Proposal to vary the Wangaratta licence area plan

Consultation paper

DECEMBER 2024

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Executive summary

The ACMA is seeking comments on the proposed changes to the [Licence Area Plan – Wangaratta (Radio)](https://www.legislation.gov.au/F2005B00805/latest/text) (Wangaratta LAP).

We are proposing to vary the Wangaratta LAP to:

* Enable the commercial radio broadcasting service 3NE in the Wangaratta RA1 licence area to convert transmission from AM to FM.
* Make spectrum available for 4 new FM infill transmitters for the commercial radio broadcasting service 3NE to serve the Wangaratta RA1 licence area.
* Vary the technical specification for the existing 3NE AM Wangaratta transmitter so that the specification will cease to have effect 28 days after 3NE commences FM transmission.
* Vary the technical specification for the Wangaratta FM transmitter for commercial radio broadcasting service 3NNN so it can be co-located with the proposed 3NE FM Wangaratta transmitter.
* Vary the technical specification of the 3NNN FM transmitter at Bright to accommodate the AM to FM conversion of 3NE.
* Make other minor amendments.

# Issues for comment

We welcome your comments on the issues raised in this paper, or on any other issues relevant to this LAP variation.

You can find details on making a submission in the [Invitation to comment](#_Invitation_to_comment_1) section at the end of this document.

# Introduction

## Planning broadcasting services

Our broadcasting planning functions are set out in Part 3 of the *Broadcasting Services Act 1992* (the BSA). We promote the objects of the BSA (section 3), including the economic and efficient use of radiofrequency spectrum. We consider the planning criteria set out in section 23 of the BSA.

When planning analog broadcasting services, we refer to the [*ACMA approach to broadcast planning and varying LAPs*](https://www.acma.gov.au/broadcast-planning-resources), which provides an overview of the regulatory framework, policy objectives and planning process for analog broadcasting services.

Under section 26 of the BSA, we must, by legislative instrument, prepare   
LAPs that determine the number and characteristics, including technical specifications, of broadcasting services that are to be available in particular areas of Australia. The BSA also provides us with a discretionary power to vary LAPs.

## AM–FM conversions

Our published guidance entitled [*Principles for planning AM to FM conversions in regional licence areas*](https://www.acma.gov.au/publications/2017-11/guide/principles-planning-am-fm-conversions-regional-licence-areas) (AM–FM conversion principles) informs the way we resolve complex issues [regarding AM–FM conversions and infill transmitters for commercial radio broadcasting services](https://www.acma.gov.au/publications/2017-11/guide/am-fm-conversion-and-requests-fm-fill-transmitters).

We will continue to consider and progress current proposals for conversions in non-competitive markets, while we open the program for conversions in competitive areas so that more listeners can benefit. We expect to finalise the requests in non-competitive markets that are currently underway, and where appropriate spectrum has already been identified.

More information about the [AM–FM conversion principles](https://www.acma.gov.au/publications/2017-11/guide/principles-planning-am-fm-conversions-regional-licence-areas) can be found on   
our website.

## Overview of the WangarattaLAP

The Wangaratta LAP currently determines the licence areas of Wangaratta RA1, Wangaratta RA2 and Mount Beauty RA1.

The radio services planned in the Wangaratta LAP are:

* one national radio broadcasting service to serve Wangaratta
* 2 national radio broadcasting services to serve Mount Beauty
* 3 national radio broadcasting services to serve Bright
* one national radio broadcasting service to serve Myrtleford
* 2 commercial radio broadcasting services to serve the Wangaratta RA1 licence area
* one open narrowcasting service to serve the Wangaratta area within the Wangaratta RA1 licence area
* one community radio broadcasting service to serve the Mount Beauty RA1 licence area
* one community radio broadcasting service to serve the Wangaratta RA2 licence area.

# Proposal 1: commercial radio – Wangaratta RA1 licence area

## Summary

We propose to vary the Wangaratta LAP to:

* Allow the commercial radio broadcasting service 3NE in the Wangaratta RA1 licence area to convert transmission from AM to FM.
* Make spectrum available for an FM transmitter for 3NE to serve Wangaratta. The proposed technical specification will permit an FM transmitter to operate on frequency 92.1 MHz at 25kW maximum effective radiated power (ERP), with a omnidirectional antenna (OD) pattern and a maximum antenna height of 45 m from a new site at Emoleum site, 3 km north of Taminick Gap on the Warby Ranges (see [Appendix B1](#_B1:_3NE_FM)).
* Make spectrum available for 4 new FM infill transmitters at Wodonga, Bright, Myrtleford and Yarrawonga to provide extended coverage of 3NE. The proposed technical specifications will permit:
* An FM infill transmitter at Wodonga to operate on the frequency   
  93.7 MHz at 100W ERP, with an directional antenna (DA) pattern and   
  a maximum antenna height of 20 m from the Telstra Site Clubhouse, 10 Clubhouse Pl Wodonga (see [Appendix B2](#B2)).
* An FM infill transmitter at Bright to operate on the frequency 91.3 MHz at 50W ERP, with an OD pattern and a maximum antenna height of   
  20 m from the Telstra Site Apex Lookout Off Mount Porepunkah Road 1.5 km NE of Bright (see [Appendix B3](#B3)).
* An FM infill transmitter at Myrtleford to operate on the frequency 90.1 MHz at 50W ERP, with an OD pattern and a maximum antenna height of 15 m from Lookout Hill Lookout Road Myrtleford (see [Appendix B4](#B4)).
* an FM infill transmitter at Yarrawonga to operate on the frequency   
  88.9 MHz at 200W ERP, with an OD pattern and a maximum antenna height of 25 m from the Optus Site Yarrawonga 26 Belmore St Yarrawonga (see [Appendix B5](#B5)).
* Vary the technical specification for the existing 3NE AM Wangaratta transmitter, so that the specification ceases to have effect 28 days after 3NE commences FM transmission using the above technical specifications. This allows a 28-day simulcast period when both the AM and FM transmissions may operate. This simulcast period will assist the licensee to inform listeners of the change to its radio service (see [Appendix B6](#B6)).
* Vary the existing technical specification for the 3NNN Wangaratta FM tramsmitter to enable it to be co-sited with the proposed 3NE Wangaratta FM transmitter at Emoleum site, 3km north of Taminick Gap on the Warby Ranges. No further changes to the technical specifications for the 3NNN Wangaratta FM transmitter are proposed (see [Appendix C1](#C1)).
* Vary the frequency of 3NNN Bright infill transmitter from 92.1 MHz to 93.7 MHz to allow 92.1 MHz to be used for the proposed 3NE Wangaratta FM transmitter (see [Appendix C2](#C2)).

We consider that this proposal is an economic and efficient use of spectrum that promotes the objects of the BSA, particularly the availability of a diverse range of radio services and efficient broadcasting planning (paragraphs 3(1)(a) and (b) of the BSA). In putting this proposal forward, we have taken into account the planning criteria in section 23 of the BSA, especially the number of existing broadcasting services and demand for new services (paragraph 23(c)) and technical restraints relating to the delivery or reception of broadcasting services in the licence area (paragraph 23(e)).

## Background

The Wangaratta RA1 licence area includes:

* the urban centre of Wangaratta
* to the north, Yarrawonga, Bendalong, Corowa and Rutherglen
* to the east, Barnawatha, Beechworth, Myrtleford, Bright, Mount Beauty and Mount Hotham
* to the west, Benalla, Violet Town and Tungamah.

It also includes numerous sparsely-populated areas in the south east region of the Victorian high country.

The Wangaratta RA1 licence area’s northern border is adjacent to the Remote Commercial Radio Service Central Zone RA1 licence area. The Wangaratta RA1 licence area also shares a border, and overlaps with, the Albury RA1 licence area to the east and the Shepparton RA1 licence area to the west (see [Appendix A](#_Appendix_A:_appendix)). We have determined the population of the Wangaratta RA1 licence area to be 94,251.[[1]](#footnote-2)

### Commercial radio broadcasting services in Wangaratta

In the Wangaratta RA1 licence area, we have planned for:

* The commercial radio broadcasting service 3NE, with an AM transmitter serving Wangaratta, and FM transmitters serving Mount Beauty, Mount Buffalo and Mount Hotham
* The commercial radio broadcasting service 3NNN, with FM transmitters serving Wangaratta, Bright and Mount Beauty.

Both commercial radio broadcasting services planned in the Wangaratta RA1 licence area are licensed to North East Broadcasters Pty Ltd (a subsidiary of the ACE Radio Network).

The AM transmitter for 3NE Wangaratta is planned to operate on 1566 kHz with a maximum cymomotive force (CMF) of 1.3 kV and a DA pattern. The nominal location of the transmitter is at Broadcast site, Wangaratta, which serves the general Wangaratta area. 3NE has 3 additional planned and operating FM infill transmitters, one at Mount Beauty on 90.1 MHz with an ERP of 10 W, a second at Mount Buffalo on 99.1 MHz with an ERP of 200 W and a third at Mount Hotham on 89.3 MHz with an ERP of 200 W.

The main FM transmitter for 3NNN is planned to operate on 102.1 MHz, with a maximum ERP of 25 kW and a DA pattern. The nominal location of the transmitter is Broadcast Site Mount Stanley, which serves the general Wangaratta area. 3NNN has 2 additional planned and operating infill transmitters, one at Bright operating on 92.1 MHz with an ERP of 50W and the other at Mount Beauty on 93.3 MHz with an ERP of 10W.

## AM–FM conversion of 3NE

### Coverage analysis of 3NE

Coverage modelling shows that the 3NE AM Wangaratta transmitter provides daytime coverage of approximately 81,265[[2]](#footnote-3) people within the Wangaratta RA1 licence area, or approximately 92% of the population of the Wangaratta RA1 licence area.[[3]](#footnote-4) Coverage also extends beyond the licence area boundary into adjacent licence areas (see ‘Overspill analysis’).

When considering the predicted coverage of the proposed 3NE FM Wangaratta transmitter, combined with 5 repeaters, coverage loss is predicted to affect between 5,790 and 6,600 people, or between 7 and 8% of the population receiving the 3NE AM transmission within the Wangaratta RA1 licence area.[[4]](#footnote-5) Coverage loss is predicted to affect scattered populations in areas with low population density at the periphery of the licence area.

### Overspill analysis 3NE FM services

An analysis of the predicted signal overspill from the existing and proposed 3NE FM transmitters indicates there will be a reduction in overspill into adjacent licence areas, compared with existing AM transmission overspill.

Coverage modelling shows that the proposed 3NE FM Wodonga transmitter may have potential overspill of between approximately 7,410 and 9,530 people[[5]](#footnote-6) in the Albury RA1 licence area. The signal overspill (coverage beyond the Wangaratta RA1 licence area) is caused as a result of serving the Wangaratta RA1 licence area.

The [ACMA’s approach to broadcast planning and varying licence area plans](https://www.acma.gov.au/am-fm-conversions) states that we do not afford planning protection to fortuitous reception. We note there may be some population in Albury, Shepparton and Deniliquin RA1 licence areas who may lose fortuitous reception of 3NE following conversion from AM to FM. These listeners should be able to access their local services planned in their respective licence areas.

### Interference analysis

Interference analysis predicts that the potential for interference from the proposed 3NE FM Wangaratta transmitter to services in neighbouring licence areas is mostly low. In most circumstances where some interference has been identified, it is likely to be in areas where alternative reception is available from other FM transmitters providing either the same or similar programming in the respective licence areas.[[6]](#footnote-7)

There is potential for the proposed 3NE FM Wangaratta transmitter to cause very low level interference to the reception of the community radio broadcasting service in Hay (2HAY).[[7]](#footnote-8) As the interference counts are significantly small based on predictions only, there is little likelihood of the interference potential being realised and therefore a reduction in ERP of a 25 kW OD Wangaratta transmission is not considered necessary.

The proposed 3NE FM Wangaratta transmitter, operating on 92.1 MHz, is predicted to receive interference from other broadcasting services, which may affect between approximately 1,430 and 2,580 people.[[8]](#footnote-9) Most of the areas affected by interference within the 0.5 mV/m contour (rural coverage) of the 3NE AM Wangaratta transmitter will receive alternative coverage from commercial radio broadcasting services in the Shepparton and Albury RA1 licence areas.

## Varying 3NNN

3NNN operates 3 FM transmitters serving the wider Wangaratta area, and the Bright and Mount Beauty areas. The transmitter that serves the wider Wangaratta area is currently planned to operate on 102.1 MHz with a maximum ERP of 25 kW and a DA pattern, from the nominal location of Broadcast Site Mount Stanley at an antenna height of 40 m.

The licensee has requested that the technical specification for the 3NNN Wangaratta transmitter be varied so that it can be co-sited with the proposed 3NE FM Wangaratta transmitter at Emoleum site, 3 km north of Taminick Gap in the Warby Ranges, approximately 55 km west of the currently planned broadcast site at Mount Stanley.

The 3NNN Bright FM transmitter requires a change in frequency from 92.1 MHz to 93.7 MHz, to enable the use of 92.1 MHz for the AM to FM conversion of 3NE.

### Coverage analysis of the proposed 3NNN Wangaratta transmitter

The 3NNN Wangaratta transmitter has a similar technical specification to that proposed for the 3NE Wangaratta FM transmitter. It is predicted that the Wangaratta RA1 licence area coverage of the 3NNN Wangaratta FM transmitter with the proposed modified technical specification (change in site) would be similar to the proposed 3NE Wangaratta FM transmitter. It is predicted that he coverage will not be similar to the existing coverage of the 3NNN transmitter at Mt Stanley.

### Interference analysis of 3NNN Bright transmitter

Interference analysis predicts that the potential for interference from the proposed 3NNN Bright FM transmitter (changing frequency to 93.7 MHz) to services in neighbouring licence areas is low. There is some potential for interference to the 3SUN transmitters at Alexandria/Eildon and Yea. Where some interference has been identified, it is likely listeners in those areas will have reception of alternative 3SUN transmissions.

## Preliminary view

We consider the proposal to vary the Wangaratta LAP by:

* converting 3NE from AM to FM transmission, and moving the 3NE Wangaratta transmitter to a new site
* making spectrum available for 4 new 3NE FM infill transmitters at Wodonga, Bright, Myrtleford and Yarrawonga
* varying the technical specifications of the 3NNN Wangaratta transmitter (change of site)
* varying the technical specifications of the 3NNN Bright transmitter (change of frequency)

to be an efficient and effective use of spectrum. The proposal promotes the objects of the BSA, especially paragraph 3(1)(a), by continuing to provide a significant proportion of the population of Wangaratta and surrounding areas with a diverse range of radio services.

# Proposal 2: minor amendments

We propose to make the following minor amendments to the text, schedules and attachments of the Wangaratta LAP:

* Change Australian Map Grid references to Geocentric Datum of Australia (GDA94) coordinates, which is the current standard reference for LAPs.
* Remove references to the Broadcasting Services (Technical Planning) Guidelines 2017 from attachments and place a reference in a substantive clause at the start of the LAP. These changes are not intended to affect the operation of the LAP.
* Make consequential amendments to schedules as a result of amendments to the attachments.

# Invitation to comment

## Making a submission

We invite comments on the issues set out in this consultation paper.

[Online submissions](https://www.acma.gov.au/have-your-say) can be made by uploading a document. Submissions in PDF, Microsoft Word or Rich Text Format are preferred.

Submissions by post can be sent to:

The Manager

Broadcasting Carriage Policy Section

Australian Communications and Media Authority

PO Box 78

Belconnen ACT 2616

The closing date for submissions is **COB, Friday 17 January 2025**.

Consultation enquiries can be emailed to [BCP@acma.gov.au](mailto:BCP@acma.gov.au).

#### Publication of submissions

We publish submissions on our website, including personal information (such as names and contact details), except for information that you have claimed (and we have accepted) is confidential.

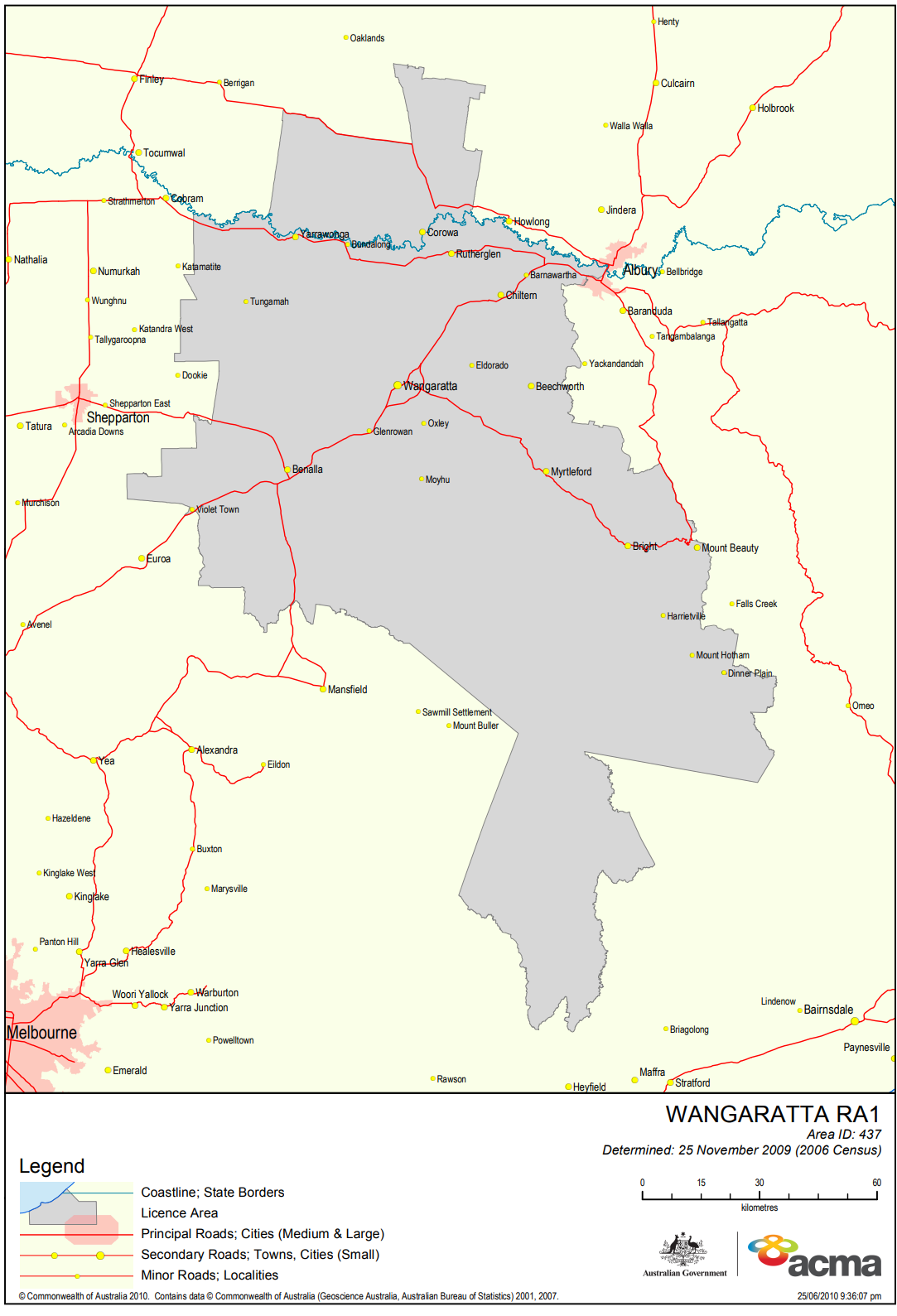
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# Appendix A: Wangaratta RA1 licence area

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# Appendix B: Proposed or updated technical specifications for 3NE

**B1: 3NE FM transmitter at Wangaratta**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Wangaratta (VIC)

Service Licence Number : SL10398

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS12000672

***Transmitter Site :-***

Nominal location : Emoleum Site 3km North of TAMINICK GAP

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.384372 146.205317

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 92.1 MHz

Polarisation : Mixed

Maximum antenna height : 45 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| At all angles of azimuth | 25 kW |

**B2: 3NE infill transmitter at Wodonga**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Wodonga (VIC)

Service Licence Number : SL10398

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS 12001166

***Transmitter Site :-***

Nominal location : Telstra Site Clubhouse 10 Clubhouse Pl West WODONGA

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.121088 146.844918

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 93.7 MHz

Polarisation : Mixed

Maximum antenna height : 20 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| 0°T - 75°T | 100 W |
| 75°T - 175°T | 10 W |
| 175°T - 360°T | 100 W |

***Advisory Note :-***

Any transmission in accordance with this specification is planned on the basis that it will be protected to a minimum median field strength level of 66 dBµV/m against interference from other broadcasting services.

**B3: 3NE infill transmitter at Bright**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Bright (VIC)

Service Licence Number : SL10398

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS12000756

***Transmitter Site :-***

Nominal location : Telstra Site Apex Lookout    
 off Mount Porepunkah Road  1.5 km NE of BRIGHT

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.715908 146.97284

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 91.3 MHz

Polarisation : Mixed

Maximum antenna height : 20 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| At all angles of azimuth | 50 W |

***Advisory Note :-***

Any transmission in accordance with this specification is planned on the basis that it will be protected to a minimum median field strength level of 66 dBµV/m against interference from other broadcasting services.

**B4: 3NE infill transmitter at Myrtleford**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Myrtleford (VIC)

Service Licence Number : SL10398

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS 1137991

***Transmitter Site :-***

Nominal location : Lookout Hill Lookout Road MYRTLEFORD

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.560733 146.734905

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 90.1 MHz

Polarisation : Mixed

Maximum antenna height : 15 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| At all angles of azimuth | 50 W |

***Advisory Note :-***

Any transmission in accordance with this specification is planned on the basis that it will be protected to a minimum median field strength level of 66 dBµV/m against interference from other broadcasting services.

**B5: 3NE infill transmitter at Yarrawonga**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Yarrawonga

Service Licence Number : SL10398

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS 12001167

***Transmitter Site :-***

Nominal location : Optus Site Yarrawonga 26 Belmore St  YARRAWONGA

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.009586 146.004861

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 88.9 MHz

Polarisation : Mixed

Maximum antenna height : 25 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| At all angles of azimuth | 200 W |

***Advisory Note :-***

Any transmission in accordance with this specification is planned on the basis that it will be protected to a minimum median field strength level of 66 dBµV/m against interference from other broadcasting services.

## B6: 3NE AM transmitter at Wangaratta

**LICENCE AREA PLAN : Wangaratta Radio**

Category : Commercial

General Area Served : Wangaratta (VIC)

Service Licence Number : SL10398

**TECHNICAL SPECIFICATION - AM Radio**

Specification Number : TS10003789

***Transmitter Site :-***

Nominal location : Broadcast Site WANGARATTA

Nominal Co-ordinates Latitude Longitude

(GDA94) : -36.313194 146.372064

***Emission :-***

Frequency Band & Mode : MF-AM

Carrier Frequency : 1566 kHz

***Output Radiation Pattern :-***

|  |  |  |
| --- | --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Elevation** | **Maximum CMF** |
| 0°T - 45°T | 0 | 500 V |
| 30°T - 30°T | 0 | 160 V |
| 35°T - 35°T | 0 | 80 V |
| 45°T - 330°T | 0 | 1.3 kV |
| 66°T - 66°T | 0 | 1.1 kV |
| 104°T - 104°T | 0 | 160 V |
| 105°T - 105°T | 0 | 80 V |
| 269°T - 269°T | 0 | 80 V |
| 330°T - 360°T | 0 | 1.3 kV |
| 339°T - 339°T | 0 | 80 V |

***Notes :-***

The CMF at all elevations is not to exceed the specified CMF at 0 degrees elevation for all angles of azimuth.

***Availability of TS10003789:-***

TS10003789 ceases to be available for SL10398 28 days after the first day on which the service provided under SL10398 is transmitted by transmitter TS12000672.

# Appendix C: Proposed updated technical specifications for 3NNN

**C1: 3NNN transmitter at Wangaratta**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Wangaratta (VIC)

Service Licence Number : SL10391

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS12000757

***Transmitter Site :-***

Nominal location : Emoleum Site 3km North of TAMINICK GAP

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.384372 146.205317

*2017*

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 102.1 MHz

Polarisation : Mixed

Maximum antenna height : 45 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| At all angles of azimuth | 25 kW |

***Special Condition :-***

The provision of a service under SL10391 by transmitter TS12000757 shall not commence until the Wangaratta service under SL10391 permitted by transmitter TS10005811 has ceased.

**C2: 3NNN transmitter at Bright**

**LICENCE AREA PLAN :** **Wangaratta Radio**

Category : Commercial

General Area Served : Bright (VIC)

Service Licence Number : SL10391

**TECHNICAL SPECIFICATION - FM Radio**

Specification Number : TS12000755

***Transmitter Site :-***

Nominal location : Telstra site Apex Lookout off  Mount  
Porepunkah Rd  1.5 km NE of BRIGHT

Nominal Co-ordinates Latitude Longitude   
(GDA94) : -36.715908 146.97284

***Emission :-***

Frequency Band & Mode : VHF-FM

Carrier Frequency : 93.7 MHz

Polarisation : Mixed

Maximum antenna height : 20 m

***Output Radiation Pattern :-***

|  |  |
| --- | --- |
| **Bearing or Sector (Clockwise direction)** | **Maximum ERP** |
| At all angles of azimuth | 50 W |

***Advisory Note :-***

Any transmission in accordance with this specification is planned on the basis that it will be protected to a minimum median field strength level of 66 dBµV/m against interference from other broadcasting services.

1. Section 30 of the BSA provides that the ACMA, having regard to the census data prepared by the ABS, may determine the population of a licence area. We last determined the population of the Wangaratta RA1 licence area in 2023 to be 94,251, using 2021 Census population data. [↑](#footnote-ref-2)
2. Population figure is estimated using the AM with 54 dBuV/m contour and 2016 ABS Census data. [↑](#footnote-ref-3)
3. Comparison of the population of the AM coverage within 54 dBuV/m contour and the determined population for Wangarrata RA1. [↑](#footnote-ref-4)
4. CRC Predict and ITU 1546-1, respectively. The repeaters in Bright, Mount Buffalo, Myrtleford, Wodonga and Yarrawonga contribute to coverage within the 0.5 mV/m contour and have been considered for the coverage loss assessments.The existing Mount Beauty and Mount Hotham FM repeaters provide extended coverage to centres outside the 3NE Wangaratta AM coverage and therefore have not been included in the numbers provided for predicted FM coverage. [↑](#footnote-ref-5)
5. ITU 1546-1 and CRC Predict, respectively (based on DA pattern and > 66 dBuV/m). [↑](#footnote-ref-6)
6. The proposed 3NE FM Wangaratta transmitter has potential to cause interference to 2XXL Thredbo, 3BDG Bendigo and 3ZZZ Melbourne. [↑](#footnote-ref-7)
7. A detailed margin assessment indicates that the proposed 25 kW (OD) Wangaratta transmission is predicted to cause interference to reception of 2HAY for between 13 and 16 people (ITU-R 1546-1 and CRC predict models respectively). Within the suburban grade of coverage, between zero and 3 people are predicted to receive interference (ITU-R 1546-1 and CRC predict models respectively). The population of Hay based on 2016 Census data is 2406. [↑](#footnote-ref-8)
8. Potential for co-channel and adjacent channel interference is between 1,443 people (CRC Predict) and 2,577 people (ITU 1546-1). The Bright, Mount Buffalo, Myrtleford, Yarrawonga and Wodonga repeaters contribute coverage to the areas within the 0.5 mV/m contour and therefore have been considered for the coverage loss assessments. [↑](#footnote-ref-9)