware of the potential need to migrate their services to another band, as well as of the potential need to change frequencies within the same band to defragment it. To facilitate the migration of services from one band to the other, there should be guidance in the RALI recommending that applicants procure multi-band technology that would allow them to change between the 1800 and 2 GHz bands with a software change, rather than having to swap out equipment.

To facilitate both inter-band migration and defragmentation of a band, the equipment should be set up such that frequency changes can be made remotely and therefore quickly to respond to deployment needs of MNOs. We recommend that this be fortified by Advisory Notes stating that the band is being replanned (e.g. Advisory Note BL) and that they may be required to vacate the band if directed to do so by the ACMA as part of the re-planning process.

Renewal statements under s103A of the Act

In addition to the above settings, the ACMA could consider the use of renewal statements to clearly communicate and enforce its policy decisions. Renewal statement(s) could be applied to all PTS apparatus licences to the effect that the licence will only be renewed in the same frequency, in specified circumstances. For example,

- a) if the new “renewed to” date falls before a migration or defragmentation deadline in accordance with the band transition arrangements; and
- b) if the licence *does not* need to migrate to another band or change frequency within the same band; **or** the licence *does* need to migrate to another band/frequency but the allotted user of the current frequency has not yet expressed demand for that frequency (and there is a public interest benefit in granting that licence to the allotted user).

We note that renewal statements can be added to existing apparatus licences in accordance with s103C of the Act.

“Supply” policy elements

Optimising spectrum supply for both MNOs and Non-MNOs

We believe that a BCA will serve to meet the desirable planning outcome of ‘supply’, since in the long-term there will be 2 x 60 MHz for Non-MNOs in the 2 GHz band, significantly more than is currently designated to such users across both bands, while also greatly increasing the efficiency of spectrum holdings for MNOs in the 1800 MHz band.

Spectrum limits

Under the BCA, there is no need for a cross-band spectrum Allocation Quantum Policy (AQP) to be applied. Each MNO will have its pre-defined allotment in the 1800 MHz band. The prescriptive assignment priorities will already limit how much an MNO can hold in the band (unless the MNO is granted access to another MNO’s spectrum by agreement from that other MNO, as suggested earlier).

Following from the above paragraph, it is only necessary to apply an AQP to the Non-MNO spectrum allotments (under the BCA, this is limited to the 2 GHz band). We recommend maintaining a 2x10 MHz limit for Non-MNOs for the duration of the “re-allocation transition period” while Non-MNOs migrate out of spectrum allotted to an MNO (i.e. under the BCA, out of the 1800 MHz band and into the 2 GHz band). Once the migration is complete, the ACMA can re-assess whether higher limits can be permitted.

Opportunistic use of spectrum in vacant spectrum space

We understand that migration of all users to their final spectrum home under the BCA could take a number of years to accomplish. We are not opposed to spectrum being used in the interim period where it is not required by the allotted MNO. This could also support the desirable planning outcome of ‘supply’ in the short-term. However, a number of safeguards would need to be put in place to ensure that this opportunistic use is manageable.

We suggest that, to facilitate an assignment made to a Non-MNO entity within the 1800 MHz band, a combination of Advisory Notes and guidance in the relevant RALI should be used to make it absolutely clear to the applicant that the band is being replanned (e.g. Advisory Note BL) and that they may be required to vacate the band under either of the following circumstances (a) if directed to do so by the ACMA as part of the re-planning process or (b) if the same (or adjacent) spectrum space is required to be used by the allotted MNO.

To fortify this, we also propose a Special Condition stating that the Non-MNO licence operates on a “no interference, no protection” basis with respect to the allotted MNO. To reduce the risk for the Non-MNO seeking to make opportunistic use of unused spectrum

space, notification requirements could be imposed on the allotted MNO. When the allotted MNO decides it needs to rollout to a new area, and if coordination fails against an interim Non-MNO licence, it must notify the Non-MNO licensee of this failure, giving the Non-MNO licensee some time to take action.

“Efficiency” policy elements

In paragraph 234 of the Options Paper, the ACMA acknowledges that some licensees have obtained PTS licences within mining sites in an opportunistic fashion which has prevented spectrum access to the mine controller. Anecdotally, we are aware of situations where the licence is obtained during a tender process held by the mine for a communications provider, and then the PTS licensee offering to relinquish the PTS licence (which they cannot use without the mine controller granting them the tender) in exchange for large sums (well beyond recovering the costs of obtaining the licence). This is both extortionate behaviour and constitutes spectrum squatting.

The ACMA’s proposal to address this is to allow over-the-top (OTT) licensing; if the licence really is just a “paper licence” and not intended to authorise actual use, then the legitimate user can just apply for an OTT licence, which is issued on a “no interference, no protection” basis with respect to the original “paper licence”, effectively making it secondary to the paper licence.

We understand that this reduces the overhead associated with investigating such behaviour and spectrum squatting within the radiocommunications industry. We also recognise that, for some users, OTT licensing may be an acceptable option to gaining access to spectrum where needed. However, in our view it is not appropriate for the legitimate user’s licence to be secondary to the paper licence, and as such OTT licensing should not be the *only* tool that the ACMA use to address inefficient spectrum use in these bands. To maintain their spectrum-squatting business activities and the associated revenue, these businesses could conceivably seek to deter OTT licensing, by (for example) simply switching on a transmitter at a nearby location and (legally) causing interference to the OTT licence. This means that OTT licences simply present too much uncertainty to legitimate users and do not do enough to deter the spectrum squatting.

We understand that this is a complex issue and at this stage we do not have a “one-size-fits-all” solution. However, we believe that the ACMA still has to respond to reports of these anti-competitive behaviours by investigating them and taking action as appropriate (including cancelling paper licences), in addition to OTT licensing (which may be considered useful for some applicants).

Discussion of technical elements

Alignment with SLTFs

We support the alignment of technical parameters with the spectrum licence technical frameworks (SLTFs) in the same band, including for support of Active Antenna Systems (AAS).

In terms of unwanted emission limits for PTS licences, these should be aligned with the unwanted emission limits of the SLTF for the same band. However, there are certain limits in the SLTFs which are more stringent than the limits in 3GPP Technical Specifications, and which the ACMA adopted because it believed it was necessary to address coexistence with adjacent-channel and adjacent-band services, namely:

- GSM-R operated by rail operators in the 1800 MHz band; and
- Television Outside Broadcasting (TOB) services in the 2 GHz band.

In remote areas in the 1800 MHz band, GSM-R is not in use, and therefore the unwanted emission limits should be relaxed to align with 3GPP.

Similarly, in regional and remote areas in the 2 GHz band, TOB services either do not exist or are very lightly used. The fixed TOB collection stations, which are of primary concern, are all located in metro areas. Even if TOB services do need to operate in close proximity to WBB networks in regional and remote areas, TOB operators will likely have far greater amounts of unused pooled spectrum to access, making operation very close to the 2110 MHz band edge unnecessary.

Noting the costs added to develop and deploy bespoke 5G solutions to comply with emission limits more stringent than 3GPP, in addition to the inherent costs associated with deploying network infrastructure over large distances to remote areas, we are strongly in favour of emission limits for PTS licences being aligned with 3GPP Technical Specifications for 5G.

Minimum separation distances and coordination requirements

We believe that part of the lack of spectrum supply in these bands is due to the existing minimum separation distances and the coordination requirements between proposed and existing PTS services, which requires consideration of the victim UE receivers by modelling a notional UE at the same location and height as the associated base station of the victim service.

As a first step, we support a reduction in the minimum separation distance as proposed by the ACMA in paragraph 220 of the Options Paper (i.e. 30 km).

Secondly, with respect to the detailed PTS vs PTS coordination requirements, we are not suggesting to do away with or replace these entirely, since they may be useful as a first-pass and lend themselves well to automated coordination by Accredited Persons.

However, we believe that the RALIs (MS 33 and 34) should explicitly allow flexibility to consider more realistic UE deployment scenarios (i.e. low site, low antenna height) and permit carrier-to-interference (C/I) predictions to be carried out to determine whether the UEs of the victim service would likely receive interference from the interfering base station over the likely coverage area (as opposed to the notional UE modelled as described above). Currently, the only flexibility allowed for in the RALIs is regarding choice of propagation model.

We also recommend that the RALIs be revised to include high-level guidance on dealing with scenarios where coordination in accordance with the prescribed methodology may fail but interference is not likely to occur in practice. We believe that a statement along the lines of *“where a proposed PTS transmitter fails the coordination requirement with respect to an existing PTS licence, licensees are encouraged to negotiate in good faith where sound engineering judgement indicates that harmful interference will not occur in practice”*.

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