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AMTA

Australian Mobile Telecommunications Association

AMTA Submission

Australian Communications and Media Authority

Five Year Spectrum Outlook 2020-24

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.

Contents

Introduction

AMTA welcomes the opportunity to provide comments on the draft Five Year Spectrum Outlook (FYSO) for 2020-24. We have provided some contextual commentary on the impact of COVID-19 on the mobile industry as well as spectrum requirements for 5G and the ongoing demand for mobile services, including 5G. We have also outlined our views on the work program and priorities in relation to specific bands. Our perspective on area wide licences and the ACMA's approach to compliance and enforcement is also included.

Impact of COVID-19 on Mobile

Australia's economy is certainly feeling the impact of the restrictions put in place to manage the health crisis caused by the global Corona virus pandemic.[1] Our economy will also be impacted by global reactions to the pandemic as countries across the world grapple with the resulting health, social and economic issues.

Mobile telecommunications, however, remains an enabling technology and connectivity has proven critical to the ability of many businesses and industries to remain operating throughout the pandemic. It is therefore clear that the demand for connectivity, particularly mobile connectivity, will not decline, but continue to grow.

In fact, a recent survey of 2500 global executives (including 200 based in Australia) by Accenture[2] found that 80% of executives expected that 5G would bring tremendous value to their business in various ways. The survey found that while 34% are yet to adopt 5G; 28% have piloted it; 26% are using it in some areas and 10% have implemented it across their organisation. The main benefits around 5G were understood to be productivity gains with 75% of those surveyed seeing the potential for 5G to boost productivity; as well as create new revenue streams and modernise business models.

Accenture concluded that 5G is likely to be an integral part of the drive towards digitilisation and that the current pandemic and its associated circumstances will only accelerate this process:

> "It's clear that Australian businesses recognise the huge potential of 5G, with many ready to take advantage of the opportunity to connect all their assets into an intelligent enterprise, creating new business potential." [3]

And:

> "A growing share of businesses are now working from home, which puts strong connectivity at the core of efficiency in operations. As businesses adapt their models to meet virtual working

[1] ABC News, Treasurer Josh Frydenburg says Australia is in recession, 3 June 2020
[2] Accenture, 5G technology will benefit Australian businesses and society, 21 June 2020, Consultancy.com.au
[3] Accenture, 5G technology will benefit Australian businesses and society, 21 June 2020, Consultancy.com.au

conditions, many are realising that remote working actually has concrete value for their business, indicating that these might end up being long term arrangements in some cases."[4]

Australia's mobile network operators continue to deploy 4G and increasingly 5G in 2020 and the pace of deployment has not slowed due to COVID-19.[5]

Mobile telecommunications have historically had an enabling impact on other industries across the economy and society. As the world starts to recover from the impacts of COVID-19, we expect that 5G will continue to drive economic growth and play a key role in Australia's recovery as it enables service providers to offer cost-effective technology to meet consumer demand for data and new advanced 5G services.[6]

Spectrum needed to meet growing demand for mobile

As noted in the FYSO, demand for mobile services continues strongly. We note that Ericsson's latest Mobility Report found there was 49% growth in mobile data traffic from Q4 2018 to Q4 2019. This growth is driven by an increasing number of subscriptions, with over 6.3 billion mobile broadband subscriptions globally, as well as increasing average data volume per subscription.[7]

AMTA therefore supports a continued and expeditious allocation of spectrum for 5G to ensure that the ongoing demand for all types of services can be met and Australia remains at the forefront of rolling out 5G to enable transformative social and economic benefits across industries such as transport and logistics, health, education and the automotive industry, as well as consumer benefits. In the context of our current economic climate, we believe that 5G can provide the requisite connectivity to provide the foundation for Industry 4.0.

Australian mobile network operators are initially utilising spectrum in the bands below 6 GHz as well as additional spectrum in the mmWave bands in the 26-28 GHz range for the deployment of 5G services.

Industry supports market-based allocation methods for the efficient allocation of spectrum that ensures spectrum moves to its highest value use. The pending auction of 26 GHz spectrum will further supply the additional spectrum that 5G networks require to deliver ultra-high-speed capacity, however, further work is needed in relation to existing bands to enable the deployment of 5G services. This work needs to include the efficient reallocation of low band spectrum, for example, 900 MHz spectrum and the 850 MHz expansion band.

5G has been designed to operate in the operating bands defined in 3GPP TS 38.104. [8]

[4] Accenture, 5G technology will benefit Australian businesses and society, 21 June 2020, Consultancy.com.au
[5] ChannelNews, Telstra 5G rollout undeterred by coronavirus, 26 May 2020
[6] Ericsson and Arthur D. Little, 5G for business: a 2030 market compass, Oct 2019, page 3
[7] Ericsson Mobility Report, Q4 2019 Update
[8] 3GPP TS 38.104 NR; Base Station (BS) radio transmission and reception

AMTA estimates that each mobile operator will *initially* require additional low band spectrum and around 100 MHz of contiguous mid band spectrum as well as up to 1GHz of mmWave spectrum for 5G to reach its full potential and deliver on what it is designed to do. It is important that the spectrum allocations in Australia are aligned with the global standards and this estimate is consistent with the GSMA's analysis of spectrum requirements for 5G which state that operators will each need 80-100MHz of contiguous mid-band spectrum as well as 1 GHz of high-band allocation. [9] The GMSA also notes that 5G needs spectrum allocated across low, mid and high ranges as each of these will be needed to support widespread coverage and all use cases for 5G.[10]

We also support increased focus on the timely reallocation of low band spectrum to enable the deployment of national 5G networks, especially in regional areas. We note the potential for use of spectrum in the 600 MHz band in the medium term.

Additionally, we support the current work to optimise the 3.4 GHz band and the progression of planning work in relation to the 3.8 GHz (3700-4200 MHz) band.

Finally, we acknowledge the Government's plans to pursue amendments to the Radiocommunications Act 1992 as part of a reform agenda. We believe the proposed reforms to the regulatory framework have the potential to improve the timely and efficient allocation of spectrum for 5G by introducing more flexibility and certainty for spectrum licence holders. Transparency of the reform agenda through close engagement with stakeholders will provide the requisite certainty for continued investment to occur.

Technology developments – 5G

A parliamentary committee inquiry into the deployment of 5G networks found that the technology will be transformative and safe for Australia.[11] David Gillespie, MP, Committee Chair, stated in parliament:

> "The fourth industrial revolution needs architecture to connect the internet of things, the machine-to-machine learning, robotics, virtual telecommunications, videoconferencing with ultra-low latency and accuracy, smart cities, smart telecommunications and smart cars that are driverless—all these things will be enabled. It will have huge applications in Defence, in universities, in smart campuses and in schools, all because of the ultra-low latency and the huge amounts of data that get delivered so much quicker. It's an evolution from 3G to 4G to 5G and, as a result, a lot of information has become available in the internet, which has cast aspersions on its safety. We have heard lots of information, from lots of reputable government and international bodies asserting that the technology is incredibly safe."[12]

[9] GSMA, 5G Spectrum GSMA Public Policy Position, March 2020
[10] GSMA,5G Spectrum GSMA Public Policy Position, March 2020
[11] The Next Gen Future Report, March 2020
[12] David Gillespie MP, speech to House of Representatives, 12 May 2020

AMTA believes that 5G is the innovation platform that will grow the mobile industry's capacity as a key contributor to Australia's economic recovery. 5G networks will transform the way Australians live and work by delivering unprecedented digital connectivity across the community and economy.

5G has the potential to transform industries and sectors including agriculture, transport and logistics, manufacturing, health, education and emergency services. It will change the way both Government and enterprise deliver goods and services as we transition to smarter cities where everything that can be connected is connected.

Recent research also points to the potential of 5G for consumers [13] with a key finding that data usage for one in five users could reach more than 160GB per month on a 5G device by 2025. Other key findings were:

- Australian consumers expect 5G to provide relief from urban network congestion in the near term - *especially in Australia's bigger cities, where nearly half (47%) smartphone users report facing network issues in crowded areas* - and to create new home broadband choices.

- Current 4G usage patterns are not indicative of future usage behaviours. Video consumption is set to rise significantly with 5G. Australian consumers expect to not only stream video in higher resolutions but also use immersive video intensive media such as Augmented reality (AR) and Virtual reality (VR), resulting in an additional two hours of video content being watched weekly on mobile devices by users in the 5G future when they are out and about, including half an hour wearing AR glasses or VR headsets.

- Consumers are willing to pay a premium on 5G, for the smartphone use case, Australian users are stating that they are willing to pay 20 percent more for fifth-generation services, and early adopters as much as 42 percent more.[14]

AMTA further notes that 4G was optimised for smartphones whereas 5G is designed to open up new use cases across many new types of devices. 5G will not simply deliver more capacity for growth of existing usage, but broaden the applications of usage across both industrial and consumer use cases.

[13] Ericsson 5G Consumer Potential report, 2019
[14] Ericsson 5G Consumer Potential report, 2019

ACMA approach to the work program and priorities

AMTA appreciates the considerable work program that the ACMA is managing and notes the professional approach of ACMA staff in prioritizing and progressing the processes involved. We particularly note the value of adopting a collaborative approach with consultation through Technical Liaison Groups (TLGs). There have been several TLGs that AMTA members have participated in recently and where a TLG used more collaborative and dynamic methods for consultation, the process worked quite effectively and efficiently. On the other hand, where consultation relied on documentation exchange in the absence of collaboration through meetings, the consultation was less efficient. We appreciate that ACMA staff are generally available and approachable for feedback but consider it worthwhile to embed a more dynamic, collaborative approach into the TLG processes so that this becomes an inherent feature and smooths out some of the friction points that can slow down TLG consultations.

Bands

Overview

The ACMA has proposed a robust work plan for the coming 12 months with optimisation activities in the 2.3 GHz and 3.4 GHz bands, along with finalisation of licensing arrangements and auction preparations for the 800/900 MHz and 26 GHz bands. In parallel, an options paper for the 3.8 GHz band has been flagged for Q3 2020, which is welcomed by AMTA.

AMTA believes that this comprises a sufficiently large workload for FY2020-21, and that the issues listed above should be focused on without further addition to this coming year's work plan. This will facilitate each of these important issues receiving appropriate attention and avoid being "rushed through". The priority for the mobile industry right now is getting the existing spectrum optimised and ready for 5G, along with introduction of 26 GHz and progression of 3.8 GHz (due to its proximity to the key 5G band in 3.4/3.6 GHz and the eventual need for additional mid-band spectrum).AMTA notes that the GSMA's analysis of spectrum requirements for 5G recommends that more mid-band spectrum is allocated in the longer term to ensure there is a good mixture of coverage and capacity benefits and that quality of service is maintained.[15]

As such, we believe that no further work is required on the 1.5 GHz or 2 GHz bands in this year's annual work plan. We also consider The 40 GHz band should progress to the Initial investigation stage by the completion of the next cycle; while at some point during the 2021-2024 period addressed in this FYSO, the conversation on 600 MHz should be revisited—the outcomes of WRC-23 Agenda item 1.5 may provide talking points but an earlier review of spectrum utilisation of 600 MHz could also be useful.

[15] GSMA,5G Spectrum GSMA Public Policy Position, March 2020

Monitoring

Encumbered bands

The bands 600 MHz, 3.3 GHz, 4.5/4.8 GHz have been listed in the FYSO for several years, and AMTA accepts that they remain at the Monitoring stage due to existing use of the bands by incumbent broadcasters and the Department of Defence.

As such, we understand that the bands are unlikely to be progressed to auction in the near future, especially when there are alternative spectrum options. However, we support these bands remaining in the FYSO in particular due to the international developments noted by the ACMA in the FYSO.

Specifically, with respect to the 600 MHz band, we remain interested in the band as a mid-term future spectrum option. For completeness, we believe it's worth noting the existing IMT identifications: including a number of Asia-Pacific nations including New Zealand (RR No. 5.296A), and in a number of American nations including Canada, USA and Mexico (RR. No. 5.308A). For this reason, we would like to see the 600 MHz band progress to Initial Investigation in the next revision of the FYSO (i.e. 2021-25), so that the ACMA and relevant industry stakeholders can begin to think about the issues involved in what will likely be a lengthy project.

40/50 GHz range

The 40/50 GHz frequency range presents the next set of important spectrum resources for high-band or mmWave 5G services. We observe that chipsets and antennas for user devices in the 37-40 GHz band are well established (for example, the Qualcomm QTM525[16] coupled with the Qualcomm Snapdragon™ X55 5G modem have been available for over 12 months[17]). We also observe vendor testing in the 39 GHz band was completed nearly two years ago[18]. Availability of user device chipsets and progress by vendors to develop network equipment to support 3GPP band n260 (37.0-40.0 GHz) supports the case for 40 GHz to be progressed as the next mmWave band after the 26 GHz band (3GPP band n258).

We also note low levels of incumbency for 40 GHzin Australia. We recommend the ACMA move 40 GHz from monitoring into initial investigation by the completion of the next cycle.

Noting that the 1.5 GHz Band is already at the Preliminary Replanning stage, and that it is not a priority, we believe it's preferable to allocate resources to advance 40 GHz to the Initial

[16] https://www.qualcomm.com/products/rf
[17] https://www.forbes.com/sites/patrickmoorhead/2019/06/12/who-is-really-leading-in-mobile-5g-part-2-5g-mobile-chipsets
[18] https://www.fiercewireless.com/wireless/ericsson-intel-complete-live-5g-data-call-at-39-ghz

Investigation stage, rather than tie up ACMA's resources on the 1.5 GHz with all its complex incumbency issues.

1900-1920 MHz

We note that 1900-1920 MHz Band is situated within valuable spectrum with good balance of coverage and capacity, albeit countered by the small quantum of spectrum not ideal for multi-operator scenarios. It is supported for LTE with 3GPP Band 33 and 39 (also overlaps 35, 37), and for 5G NR with 3GPP Band n39.

The operation of TDD systems adjacent to the based station receivers 2 GHz spectrum-licensed networks poses potential for adjacent-channel interference. Of late, the ACMA has preferred synchronisation as the fallback mitigation method for such interference mechanisms. AMTA notes, however, that the adjacent 2100 band is FDD, so synchronisation is not a solution for interference. If a guard band is required then the quantum of useful spectrum is too small and further work is needed to identify a suitable use case.

Interference could be better managed by releasing the band (if at all) for spectrum licensing for deployment of a TDD network.

WRC-23 Bands

We support the bands covered under WRC-23 Agenda items 1.2 and 1.4 being included in the annual spectrum management work program at the Monitoring stage. AMTA will participate in the parallel WRC-23 Preparatory process and will provide further comment as the Agenda items develop.

5-7 GHz (currently "Bands studied under WRC-19 Agenda item 1.16")

The *"Bands studied under WRC-19 Agenda item 1.16"* comprised spectrum bands between 5150 MHz and 5925 MHz. WRC-19 Agenda item 1.16 dealt with identifications and provisions for wireless access systems, including radio local area networks (WAS/RLAN). One of the main proponents for relaxing limits on WAS/RLAN in the band—the United States—had unilaterally increased their domestic power limits beyond the existing provisions of Resolution 229. In Resolution 229 (rev. WRC-19) *resolves* 3 includes some flexibility to administrations to further increase power beyond the limits in the existing *resolves* 2.

Since WAS/RLAN is a common topic both below and above 5925 MHz frequency boundary, we believe this frequency range in the Monitoring stage could be expanded to include up to 7125 MHz, so that the ACMA and industry can also monitor developments on WiFi in 6 GHz (5925-7125 MHz). To be clear, we suggest the frequency range/section in the Monitoring stage would

therefore be extended from 5150-5925 MHz to 5150-7125 MHz and be renamed from "*Bands studied under WRC-19 Agenda item 1.16*" to simply "*5-7 GHz*". The aim would be to progress this band in the following year's work plan to enable innovation and address WiFi congestion issues.

This frequency range (5925-7125 MHz) was highlighted by the ACMA under *Class licensing and the spectrum commons*, and is also relevant to FCC provisions for indoor and outdoor WAS/RLAN. The inclusion of this frequency range in the annual work plan will allow the frequency range or parts thereof to be advanced for further replanning to address the congestion of WiFi spectrum as and when needed. AMTA notes that Australia is notably short on WiFi spectrum compared to other countries, such as the USA. We suggest that the ACMA should continue to look at alignments with global WiFi considering the allocation by the FCC of the 6 GHz band for WiFi.

We understand that there would be an overlap with "Bands studied under WRC-23 Agenda item 1.2", but noting that

- 5925-6425 MHz is not considered under WRC-23 Agenda item 1.2; and
- 6245-7025 MHz is limited to Region 1 in Resolution 245 (WRC-19),

we believe the overlap (limited to 7025-7125 MHz) is relatively small and therefore the issues can be considered in separate items, at least until WRC-23 Agenda item 1.2 develops further.

With respect to the spectrum below 5925 MHz, at this point, we just wish to point out that a comparison of Resolution 229 (Rev. WRC-12) in the ITU Radio Regulations and Resolution 229 (Rev. WRC-19) in the Final Acts of the Conference reveal that the only significant change made to the *resolves* of the Resolution (with a few exceptions) is the insertion of a new *resolves* 3 on the band **5150-5250 MHz**, along with a power limit for mobile stations inside automobiles in 5150-5250 MHz in *resolves* 1.

The RR have not changed substantially with respect to bands 5250-5350 MHz and 5470-5725 MHz. Exceptions:

- reference to protection criteria for radiolocation services in Recommendation ITU-R M.1652 in *resolves* 9; and
- Table of Allocations footnotes formally incorporating Recommendations ITU-R M.1638-0 and RS.1632-0 by reference (5.447F and 5.450A) now point to Resolution 229 (WRC-19).

Initial Investigation

Extended MSS L-band

See comments on 1.5 GHz band below. We prefer that the 1.5 GHz Band is not progressed at this stage, but won't object to 1518-1525 MHz and 1668-1675 MHz being progressed to Preliminary replanning for consideration of the use of those bands for MSS.

2300-2302 MHz

We note that the TLG is currently underway and we support this progress towards band arrangements that allow efficient use of the spectrum by modern wireless broadband technologies.

Preliminary replanning

Before going into the band-by-band detail, AMTA has a firm view that 3.8 GHz is a strong priority, while 1.5 GHz and 2 GHz are *not* priorities. Further detail provided in this section.

1.5 GHz Band (1427-1518 MHz)

As mentioned in the previous section (re. 40/50 GHz), AMTA is not requiring further progress of the 1.5 GHz band beyond its current status. However, we do note the common frequency boundary at 1518 MHz between the 1.5 GHz Band and the Extended MSS L-band (currently at the Initial investigation stage). We generally agree with the concept of increased efficiency through developing 1.5 GHz and Extended MSS L-band together—as referred to under *Future band planning priorities*, pg 65 of the Draft FYSO—although there are aspects of the 1.5 GHz Band planning and allocation process that should not be rushed due to a desire to provide access to the MSS.

Given the interest to make 1518-1525 MHz available for MSS, we note a possible compromise would be to participate in a TLG (or similar working group) to resolve adjacent-band compatibility issues above 1518 MHz, without having to commit on other issues such as: licence areas; in-band sharing with fixed services and Defence applications; spectrum provisions for BSS; adjacent-band compatibility with services below 1427 MHz; or spectrum auctions. We further note that the existing 1.5 GHz ecosystem is very low-tech, so in conjunction with the modest available spectrum its merits are not commensurate with the capacity increases that the IMT industry requires.

We believe there is a typo under *Recent developments*—it was WRC-19 Agenda item 9.1.2 not 9.1.1 that discussed IMT vs BSS (sound).

2 GHz Band (1980-2010/2170-2200 MHz)

Noting that the band is situated within valuable spectrum with good balance of coverage and capacity, and that it is adjacent to the existing 2 GHz Band (3GPP Band 1), this is potentially high-value spectrum which could be introduced relatively easily in terms of interference management at frequency boundaries (noting the FDD arrangement). Any wireless broadband spectrum allocation would therefore logically be at the bottom (or all) of the 2 x 30 MHz paired spectrum. Also, it is covered by 5G NR Band n65 (1920-2010/2110-2200 MHz).

The main drawbacks are therefore:

- limited quantum of spectrum for a multi-operator scenario if required to be shared with other competing services and/or significant guard bands—although a future consolidation/optimisation exercise could address this; and

- compatibility with the upper-adjacent band services, and with any co-channel services if the spectrum is also partitioned on a geographical basis.

At this stage, the 2 GHz band is not a short-term priority for AMTA and we don't see a need to progress the band within this FY2020-21 work plan.

If the ACMA decides to proceed with the release of an Options paper on the band, we will provide comment in more detail.

3700-4200 MHz

Aside from what is already planned for allocation, the 3.8 GHz Band (3700-4200 MHz) is our next highest spectrum priority, and we support the ACMA's inclusion of the band in the Forward allocation work plan and placing it above the 1.5 GHz band in Table 11 *Potential timing of allocations*.

3GPP support for 5G NR and being immediately adjacent to 5G services rolling out in the 3.4 GHz band below 3700 MHz, make this spectrum highly valuable. As per our previous response to IFC 27/2019, noting the need for 100 MHz mid-band 5G spectrum per operator[19] and for this spectrum to be contiguous, the highest priority is the reallocation for spectrum licensing of 3700-3800 MHz in the same geographical areas that were spectrum licensed under the 3.6 GHz process. Under Scenario C presented in that consultation, we also see an opportunity for expanded access to 3800-4000 MHz in four mainland capital cities (excluding Sydney and Perth due to current incumbency and Darwin due to ACMA policy), where 5G could easily become the HVU with relatively little impact to the FSS.

[19]GSMA,5G Spectrum GSMA Public Policy Position, March 2020

We look forward to the ACMA's Options paper which will provide an opportunity to comment in more detail.

Replanning & Forward allocations

On the bands already in the forward allocation work plan, AMTA is supportive of the ACMA's progress and agrees with the order of prioritisation in Table 11 *Potential timing of allocations*. 5G services are being deployed in mid-band spectrum around 3400-3700 MHz and high-band/mmWave spectrum is on the way to bolster capacity and provide new applications. However, 5G will also need to leverage low-band spectrum—particularly for more sparsely developed areas combined with greater mobility requirements—and the availability of the new 850 MHz expansion band and an ability to appropriately re-farm 900 MHz band spectrum is vital.

Regarding the 26 GHz and 28 GHz bands, AMTA is looking forward to the prospect of licensed spectrum supporting mmWave 5G deployments in 2021. We support the progress made to date and appreciate the ACMA's facilitation of the process, however we have some outstanding concerns and we are continuing to engage with the ACMA and TLG members in relation to stringent in-band limits imposed on 26 GHZ wireless broadband service. Our concerns regarding the 26 GHz and 28 GHz bands include:

- AMTA is concerned about the stringent in-band limits imposed on 26 GHz band wireless broadband services:
    - 25 dBm/(200 MHz) TRP to protect fixed-satellite service (FSS) uplink in 27-27.5 GHz, specifically within FSS coexistence zones coinciding with the high-gain beams of NBN Co satellite receivers.
    - 37 dBm/(200 MHz) TRP in all other bands and/or areas, with a view to protect other FSS uplinks (allocations 24.75-25.25 GHz and 27-27.5 GHz) and inter-satellite service (ISS) links (25.25-27.5 GHz).
- AMTA is concerned about the application of complex and restrictive licence conditions that may inhibit network planning, deployment and/or operation in practice. That said, on balance, it is preferable to adapt to such conditions in place being constrained by excessively restrictive 'blanket' in-band emission limits.
- AMTA continues to oppose class licensing arrangements for wireless broadband in 24.25-25.1 GHz. Their uncontrolled uncoordinated operation could lead to adjacent-channel interference not only to spectrum licensees operating above 25.1 GHz, but also potentially contribute to the interference potential to earth exploration-satellite services (EESS) below 24.0 GHz. The protection of these passive sensing services is already placing significant restrictions and costs on the mobile broadband sector (particularly by way of stringent out-of-band emissions), and the benefit of these may be undone by rogue operation of

such devices outdoors. These will be uncontrolled deployments and AMTA suggests that the ACMA revisit these arrangements once Spectrum licences are put into use.

- AMTA disagrees with the setting up of wide-area spectrum licences involving massive investments on an equal technical & regulatory footing with localized area-wide licences (AWL) purchased over-the-counter. The latter should not be able to constrain the former in any way, which there is scope for as long as the equitable coordination requirements remain in place. This issue is not specific or unique to the 26 GHz band, see further below.

Two other bands in the replanning stage are not explicitly listed in the forward allocation work plan:

- 1800 MHz in remote areas—We look forward to the ACMA's discussion paper later this year.

- 3.4 GHz "restack"—We note that this is optimising arrangements for existing 3.4 GHz spectrum licensees and are pleased that this is underway. We are interested in seeing what opportunities become available for access to 3.4 GHz spectrum in urban excise areas, and existing 3.4 GHz licensees are well placed to make efficient use of the spectrum and provide high-value services to large populations in major Australian cities. We look forward to further consultation on this matter late this year.

Furthermore, we propose that the ACMA add to its work plan for optimising established planning frameworks:

- 2 GHz in regional areas—conversion of the band from PTS to spectrum licensing; an exercise similar to that which was carried out for the 1800 MHz Band in 2016.

Compliance and enforcement

AMTA strongly supports the necessity of ensuring that communications networks are not unduly interfered with or disrupted. Our telecommunications networks are fundamental to delivering connectivity and ensuring safety of the public through the provision of services including Triple Zero. Undue interference with telecommunications networks and licensed spectrum must be avoided and it is essential that the regulatory framework is sufficiently robust to ensure networks are protected.

The ACMA must be adequately resourced and empowered to undertake compliance and enforcement activities. Compliance and enforcement necessarily underpin the property rights of spectrum owners. Spectrum is a valuable national resource and it is vital that allocated spectrum

is protected from undue interference in order for the economic and social benefits of spectrum use to be fully realised.

We note that effective compliance requires adequate and proactive monitoring. Licence conditions that are not properly monitored may not have the intended effect and waiting for complaints to arise can allow interference issues to run unchecked, especially in relation to class licence devices.

AMTA notes that the ACMA is currently consulting on the prohibitions and exemptions regime and we are working with Communications Alliance to provide an industry submission to that consultation.

AMTA believes that a continued proliferation of exemption instruments must be avoided and that a coordinated and consistent approach needs to be adopted to manage the increasing number of devices that will potentially cause undue interference to mobile networks. We caution against undermining the fundamental policy of prohibition of jamming devices.

Area-wide licences

As per the ACMA's paper *Area-wide licensing—ACMA approach to introducing area-wide licences*[20] the ACMA has amended the *Radiocommunications (Register of Radiocommunications Licences) Determination 2017* to exempt area-wide licence (AWL) licensees from certain device registration requirements unless a licence condition or the AWL Licence Conditions Determination (LCD) requires otherwise. The ACMA explains that it "will carefully consider whether device registration is needed on a band-by-band basis when considering the implementation of AWLs in a particular band".

AMTA strongly opposes the default assumption in the broader AWL framework that network equipment device registration is not required and that specific technical frameworks in particular bands need to set registration requirements on a case-by-case basis. We insist that the reverse should apply—the broader AWL framework should impose registration requirements by default, which could be lifted in a particular band following careful consideration on a case-by-case basis.

We also wish to reiterate our views from the 26 GHz spectrum licence TLG, that the property rights of spectrum licensees and protection from interference must be considered with respect to both apparatus-licensed and class-licensed services in adjacent spectrum space[21]. In particular with respect to AWLs, we are concerned about the ACMA's apparent policy to ensure equitable

[20] Feb 2020, Available here: https://www.acma.gov.au/publications/2020-02/guide/area-wide-licensing-acma-approach-introducing-area-wide-licences

[21] Note that we also oppose either of these licence types being permitted in the same spectrum space without the agreement of the relevant spectrum licensee.

access of spectrum between spectrum licensees and AWLs in adjacent spectrum space. Spectrum licences require significant investment and provide services to an expansive customer base.

Technical frameworks in spectrum licensed bands should reflect a clear hierarchy of spectrum-, apparatus- and class-licensed services (in that order).

Conclusion

AMTA recognises and appreciates the efforts of the ACMA in planning for and progressing spectrum bands for 5G and looks forward to continued engagement across the work program.

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