



Submission by Free TV Australia

**Five-year spectrum
outlook 2020-2024**

**Australian
Communications and
Media Authority**

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1. Executive Summary

- Free TV welcomes the opportunity to provide a submission to the Australian Communications and Media Authority (ACMA) on the draft Five-Year Spectrum Outlook for 2020-2024. Our members are spectrum users in a number of different bands discussed in the FYSO consultation draft.
- The recent events of the 2019/2020 summer bushfires and the COVID-19 pandemic have reinforced the vital nature of the services provided by commercial free-to-air television broadcasters to the community.
- While there may be significant negative revenue implications, the response that saw average audiences in all news programming increase by over 50% in mid-March, highlights that commercial free-to-air television remains a critical service in times of national crisis.
- This has important implications for the work of the ACMA, in terms of spectrum planning, allocation and pricing.
- Recent events also highlight how important it is to maintain the ability of our news services to obtain spectrum for electronic news gathering and television outside broadcast. Whether reporting from a town under imminent threat from an approaching bushfire, on the clean-up operation or during the subsequent floods, Australian communities rely on our ability to tell their stories in real-time.
- As such, the aspects of the FYSO forward work-plan that relate to spectrum that is currently used by television outside broadcast, or is adjacent to it, must be carefully planned to ensure that there is no loss of service to the community.
- On pricing, the final FYSO should recognise the need to ensure the sustainability of the commercial broadcasting sector as part of the ACMA's upcoming review of the commercial broadcasting tax. Free TV considers that this tax should be abolished or limited to the ACMA's costs of spectrum management in line with international best practice.
- On the international front, while acknowledging that there are investigations ongoing into the use of the 600MHz band for services other than broadcast, the ACMA should explicitly acknowledge the difference between the Australian market and markets where a reallocation has occurred or is proposed.
- In Australia, there is already a relatively small amount of spectrum assigned to broadcast services and, in that spectrum, broadcasters provide up to 30 services within their 7MHz channels in most markets across Australia. This compares favourably to other comparable markets such as the UK and the USA.
- Given the reliance on the 600MHz band for services in regional Australia and the already small amount of spectrum allocated to broadcasting services in Australia, a USA style re-stack and reallocation could not occur without some parts of the community losing services.

2. Introduction

Free TV Australia is the peak industry body for Australia's commercial free-to-air television broadcasters. We advance the interests of our members in national policy debates, position the industry for the future in technology and innovation and highlight the important contribution commercial free-to-air television makes to Australia's culture and economy. We proudly represent all of Australia's commercial free-to-air television broadcasters in metropolitan, regional and remote licence areas.

Our members have a fundamental role in bringing local content to Australian audiences. This includes the provision of local news services, current affairs, sports and other culturally significant programs that are relevant and responsive to regional and rural areas.



2.1 Commercial broadcasters' use of spectrum

Television broadcasting, like many other industries, applies radiofrequency spectrum beyond what is immediately apparent to the public. While the television transmissions to antennas on residential premises are clearly the primary application there are a wide range of other applications such as:

- Terrestrial feeder links for contribution of television program material from other sources
- Terrestrial feeder links as relays from television centres to outlying transmitters
- Wireless cameras used in electronic news gathering
- Sports and special event program content from outdoor venues
- Wireless microphones for sound recording
- Contribution of television program material from overseas sources via satellite
- Two-way radiocommunications.

As we elaborate on throughout this submission, the importance of television broadcasting to the community has rarely been more apparent than during the 2019-2020 bushfire crisis and the COVID-19 pandemic.

This experience demonstrates two important matters. First, spectrum allocated to broadcast spectrum continues to play a vital community service, including spectrum used for electronic news gathering and TV outside broadcast. Second, regional Australians continue to rely heavily on broadcast services, where services are provided in the UHF band.

2.2 Structure of this submission

This submission is set out in two parts. The first part provides a response to the five broad questions posed by the ACMA in the consultation draft FYSO. Second, Free TV provides a technical appendix, including more detailed comments on aspects of the proposed FYSO 2020-2024.

3. The impact of COVID-19 on commercial broadcasters

Relevant ACMA questions:

- What are the expected impacts of the COVID-19 pandemic on the short- and medium-term capacity of your industry?
- Do you have any feedback on the ACMA's approach to its spectrum work program in the current environment? Do you have alternative proposals or priorities?

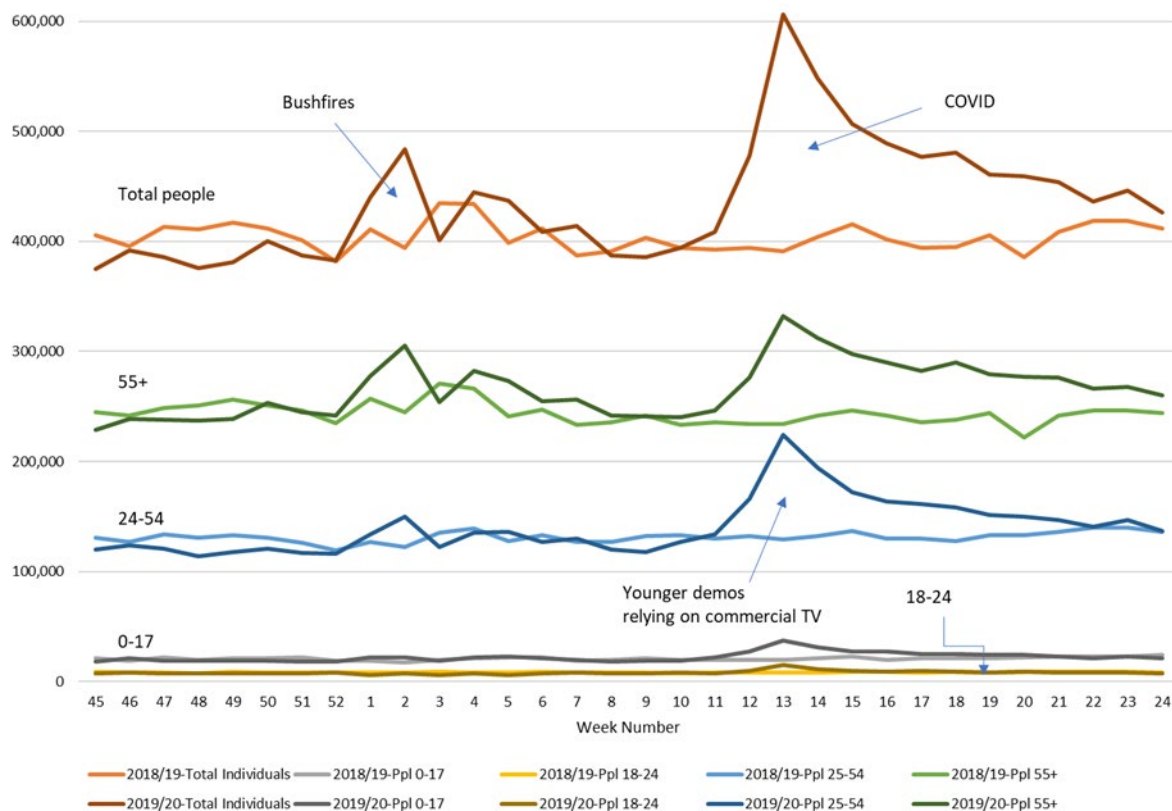
The ongoing COVID-19 pandemic, much like the bushfire crisis of late 2019 and early 2020, has impacted both sides of the free-to-air television market significantly. What is clear is that 2020 has proven the importance of commercial free-to-air services to the community and how vital it is that the current spectrum allocations be maintained, including for outside broadcasts and electronic news gathering.

We expand upon the impact on our audiences and our revenues in following sections.

3.1 Demonstrating community reliance on commercial free-to-air television

In terms of demand, the community has shown that it values and trust commercial free-to-air services in times of crisis. While we acknowledge that there is greater choice for video content today than at any time in our history, in times of crisis, people of all ages have turned to commercial free-to-air television as their trusted source of news.

News Genre 6am-midnight - Primary Channels – National Audiences



As shown above, at the height of the COVID-19 news-cycle, average audiences in news programming across the primary services within each broadcaster's channels in both metropolitan and regional Australia were up by over 55% on 2019 levels. Most striking in these audience patterns was the response of the audience below 55 years old, underscoring the fact that commercial free-to-air is a vital service across all age groups, including the younger generations. Even now, as the economy begins to reopen, news audiences are still above where they were this time last year.

Also shown in the graph above is the increase in audiences during the new year bushfire crisis. Significantly for the ACMA's FYSO forward work program, much of the coverage by Free TV members' during these events was undertaken using spectrum licensed for electronic news gathering and television outside broadcast. This highlights the importance of the ACMA making available sufficient television news gathering and outside broadcast spectrum available, with sufficient interference protection, to enable these broadcasts to continue.

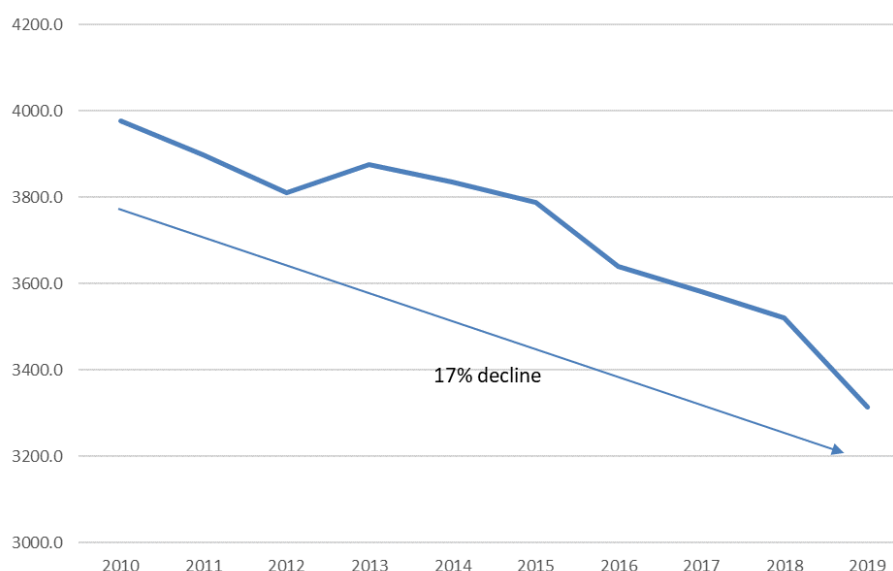
We note that during the bushfire crisis, there was extensive damage to the broadcast network in some regions. By working together with local authorities, Free TV members were able to keep disruptions to a minimum through the use of emergency stand-by power and back-up transmission sites.

3.2 Revenue impact

While the revenue impact on broadcasters does not impact the need for spectrum, there are aspects of the ACMA's future work program that will need to take into account the financial viability of commercial broadcasters in pricing decisions and recommendations to Government.

The FYSO sets out the revenue the commercial free-to-air revenue decline to 2018. The graph below extends this with the addition of 2019 data, showing a 17% decline in revenues over the last ten years.

2010-2019 Commercial FTA Revenue



The exact impact of the COVID-19 pandemic is not yet known. However, it is likely that the impact will be significant with advertisers pulling back or cancelling advertising spends across many sectors of the economy.

The Government has already taken action to support Australia's broadcast industry with the announcement of 100% commercial broadcasting tax rebates for 2020. As we outline in the next section, Free TV strongly believes that this rebate should be applied until such time as the entire commercial broadcasting tax is abolished.

4. Forward work plan

4.1 Commercial broadcasting tax

The consultation draft FYSO notes the ACMA's intention to make announcements in Q3 2020 in relation to the commercial broadcasting tax review. While we understand that the ACMA review will likely focus on the composition of the formula and the charging framework, the ACMA should note that international best practice for pricing spectrum does not exceed the regulatory costs of managing spectrum allocated to broadcast TV services.

In our view, the temporary 2020 rebate approach should be extended until 2022, at which time the commercial broadcasting tax legislation should be repealed.

4.1.1 Background to the broadcasting tax

In 2017, the revenue-based broadcasting licence fee was replaced with an interim spectrum tax, locked in for five-years. The aggregate level of the spectrum charge of \$43.5 million per annum was determined by Cabinet and then levied via a tax on broadcast transmitters.

Free TV has previously expressed concerns with this approach, on the basis that the pricing does not properly reflect economic value of the spectrum, taking into account its use for free-to-air broadcasting. The amount of the spectrum charge is also high by international standards. In addition, to offset the disproportionate impact on regional broadcasters who have many more transmitters than their metro counterparts and serve much smaller populations, the charging method requires a complex system based on the power and population density of the transmitters. In some cases, regional broadcasters have received an additional rebate to ensure that they were not worse-off as a result of the 2017 removal of the broadcast licence fee and the imposition of a spectrum charge.

4.1.2 Sustainability of commercial broadcast sector required to meet Government's communications policy objectives

As the recent COVID-19 pandemic and bushfire crisis have demonstrated, the value of Free TV to the community continues to be high. More broadly, the Government's social and cultural objectives as established under the Broadcasting Services Act rely heavily on a sustainable broadcast sector that can continue to invest in Australian content and local news services.

Conversely, the growing dominance of digital platforms such as Google and Facebook has seen the advertising revenue available to media businesses, like commercial television broadcasters, who invest in local content and services fall dramatically. This, together with the audience fragmentation caused by online streaming platforms, means that action is required to ensure the future sustainability of the broadcast industry.

As we set out below, spectrum pricing beyond the cost of spectrum management for a free-to-air broadcast service only results in a wealth transfer from networks to the Government. This puts Free TV networks at a disadvantage to other competitors, many of whom are delivering content via the Government funded NBN free of charge.

Accordingly, the commercial broadcasting tax should be abolished, or limited to the cost of spectrum management.

4.1.3 Pricing needs to reflect that free-to-air broadcasting is a public good

Free-to-air broadcasting by its very nature is a public good. In the free-to-air model, commercial TV broadcasters can only capture the value of providing the platform to advertisers. They cannot capture the value of the broadcast to viewers (as they, by definition, receive the content free of charge).

While a spectrum price signal can be useful in driving the efficient use of spectrum where users are able to respond effectively to that signal, in the case of broadcasting services this can only result in a wealth transfer from networks to the Government. Broadcasters are heavily constrained in how they can use the spectrum. For example, they face extensive content obligations, advertising restrictions and captioning requirements. As the ACMA is also aware, there are also complex technical restrictions in how the spectrum can be used to protect against interference.

As a result of the restrictions on the use of broadcast spectrum and the difficulties in estimating the positive externalities associated with the provision of public good free-to-air services, applying a spectrum price for broadcasting based on the costs of managing the spectrum is the most common approach used globally. Work undertaken by Competition Economist's Group (CEG) concluded that they had:

“not identified any jurisdiction with a comparable free-to-air broadcasting sector and content obligations, which charges for spectrum beyond fees for spectrum management.”

Given the restrictions on the use of broadcast spectrum, spectrum charges in excess of the cost of managing the spectrum only result in a wealth transfer, with no increase in spectral efficiency. Such a wealth transfer harms free-to-air broadcasters at a time when the costs of meeting our obligations are continuing to increase and advertising revenues are declining.

4.2 Future work must acknowledge and make allowance for TOB

4.2.1 2GHz planning

As noted in the consultation paper, the 1980–2010 MHz and 2170–2200 MHz bands are currently used for television outside broadcast (TOB) services on a shared and non-exclusive basis for short-term applications, such as covering special events. As set out in RALI FX21, the use of these bands for TOB is only available while further investigation is being undertaken, with a discussion paper planned for Q4 2020.

The final FYSO should acknowledge the use of the adjacent bands 2010-2110 MHz and 2200-2290 MHz by the ABC, Channel Seven, Nine Network, Network Ten and FOX Sports on behalf of subscription television. It should also commit to ensuring protection against interference from any new services to TOB at 2010MHz and 2200MHz.

Free TV would be a willing participant should the ACMA decide to establish a Technical Liaison Group comprising interested stakeholders to address the replanning of the 1980-2010MHz and 2170-2200MHz bands.

4.3 Next generation receiver standards

With respect to the television broadcasting industry the ACMA should take into consideration the advances in television broadcasting technologies which have been and are being further developed in

ITU-R Study Group 6 such as High Dynamic Range picture formats and Next Generation Audio including immersive sound systems. Both have a regulatory impact on content standards such as advanced access systems and of multi-channel sound system's loudness characteristics.

Free TV Australia has been participating in these developments in the Working Parties of ITU Study Group 6 and monitoring their approval by Australia within Australian Radio Study Group 6. We look forward to the ACMA's continuing support and participation in this work.

5. Spectrum planning must support vital broadcasting services

Relevant ACMA questions:

- Are there other technology developments or sources of spectrum demand that the ACMA should be aware of in considering spectrum management over the next five years?
- Do you have any other feedback on the ACMA's plans for monitoring, initial investigation, preliminary replanning or replanning of bands?
- Do you have any comments about the ACMA's approach to forward allocations?

5.1 Proposed monitoring of the 600MHz band

Free TV notes that the consultation draft of the FYSO maintains the 600MHz band in the monitoring category for the annual spectrum work program. While it is appropriate that the ACMA continue to monitor international developments, it is crucial that the continued Australian demand for this spectrum for allocation to broadcast services is also recognised.

Television broadcasters in Australia are the main users of the frequency range 520-694MHz for TV broadcasting services and wireless microphones. As set out above, the community demand for these services, including in regional areas has been recently reaffirmed by a surge in audiences through the bushfire and COVID-19 crises.

While we acknowledge that internationally there has been some re-purposing of this band for services other than broadcasting, it is unlikely that this will be appropriate in Australia for the foreseeable future. The reasons for this are set out in the following sections.

5.1.1 Relatively small amount of spectrum allocated to broadcast already

By international standards, Australia allocates a very small amount of spectrum for broadcast television, as set out in the table below. It is also worth noting that not all of the spectrum identified for television broadcasting is available for DTTB, due to assignments to other services in the bands, such as DAB in VHF Band III.

Television Broadcasting Spectrum Allocations

	Region 1 (Africa/Europe)	Region 2 (Americas)	Region 3 (Asia Pacific)	Australia
Band I (47-68MHz)	Not allocated to Digital TV	18 MHz ¹	Not allocated to Digital TV	Not allocated to Digital TV
Band III (174-216/230MHz)	56 MHz ²	42 MHz ³	56 MHz ⁴	56 MHz
Band IV/V (470-608/694/698MHz)	224 MHz ⁵	228 MHz	228 MHz	174 MHz ⁶
Total	280MHz	288MHz	284MHz	230MHz

5.2 Broadcasters use spectrum efficiently

Broadcast television is available to 97% of the Australian population. This is significantly higher than most other comparable countries. However, as shown in the table above, the spectrum allocated to broadcast services in Australia is less than in other regions.

Despite the small amount of spectrum allocated to broadcast services in Australia, an analysis of the services available in comparable countries, demonstrates our efficiency in the use of that spectrum. As shown in the table below, across the 7MHz channels transmitted by Australia's broadcasters up to 30 services are offered to the public. A full list of these services is attached to this submission.

Australia <u>Frequency ranges</u> VHF - 174-230MHz UHF - 526-694MHz <u>Channel Bandwidth</u> 7MHz <u>Available DTTB channels</u> 30 <u>DTTB System</u> DVB-T	United Kingdom <u>Frequency ranges</u> VHF – Nil UHF – 470 to 694MHz <u>Channel Bandwidth</u> 8MHz <u>Available DTTB channels</u> 28 <u>DTTB System(s)</u> DVB-T / DVB-T2	United States <u>Frequency ranges</u> VHF – 54 to 72, 174 to 216MHz UHF – 470 to 608MHz <u>Channel Bandwidth</u> 6MHz <u>Available DTTB channels</u> 33 <u>DTTB System</u> ATSC / ATSC 3.0
Population Geography		
Population: 24.99 million Land area: 7.692 million km ²	Population: 66.65 million Land area: 242,495 km ²	Population: 328.2 million Land area: 9.834 million km ²

¹ To date, only the US has allocated the VHF band for Digital TV in the Americas i.e. ATSC

² 174-230MHz allocated to only a few countries for Digital TV in Europe

³ 174-216MHz allocated in US to Digital TV

⁴ 174-230MHz allocated to only a few countries for Digital TV in Asia Pacific

⁵ In Region 1 only 322 MHz is available across the Region but in the African broadcasting area a further 98 MHz is available between 862 – 960 MHz.

⁶ Australia has allocated 526-694MHz for Digital TV

5.2.1 A USA style reallocation could not be undertaken without impacting services

The draft FYSO notes that in 2017, the US Federal Communications Commission auction repurposed 84MHz of spectrum in the 600MHz band, including channels 38 to 51 in the UHF band.⁷

The band reallocated in the US as the 600MHz band, 617-698MHz, are 6MHz TV channels. The frequency range 617-698MHz in the Australian 7MHz channel arrangements encompasses channels 41 to 52. Accordingly, a restack to yield a contiguous block of spectrum in the 600 MHz range could not be undertaken in Australia without requiring significant investment in network reconfiguration and the potential loss of service to the public, particularly in regional areas.

In addition, Free TV notes that to transition wireless microphones out of the US 600MHz band, the FCC made available additional frequencies outside of the TV bands for wireless microphone use. Unlicensed wireless microphone use is permitted on the 902-928 MHz band, the 1920-1930 MHz, and on portions of the 2.4 GHz and 5 GHz bands under specified power levels and rules for operation for each of those bands. Licensed wireless microphone use is permitted on several other spectrum bands, including on portions of the 900 MHz band, the 1435-1525 MHz band, and the 6875-7125 GHz band.

5.3 Trials and studies are being undertaken for next generation services

As we explain below in the technical appendix, Free TV has been undertaking trials and studies in relation to the performance of next generation broadcast technologies in the Australian environment. As noted in the draft FYSO, the adoption of these technologies is likely to be a prerequisite for any future reallocation of broadcasting spectrum for non-broadcasting uses in order to maintain current services through performance increases offered by the next generation technologies. However, Free TV suggests that the FYSO should highlight two significant challenges associated with any possible transition.

Firstly, the studies that Australia has contributed to the ITU on the performance on DVB-T2 indicate that DVB-T2 is less robust than DVB-T. This means a reduction in available spectrum for DVB-T2 coverage may not be sufficient to provide the same number of services as is currently provided with the existing DVB-T coverage; and therefore any reallocation of broadcasting spectrum for non-broadcasting uses may not fully realise significant benefits.

Secondly, the FYSO could usefully highlight that the primary constraint in the adoption of next generation broadcast technology is the capability of the existing DVB-T receivers in Australian households; where a migration to DVB-T2 capable receivers is required.

We are working with consumer electronics manufacturers on the appropriate standards to ensure that all new television receivers sold in Australia can receive and decode next generation TV broadcast services. However, any transition plan will need to first ensure that a critical mass of households have receivers that are next generation capable to ensure continuity of service to the Australian public.

This may require a transition which enables the continuation of the existing 5 / 6 program services for each Australian television broadcaster within their 7MHz channel. Refer Attachments A and B – Current composition of Australian television broadcaster’s 7MHz multiplexes – Metropolitan, Rural and Remote services.

⁷ <https://www.fcc.gov/consumers/guides/operation-wireless-microphones>

A. Technical appendix

A.1 International trends and Free TV engagement

We appreciate the recognition the ACMA has given to “international trends driving demand for spectrum” which include “advances in broadcasting technology”.

Free TV and its members have, through their membership of several peak international standards organisations, taken part in innovation in radiocommunications technologies that support more efficient spectrum use. Examples include more efficient radiocommunications modulation and coding techniques.

Specifically, via Australian Radio Study Group 6 Free TV has authored several contributions to the Working Parties of ITU-R Study Group 6:

Document	Title	Date
6A/13	Proposed revision to Report ITU-R BR.2467 - DVB-T2 Trials in Australia	22 – 01 - 2020
6B/11	Proposed reply liaison statement to ISO/IEC JTC 1/SC 29/WG11 - Video-coding Technologies Beyond ISO/IEC 23008 - Recommendation ITU-T H.265 (High Efficiency Video Coding)	22 – 01 - 2020
6C/11	Strategic review of ITU-R Reports on HDR (High Dynamic Range)	22 – 01 - 2020
6C/443	Proposal of support for ADM (Audio Definition Model) Renderer guideline - ADM Renderer for advanced sound systems	5 – 7 – 2019

Free TV continues to monitor and participate in standards organisations, ITU-R Working Party’s Correspondence and Rapporteur Groups activities to the benefit of Australian television broadcasting and the viewing public.

A.2 Spectrum sharing

Free TV recognises that International Telecommunications Union (ITU) member countries, of which Australia is one of 194 countries, have three instruments at their disposal as a means of sharing frequencies as prescribed in the ITU Radio Regulations - the Table of Frequency Allocations, assignment and allotment plans; and coordination procedures.

Within the Australian regulatory framework, the Australian Radiofrequency Spectrum Plan reflects Australia’s use of spectrum in the ITU Table of Frequency Allocations and the rules Australia follows as a member of the ITU.

As licensees of spectrum in Australia, Free TV members are aware of the Australian regulatory framework through their own experience of sharing spectrum in a wide range of bands associated with their use of spectrum in the ACMA’s technical and regulatory frameworks, which include:

- Earth receive – receivers on a large satellite antenna used for incoming television program content from overseas sources
- Land mobile ambulatory – two-way communications on a wide area basis

- Land mobile systems in bands above 30MHz – wireless microphones to operate in the television services bands at powers greater than the class licence limit but not greater than 250mW.
- Point to point fixed links – feeder links as relays from television centres to outlying transmitters, studio to transmitter links and feeder links for contribution of television program material from other sources
- Television outside broadcast fixed links – Australia wide fixed links for sports and special event program content from outdoor venues

By way of example Australian television outside broadcast licensees share spectrum in the bands 2010 to 2110 and 2200 to 2290MHz in accordance with Radiocommunications Assignment and Licensing Instruction FX21.⁸ This RALI also defines the arrangements for sharing spectrum with the European Space Agency (ESA).

An explicit example of the self-coordination and sharing by TOB licensees is reflected by the ACMA in RALI FX21:

The use of the bands 2010-2110 MHz and 2200-2300 MHz are limited to ABC, Channel Seven, Nine Network, Network Ten and FOX Sports on behalf of subscription television. The channel arrangements for TOB use of the band are outlined in Section 4 of this RALI. Authorisation of TOB transmitters for ABC, Channel Seven, Nine Network, Network Ten and subscription television will be via Australia wide licences with licensees required to operate in accordance with the requirements in this RALI. The licensing of fixed TOB receivers in the band is optional.

TOB licensees are to self-coordinate adjacent channel use with other TOB licensees.

Coordination between TOB transmitters and fixed point-to-point receivers, Earth station receivers and adjacent apparatus licence and spectrum licence receivers is required.

Coordination is also required between fixed TOB receivers and fixed point-to-point, adjacent apparatus licence and spectrum licensees. Coordination between earth stations and fixed TOB receivers is not required.

In a majority of cases minimal coordination will be required for TOB service operations around Australian capital cities (Perth and Canberra being notable exceptions).

Other examples of Australian television broadcasters sharing in a range of frequency bands can be provided.

A.3 Class licences and wireless microphones

Free TV notes the ACMA will review the LIPD class licences approach in Q4 2020.

Australian television broadcasters are one of the user groups in Australia who have high usage of wireless microphones. Other users include the Australian radio broadcasting sector, film and television program production, music industry, advertising industry, public address systems in schools, to name a few.

Wireless microphones are classified as audio transmitters where the operation of the wireless microphones are permitted under the low interference potential devices (LIPD) class licence.

The LIPD class licence permits use as a short-range device on shared frequencies. The class licence is also on the basis that no interference is caused to other radiocommunications users, no protection is

⁸ <https://www.acma.gov.au/publications/2019-09/publication/rali-fx21-television-outside-broadcasting-services>

provided from interference for users operating under the licence and users must abide by any other limitations and requirements of the licence.

Wireless microphone usage is ubiquitous, and the shared frequency use requires specific procedures.

Free TV Australia Operational Practice 27 Operation of wireless microphones in Australia, has been a reference for these operational procedures for many decades.

Free TV OP27 recommends the operating practices for wireless microphones licenced for operation within the television broadcasting spectrum in interleaved channels where channels are not assigned in the geographical area for digital terrestrial television broadcasting planning purposes.

It should be noted, operation of wireless microphones in VHF Band III (174-230 MHz) is not permitted in all metropolitan areas and some regional areas in Australia where this band would be fully occupied by TV channels and a digital radio sub-band.

It should also be noted, the use of wireless microphones in the UHF Bands IV/V (520-694 MHz) will operate as a secondary application and that operation of any wireless microphones in frequency range below 520 MHz and above 694 MHz is not permitted. In the band 520-694MHz another restriction is a wireless microphone's transmitter power must not exceed a maximum effective isotropic radiation power (EIRP) of 100 mW (or approximately maximum ERP of 60.95 mW).⁹

The band 1790-1800 MHz is also assigned to wireless microphone use in Australia with the following restriction - a wireless microphone with a transmitter power not exceeding maximum effective isotropic radiation power (EIRP) of 100 mW (or approximately maximum ERP of 60.95 mW).

These explicit operational practices found in OP27 indicate the spectrum sharing experience within the Australian television industry.

A.4 Formation of WRC-23 Preparatory Group

We appreciate the Department of Communications initiation of the preparatory process for WRC-23. Free TV notes Table 7 International engagement indicates the Project priorities and Proposed timelines:

Project priorities	Proposed timelines
ITU-R Study Group 4 block meetings	Q4 2020 (21 October – 6 November 2020)
ITU-R Study Group 5 block meetings	Q3 2020 (7–31 July) Q4 2020 (4–24 November 2020 includes working party 5D)
ITU-R Working party 5D meetings	Q2–3 2020 (24 June – 1 August) Q4 2020 (7–14 October and 17–19 November)
First meeting of the APT Conference Preparatory Group (Asia Pacific) for WRC-23 (APG23-1)	TBA (possibly August/September/October 2020)

⁹ <https://www.acma.gov.au/wireless-microphones#the-rules-for-using-wireless-microphones>

There appears to be an emphasis of monitoring on mobile and satellite matters, for example where these are the *responsible groups* for WRC-23 Agenda Items. Free TV notes that the draft FYSO 2020-2024 indicates in Table 1 the *project priorities* which require monitoring of international developments.

Planning stage	Project priorities	Proposed timelines	Concerned groups
Monitoring	600 MHz (617–698 MHz) 1900–1920 MHz 3.3 GHz (3300–3400 MHz) 4.5 GHz (4400–4500 MHz) 4.8 GHz (4800–4990 MHz) 13 GHz 40 GHz (37–43.5 GHz) 46 GHz (45.5–47 GHz) 47 GHz (47.2–48.2 GHz) Bands studied under WRC-19 agenda item 1.16 Bands being studied under WRC-23 agenda item 1.2 Bands being studied under WRC-23 agenda item 1.4	Continue to monitor domestic and international developments in these bands to identify usage trends	Task Group 6/1 SG5 Working Party 5B SG4 and SG5 SG4 and SG5 Working Party 4A SG4 and SG5 Working Party 4A Working Party 5D Working Party 5D

The draft FYSO 2020-2024 includes reference to WRC-23 Agenda Item 1.5, however, in the case of monitoring international developments in the 600 MHz (617-698MHz) band the ACMA does not indicate it will be attending Task Group 6/1.¹⁰

We note while Task Group 6/1 is the *responsible* group for WRC-23 Agenda Item 1.5, ITU Working Parties 5D and 6A are two of the *contributing* groups to TG 6/1.

Working Party 6A, which is responsible in ITU for terrestrial broadcasting delivery, has commenced conducting studies to review the spectrum use and study the spectrum needs of the broadcasting service in Region 1 and has a deadline to report the results of these studies to TG 6/1 by 15 May 2021 at the latest.¹¹

These studies include:

- Characteristics of digital terrestrial television broadcasting systems in the frequency band 470-862 MHz,
- Revisions to Frequency and network planning aspects of DVB-T2,
- Methods for the evaluation of the quality of service of second generation DTTB systems, and
- Co-existence calculations for Digital Terrestrial Television Broadcasting using Monte Carlo simulations.

¹⁰ <https://www.itu.int/en/ITU-R/study-groups/rsg6/tg6-1/Pages/default.aspx>

¹¹ <https://www.itu.int/en/ITU-R/study-groups/rsg6/rwp6a/Pages/default.aspx>

We recall in the lead up period to WRC-07 and WRC-12 studies were undertaken on the 790-862MHz band and 694-790MHz bands respectively. These studies consequently resulted in re allocations for the 800MHz and 700MHz bands for Mobile and identification for International Mobile Telecommunications (IMT). The results of the studies became the globally applied models for IMT in these frequency ranges. Free TV considers that the ACMA should explicitly note that its monitoring of studies in the UHF band below 694MHz include the potential impact on DTV services in Australia.

A.5 DVB-T2 trials

In 2018 / 2019 Free TV Australia jointly with Broadcast Australia and TX Australia conducted DVB-T2 trials in Sydney and the Gold Coast. DVB-T2 is a second-generation digital terrestrial television broadcasting (DTTB) system. DVB-T2 is described as expected to provide an increase in capacity of 30-50% in equivalent reception conditions using existing receiving antennas. The new specification introduces new modulation and coding techniques to enable highly efficient use of spectrum.¹²

The trials focussed on the evaluation of quality of service of DVB-T2 including results of laboratory measurements and field measurements where the aim was to identify a possible method for objective reception quality assessment for this DTTB system, as would be anticipated in an implementation in Australia.

At the completion of the trial's Free TV Australia, Broadcast Australia and TX Australia provided reports and presentations to the ACMA on:

- a) the Sydney UHF / VHF DVB-T trial,
- b) the Gold Coast UHF replication trial, and
- c) the Gold Coast / Brisbane extended SFN trial.

In addition, Free TV authored an Australian contribution which was submitted via the ACMA to ITU Working Party 6A on the results of the trials which can be found in ITU-R Report BT.2467 - Methods for the evaluation of the quality of service of second generation DTTB systems.

A.6 Support ongoing ACMA compliance work with solar inverter suppliers

Free TV members acknowledge the commitment the ACMA has to compliance and enforcement and in particular the area of electro-magnetic compatibility (EMC). Free TV members are aware of the recent undertakings regarding photo voltaic arrays and specifically solar invertors within Standards Australia committee TE-003 in relation to:

- AS CISPR11 Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods
- IEC 62920 – Photovoltaic power generating systems – EMC requirements and test methods for power conversion equipment

We encourage the ACMA to maintain close contact with TE-003 regarding recent reference to the comprehensive list of ACMA-mandated EMC standards it has within its purview.¹³

¹² <https://tech.ebu.ch/dvb-t2>

¹³ <https://www.acma.gov.au/sites/default/files/2019-08/ACMA-mandated%20EMC%20standards.pdf>

In addition to the comments above, we have noted that the “Remarks” column in the August 2019 version of the ACMA-mandated Electromagnetic Compatibility (EMC) standards is not fully developed.

We seek the ACMA’s assistance to complete the opportunity to inset additional remarks into the document. We believe that Standards Australia committee TE-003 may be interested in assisting with this task.

A.7 Staged approach to considering potential allocations

While some of the items on the ACMA’s spectrum work program may be influenced by external events, the 2020-21 work program and forward allocation plan, the bands and timing is essentially a national program. However, we note some of the bands under consideration for potential allocations may have the same spectrum stakeholders as potentially affected parties e.g. where current use is fixed point to point and multipoint links. We request the ACMA develop a timing sequence / schedule where the consultation for these bands e.g. within a Technical Liaison Group, do not clash in the same time frame.

The ACMA and the Australian radiocommunications sector’s most significant influences arise within the International Telecommunications Union and the relevant Study Groups to the specific sector. And with respect to technology trends and utilisation of radiofrequency spectrum the greatest influence are the Agenda Items of the World Radio Conferences.

The disruption caused by the current pandemic in the initiation of many of the studies for Agenda Items for WRC-23, the tenuous arrangements for meetings of the Study Groups and the resulting uncertainty of the ability of Australian delegates to participate effectively needs to be taken into consideration within the milestones / timelines for the ACMA’s proposed work program.

Free TV would also find it useful if the introductory section on the overview of the ACMA’s work found on page 39, which diagrammatically explains the four stages in ACMA’s spectrum management band planning, could be moved earlier in the document. It would also be useful for more detail to be provided in relation to the activities (and timing) that ACMA intends to undertake in those bands included under the *monitoring* stage.

Attachment A – Current composition of Australian television broadcaster’s 7MHz multiplexes - Metropolitan services

ABC	SBS	SEVEN	NINE	TEN
				
				
				
				

ABC

NEWS

ABC Dig Music
ABC Jazz

SBS

SBS
FOOD



SBS Arabic 24
SBS Radio 1
SBS Radio 2
SBS Radio 3
SBS Chilli
SBS Pop

SEVEN

7mate HD

open
shop

7
flix

RACING.COM

NINE

Life

Gem HD

RUSH

TEN



Attachment B - Current composition of Australian television broadcaster's 7MHz multiplexes - Regional and Remote services

ABC	SBS	Prime	WIN	Southern Cross Austereo	Imparja
					
					
					
					

ABC

SBS

Prime

WIN

Southern Cross
Austereo

NEWS



ABC Dig Music
ABC Jazz



SBS Arabic 24
SBS Radio 1
SBS Radio 2
SBS Radio 3
SBS Chilli
SBS Pop

