

Antenna survey report

Summary of the 2022 household TV antenna survey – Victoria

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Executive summary

Background

Household television antenna surveys were conducted in Victoria between June and September 2022 by an external provider under contract to the ACMA. The surveys were conducted in the areas around local repeaters in the Melbourne TV1 metro licence area and 2 additional sites outside the metro licence areas, Lorne and Wye River. The key objective of this exercise was to identify areas where viewer households predominantly point their antennas to the local repeaters instead of the main transmitter. This would give an indication of the number and location of households using the local repeaters for the reception of terrestrial television services, which would potentially be affected by any changes to channel arrangements at those sites.

The survey areas included:

1. inner city suburbs around Melbourne Inner Suburbs and South Yarra repeaters
2. several suburbs in Mount Dandenong area, where Ferntree Gully, Upwey, Selby and Monbulk repeaters are located
3. the Mornington Peninsula and surrounding areas, around Safety Beach and Rosebud local repeaters
4. the Geelong area, where the medium power local Geelong repeater is operating
5. several areas along the Great Ocean Road, which are generally served by the local Anglesea/Aireys Inlet, Lorne and Wye River sites
6. areas in and around Healesville, Marysville and Warburton, where the 3 local repeaters are also operating in each of these towns.

We determined the general size and location of the survey areas using computer modelling and the 'best server' approach, that is, identifying areas where local repeaters provide better coverage (in terms of the signal strength), compared to the main Melbourne site. Detailed survey planning and implementation considerations were determined by the contractor undertaking the surveys.

The survey results collected a large amount of data and descriptive information about viewer antenna pointing behaviour, which is presented in detail in this report.

Findings

The survey's findings were broadly consistent with the expected pointing behaviour of household antenna based on our computer-generated predictions.

However, a key observation is that in many of the surveyed areas viewers are still predominantly relying on coverage from the main high-power Melbourne (Mount Dandenong) site, even in some areas where predictions show that the local repeater may provide a stronger signal.

The proportion of antennas pointing to the local repeater was found to decrease with the distance from the repeater site. In some cases, antenna pointing choices are

possibly due to historical reasons, that is, some antennas were installed before the new repeater sites were established.

In areas with known reception issues from the main sites, for example, due to terrain obstructions or tall buildings, it was observed that household antennas were pointed towards the local repeater. Household antennas pointing to local repeaters in suburbs at the Mount Dandenong foothills, South Yarra and few surrounding suburbs, Safety Beach, Anglesea, Lorne, Wye River, Healesville, Marysville, Warburton, and some areas east of Geelong. In all these areas coverage from the main Melbourne site is obstructed due to terrain to some extent.

In the inner Melbourne suburbs west of the CBD and in the inner Geelong suburbs, an increase in antennas pointing towards local repeaters was observed. However, the antennas in these areas were still predominantly pointing to the main Melbourne site.

In some areas, particularly around Geelong, households in the newer housing developments tended to point their antennas towards the local repeaters, and this trend is expected to continue with the new developments, or as existing antenna installations are replaced due to old age and/or corrosion.

In the majority of the surveyed areas, most of the antennas observed were installed at roof height (nominally at 5 m) or lower. However, numerous masthead amplifiers and very tall antenna installations were observed across Geelong and the wider Geelong area, typically at 5 to 10 m in height. In the suburbs west of the Melbourne CBD and Portsea an equal proportion of antennas were observed installed at roof height (nominally at 5 m) and at 10 m above the ground level.

Detailed description and survey results for the Victorian survey areas are presented in separate sections in this report.

1. Introduction

The ACMA has conducted a survey of households' television (TV) antenna type (VHF and/or UHF), orientation and height in identified areas. The aim of this work is to support the evidence base for the considerations of the potential impact to consumers under different TV channel planning scenarios that may arise from a potential future restack channel planning exercise to support terrestrial television technology transition.

This work is one component of technical research conducted under the Television Research and Policy Development Program¹. This work was also foreshadowed in the [Five-year spectrum outlook 2022–27](#) and 2022-23 work program.

The work program consists of preparatory activities to ready the ACMA to undertake TV channel replanning activities, if required to support possible future government policy decisions that may require replanning of TV channels.

An approach to market for antenna surveys in Victoria, New South Wales and Queensland was advertised on 11 March 2022 with responses closing on 11 April 2022. The contractor engaged was Erkmar Australia Pty Ltd.

The surveys in Melbourne and surrounding areas of Victoria commenced in June 2022 and were completed in September 2022. This report provides a summary of the results of the surveys conducted in Victoria.

Purpose and scope

The purpose of this work was to survey households' TV antenna type, orientation and height in identified survey areas.

The aim was to inform a reliable estimation of:

- > the number and location of the households in a particular survey area that rely on (point their antenna to) the local TV transmission (repeater) sites versus the main TV site for TV reception
- > In the case of areas covered by a single frequency network (SFN), the number and location of households that rely on (point their antenna to) a particular TV transmission site (within a SFN) for TV reception.

The Melbourne TV1 licence area is predominantly served by the high-power main Melbourne VHF transmitter operation on TV channel Block A, which is located on the top of Mount Dandenong². However, there are lower-power metro repeaters located around Melbourne TV1 licence area, which are used to address local coverage issues.

The survey included areas around local metro repeaters within the Melbourne TV1 licence area³. It also included areas being served by Wye River and Lorne repeaters, which are outside the Melbourne TV1 licence area.

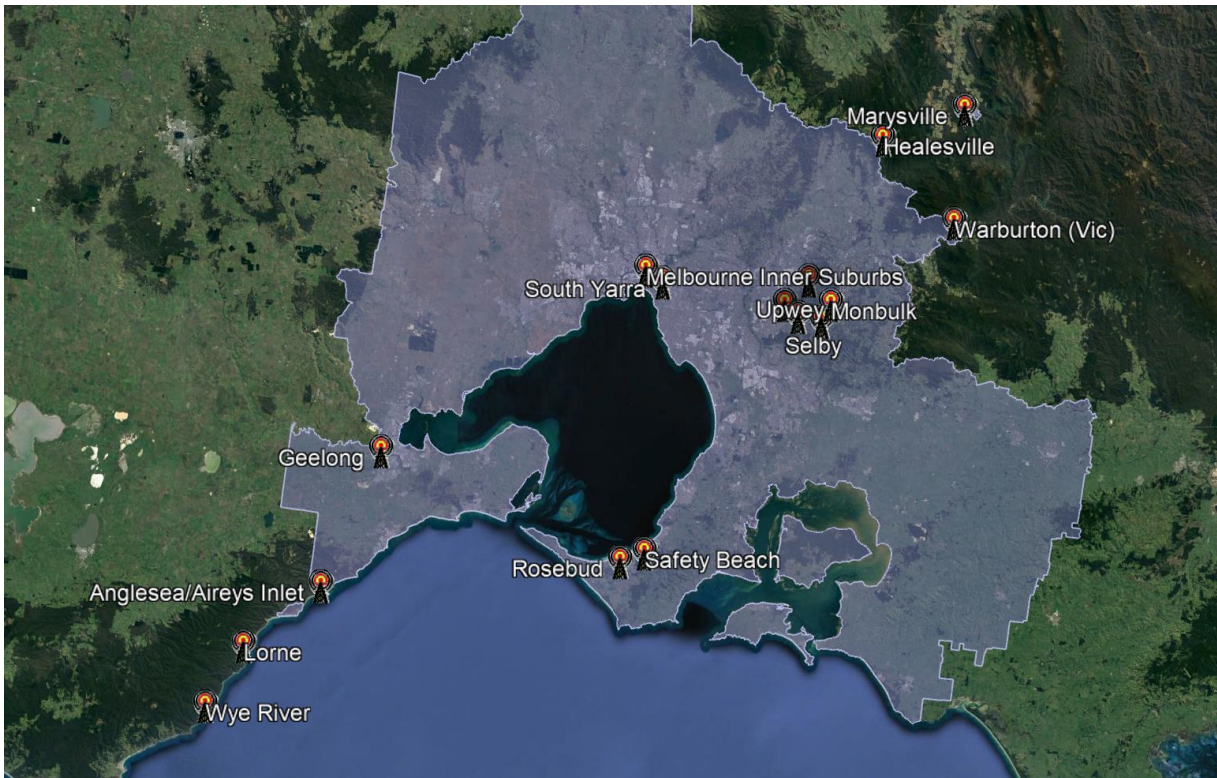
¹ [Budget Paper No. 2](#), 2022-23 (p. 145) included in the [Appropriation Bill \(No. 3\) 2021-22](#) (p. 61)

² All TV towers from which TV services are being broadcast are on the top of Mount Dandenong and they are all referred to as the main Melbourne (Mt Dandenong) site in this report.

³ Details of broadcasting licence areas are available on the [ACMA website](#).

Wye River is an out of area retransmission site⁴, and as such it was also included in the survey as a natural part of the general area. The Lorne transmitter, which is located between Anglesea/Aireys Inlet (metro) and Wye River sites, was also included in the survey. The sites which were included in the studies are shown in Figure 1. The list of the sites and the corresponding survey areas is shown in Table 1.

Figure 1: TV broadcast transmission sites included in the household antenna survey in Victoria (shaded area is the Melbourne TV1 licence area)



⁴ Out-of-area retransmission is retransmission of programs of a commercial broadcasting service or community broadcasting service outside the relevant commercial or community broadcasting licensee's licence area.

Table 1: List of survey areas in Victoria

Local transmission (repeater) site	TV Channel Block	Surveyed areas
Melbourne Inner Suburbs	Block D (SFN with South Yarra)	As in Figure 2.
South Yarra	Block D (SFN with Melbourne Inner Suburbs)	
Ferntree Gully	Block D	Boronia, Ferntree Gully, Upper Ferntree Gully, Upwey, Belgrave, Selby, Monbulk, Lysterfield, Emerald. (Figure 5)
Monbulk	Block E	
Upwey	Block C (SFN with Selby)	
Selby	Block C (SFN with Upwey)	
Geelong	Block E	
Rosebud	Block D (SFN with Safety Beach)	Safety Beach, Mount Martha, Dromana, Rosebud, Rye, Blairgowrie, Sorrento, Portsea (Figure 12)
Safety Beach	Block D (SFN with Rosebud)	
Anglesea / Aireys Inlet	Block B	Anglesea, Aireys Inlet, Fairhaven, Lorne, Wye River (Figure 15)
Lorne (regional)	Block C	
Wye River	Block C	
Healesville	Block C (SFN with Warburton)	Healesville, Chum Creek, Badger Creek (Figure 18)
Marysville	Block C	Marysville (Figure 19)
Warburton	Block C (SFN with Healesville)	Warburton, East Warburton, Millgrove (Figure 20)

Methodology

Surveys were performed by the contractor physically visiting the identified survey areas and visually observing and collecting household antenna data. The data was obtained by counting types (for example, UHF or VHF), height and orientations of antennas across identified survey areas. Where possible the use of mast head amplifiers was also recorded. The surveys have been conducted by experienced antenna installers with detailed knowledge about the survey areas.

The original sample size (of households to observe in each survey area) was generally determined based on the estimated number of dwellings in each individual survey area and using 95% confidence level⁵ and 5% confidence interval⁶.

Individual survey areas generally comprised either of individual suburbs, parts of suburbs, or several suburbs grouped together. In some cases, the sample size was adjusted by the contractor in consultation with the ACMA due to a number of factors, with the most common being proportion estimate and visibility/accessibility of the antennas. Proportion estimates were generally based on prior knowledge about antenna orientation in an area, either from the surveyor's experience, or general visual observation of the area (for example, driving around the suburb before the survey was conducted). MySwitch information and the ACMA-produced coverage and best server predictions were also used to inform the survey planning. In some cases where an area had a small number of dwellings (generally about a couple of hundred dwellings), the sample size was generally reduced to a number that, based on the surveyor's estimate would be sufficient to represent the area.

In addition to the numerical data, descriptive information was provided for all survey areas, including general descriptions of the survey areas and any relevant observations, such as:

- > the size of the area surveyed
- > how representative the area is
- > the impression about the direction the antennas were generally pointing
- > the impression whether the viewers 'try hard' to get the reception based on the general antenna heights.

The surveys also provided other observations such as:

- > geography of the area (flat, hilly, valley, etc)
- > clutter (trees, type of buildings in the area, any other specifics)
- > any parts of the surveyed area with arrangements different from the rest of the area
- > a general impression about the survey.

All the survey results for each survey areas as per Table 1 are presented in the corresponding sections of this report and they are compared with the best server computer-based predictions. Best server predictions are plots which show, for each transmitter, in which areas they provide the strongest signal (that is, they are the best server in that particular area, compared to all other transmitters that could potentially provide the coverage in that area). In addition, the descriptive summary about the general and specific observations are also provided for each area under survey results in each section of this report. It should be noted that the survey findings were based on the external observations only and therefore, no information was obtained about whether the antennas were functional and in use.

⁵ This is the level of certainty with which the true population value is estimated.

⁶ This is the desired level of accuracy of the estimate.

2. Melbourne Inner Suburbs and South Yarra areas

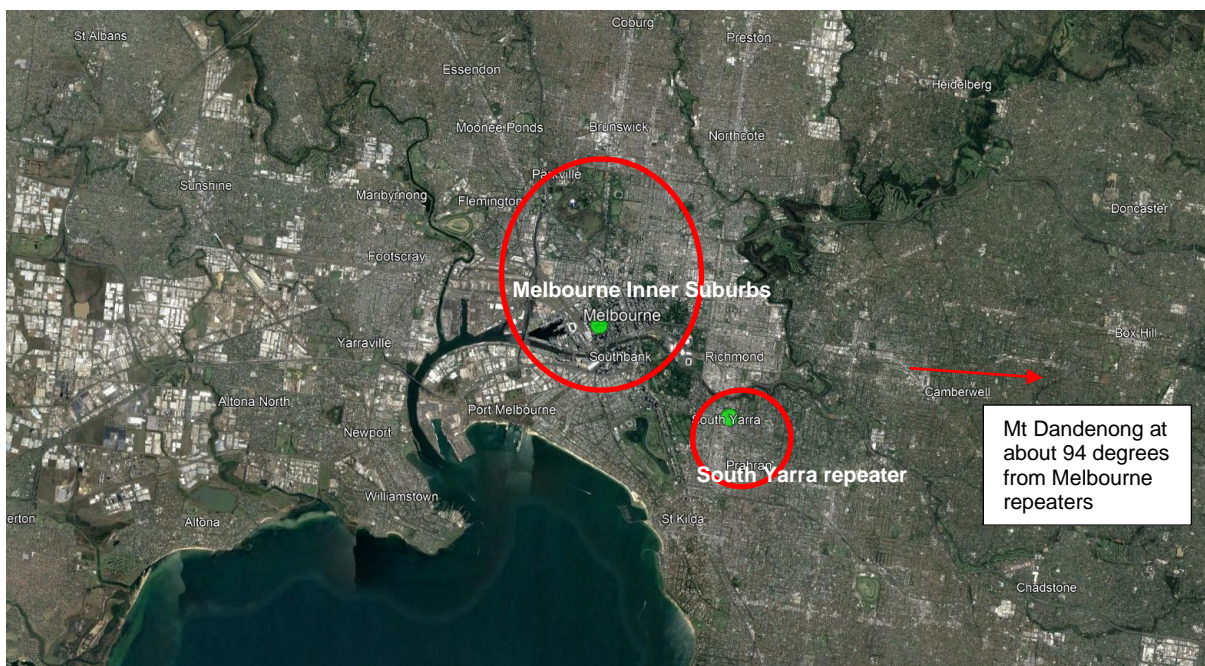
Overview

The main Melbourne (Mt Dandenong) site (operating in VHF on Block A) is located about 33 km in the eastward direction from the Melbourne CBD and it is predicted to provide generally very good coverage in the central Melbourne area.

Melbourne Inner Suburbs repeater is located on Bourke place in the Melbourne CBD and its goal is to provide coverage in inner Melbourne areas where the coverage from the main Melbourne (Mt Dandenong) site may be deficient particularly due to obstructions caused by the tall buildings in the inner Melbourne area. South Yarra repeater is located on Como building in South Yarra, and it operates in a Single Frequency Network with the Melbourne Inner Suburbs repeater on Block D. These 2 repeaters were planned on the basis that their coverage will be protected to within suburban level reception against interference from other broadcasting services.

The survey area for these 2 sites is shown in Figure 2. The area was identified using the best server approach, that is, identifying areas where the local repeaters provide strongest signal compared to the main Melbourne (Mt Dandenong) site. The suburbs with tall buildings were generally more difficult to survey due to limited visibility of the antenna systems, whereas those suburbs where the dwellings are not as tall were easier to survey. These were generally the suburbs which are further away from the CBD. A total of 41 suburbs/local areas were surveyed with an overall sample size of around 7,200 antennas counted.

Figure 2: Repeaters (green dots): Melbourne Inner Suburbs and South Yarra repeaters; survey areas (red ovals)



Survey results

Survey results for the Melbourne Inner Suburbs and South Yarra areas are shown in Figure 3 and are overlaid on the best server plot. The actual percentage breakdowns corresponding to the results in Figure 3 are presented in Figure 4.

It can be observed that in the inner-city area households receive reception from the main Melbourne (Mt Dandenong) site. An increase in the number of single UHF antennas pointing towards the Melbourne Inner Suburbs repeater was observed in the areas west of the CBD, which may be expected since the reception from the main site in these areas may be obstructed by tall buildings in the Melbourne CBD and surrounding areas.

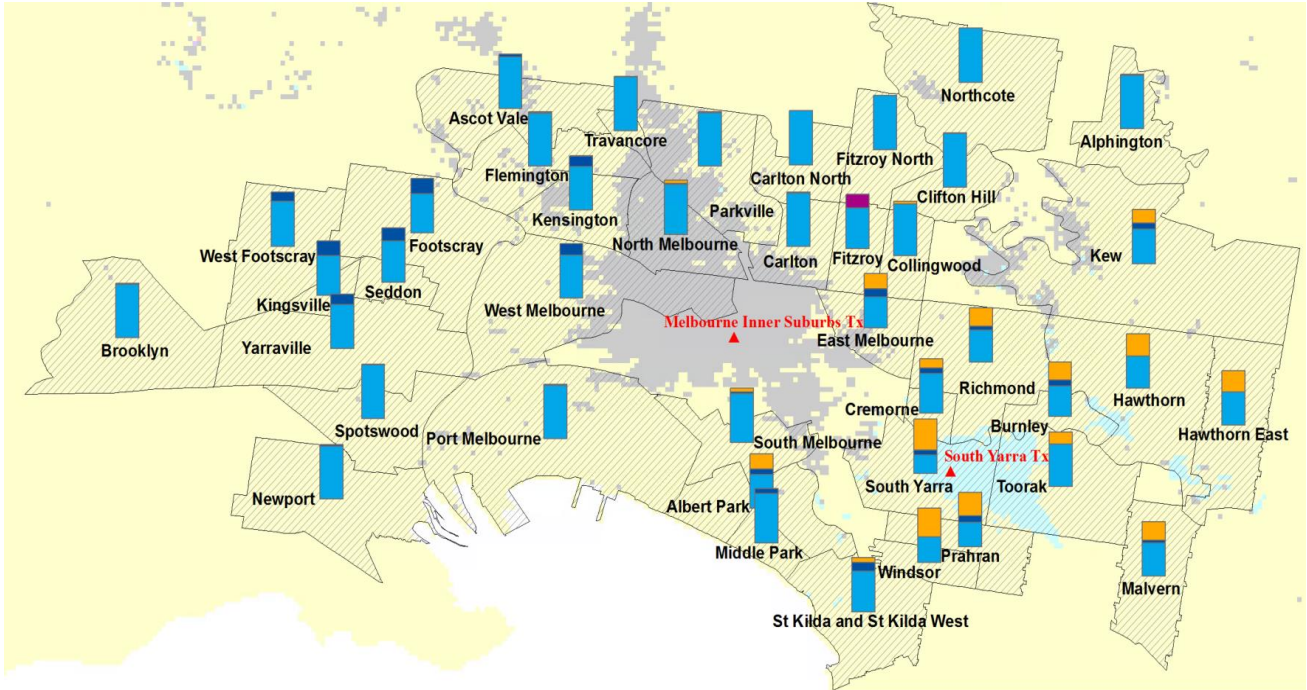
The suburbs where such an increase was observed include West Melbourne, Kensington, Footscray, West Footscray, Seddon, Kingsville and Yarraville. However, even in those areas it was observed that households mainly receive their reception from the main Melbourne (Mt Dandenong), which is reflected through the percentage of individual VHF antennas installed.

In the areas west of the CBD, both the Melbourne Inner Suburbs UHF site and the main Melbourne (Mt Dandenong) site are located in a similar direction (at a similar bearing) and therefore for those households using both VHF and UHF antenna systems, generally it would not be possible to determine via a visual inspection which site is being used for TV reception.

In the southern and south-eastern parts of the survey area, an increase in the UHF antennas pointing towards the South Yarra repeater was observed. In some areas such as South Yarra, Windsor and Prahran, it appears that households mainly use this site to get their TV reception. In areas east of this repeater such as Richmond, Burnley and Hawthorn, a significant percentage of households have their UHF antennas also pointing to this site.

In the suburbs west of the CBD an equal proportion of antennas were observed installed at roof height (nominally at 5 m) and at 10 m above the ground level. In all other surveyed Melbourne Inner Suburbs and South Yarra areas the majority of the antennas were observed installed at roof height (nominally at 5 m) or lower.

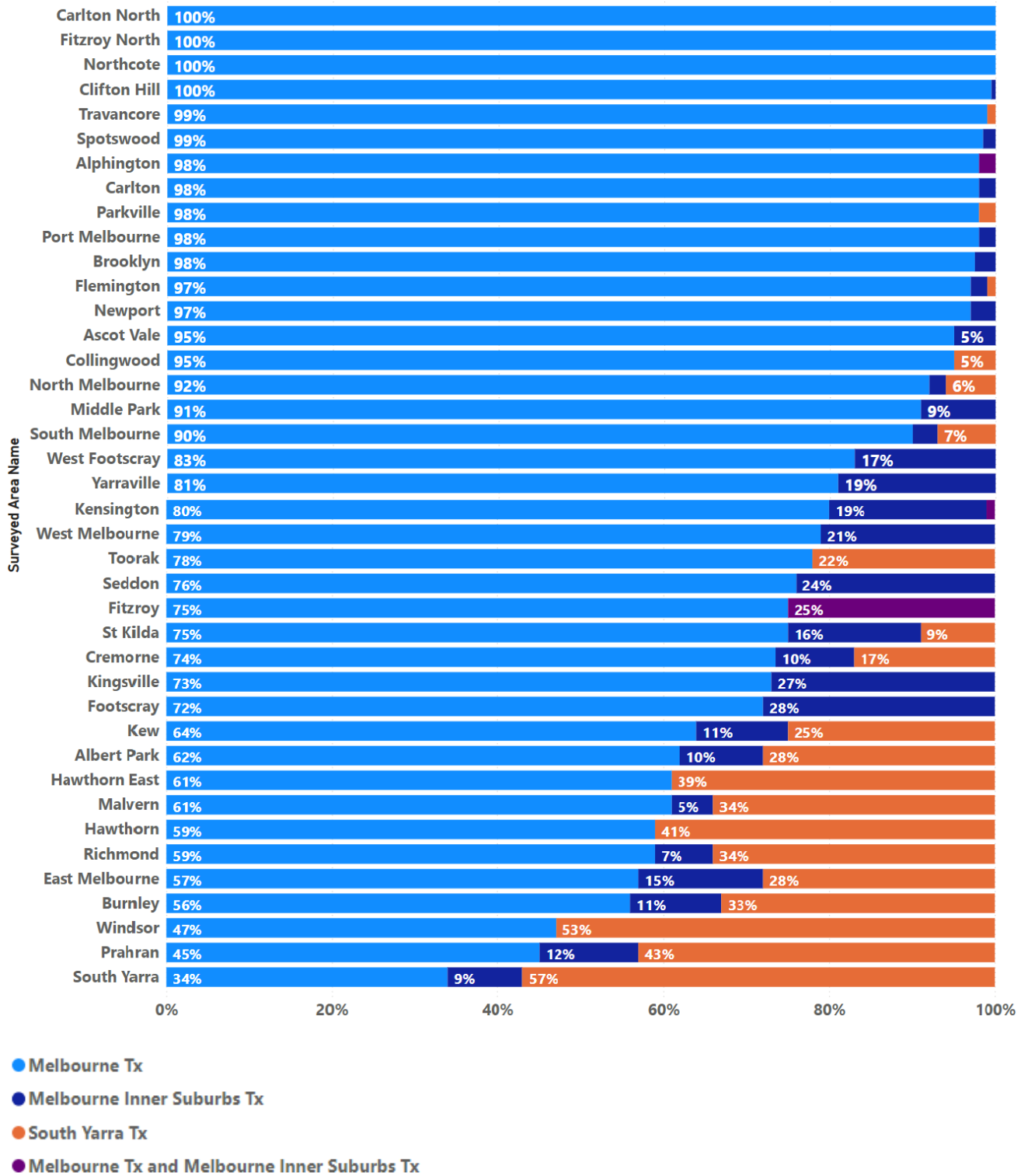
Figure 3: Survey results overlaid on the coverage predications plot - Melbourne Inner Suburbs/South Yarra area. Coverage prediction background colour code: Yellow – Melbourne (Mt Dandenong), Grey – Melbourne Inner Suburbs and Blue – South Yarra.



Legend

- Melbourne Tx and Melbourne Inner Suburbs Tx
- South Yarra Tx
- Melbourne Inner Suburbs Tx
- Melbourne Tx

Figure 4: Percentage breakdown (rounded to the nearest percent) for each suburb in the survey area – Melbourne Inner Suburbs/South Yarra



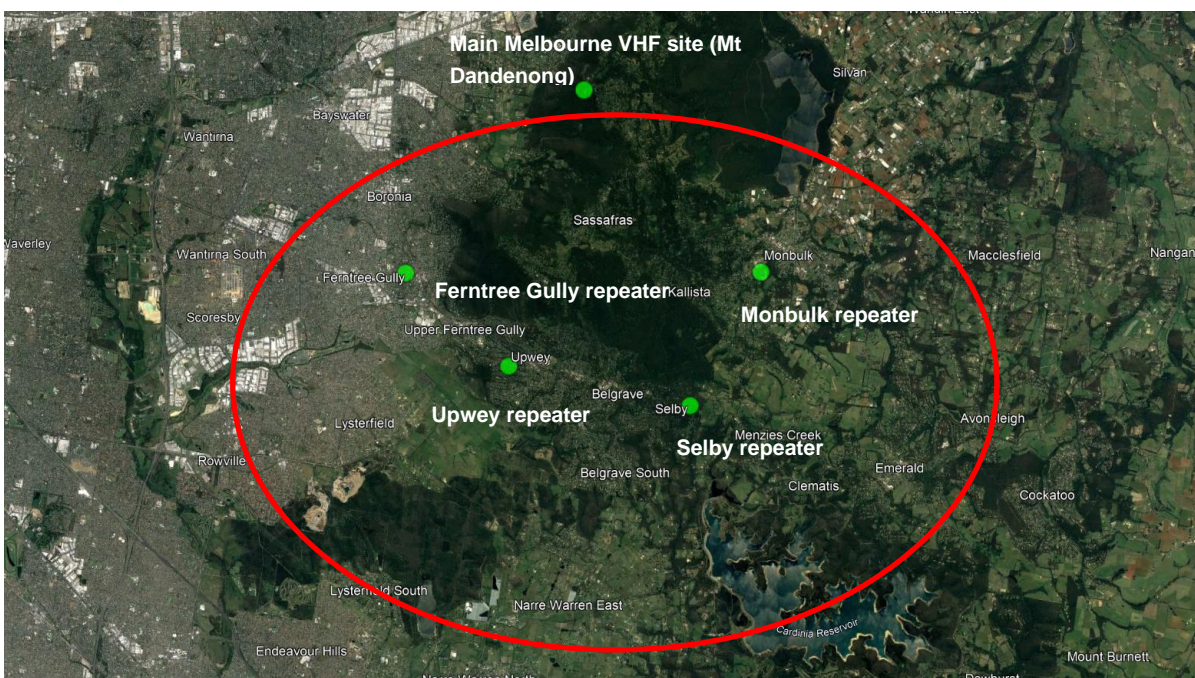
3. Mount Dandenong area (Ferntree Gully, Upwey, Selby and Monbulk repeaters)

Overview

The main Melbourne (Mt Dandenong) site is located on the top of Mount Dandenong. However, some areas in the foothills of Mt Dandenong immediately surrounding it may have reception issues because of propagation being obstructed by the foothills. There are four repeaters located at the bottom of Mt Dandenong – Ferntree Gully (Block D), Upwey (Block C), Selby (Block C) and Monbulk (Block E), named after the general areas they were planned to serve, with Upwey and Selby operating in an SFN. All four repeaters were planned on the basis that their coverage will be protected to within suburban level reception against interference from other broadcasting services.

The survey area for these four sites is shown in Figure 5. The area was identified using the best server approach, that is, identifying areas where the local repeaters provide the strongest signal compared to the main Melbourne (Mt Dandenong) site. Some parts of the area were generally more difficult to survey due to limited visibility of the antenna systems, due to tree lines. A total of 7 suburbs/local areas were surveyed with an overall sample size of around 1,800 antennas counted.

Figure 5: Repeaters (green dots): Ferntree Gully, Monbulk, Upwey and Selby repeaters; survey areas (red oval): Boronia, Ferntree Gully, Upper Ferntree Gully, Upwey, Belgrave, Selby, Monbulk, Lysterfield.



Survey results

Survey results for the Mount Dandenong area are shown in Figure 6 and are overlaid on the best server plot. The actual percentage breakdowns corresponding to the results in Figure 6 are presented in Figure 7. It can be observed that in the areas which are immediately next to Mount Dandenong, households generally point their antennas to one of the local repeaters, since those areas are in the terrain shadow from the main Melbourne (Mt Dandenong) site and hence do not have direct line of sight to it.

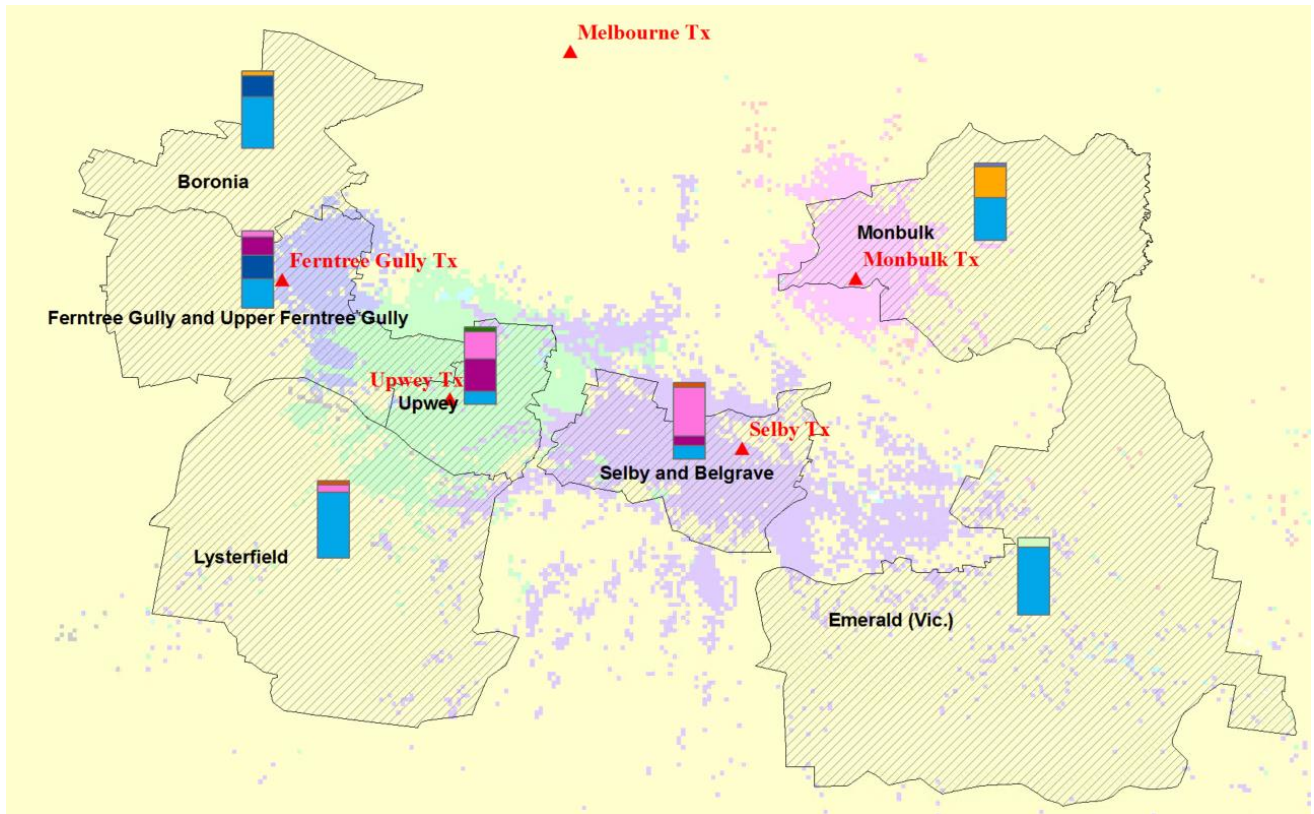
However, the choice of which local repeater was used varied, with no obvious general patterns of antenna pointing behaviour. A general observation is that the number of antennas pointing to a particular repeater tends to increase closer to the repeater. Therefore, no clear boundaries between the coverage areas of the individual repeaters were observed.

The suburbs where such an increase was observed include Ferntree Gully, Upper Ferntree Gully, Upwey, Selby. In Monbulk. However, while a significant percentage of households were pointing their antennas towards the local repeater, it appears that the majority (around 55%) obtain their reception from the main Melbourne (Mt Dandenong) site.

In other surveyed suburbs more distant from Mount Dandenong, that is, Boronia, Lysterfield and Emerald) the observed antennas were mainly of a VHF type pointing to the main Melbourne (Mt Dandenong) site. In Boronia, however, a significant percentage of antennas (around 27%) were individual UHF antennas pointing to the local Ferntree Gully repeater.

The majority of the antennas observed in the Mount Dandenong area (Ferntree Gully, Upwey, Selby and Monbulk repeaters) were installed at roof height (nominally at 5 m) or lower.

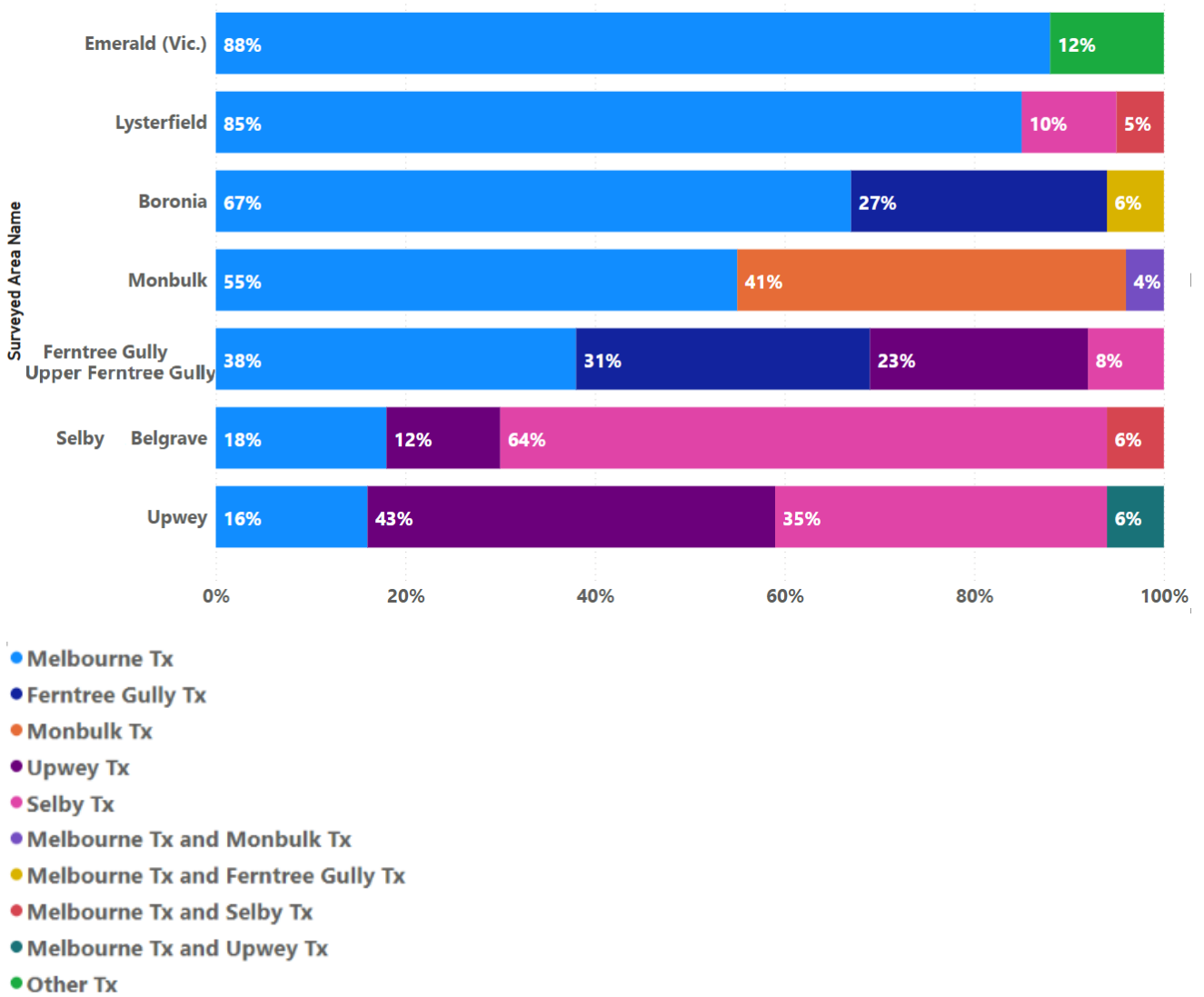
Figure 6: Survey results overlaid on the coverage prediction plot - Ferntree Gully, Upwey, Selby and Monbulk areas. Coverage prediction background colour code: **Yellow** – Melbourne (Mt Dandenong), **Purple** – Ferntree Gully, **Green** – Upwey, **Lavender** - Selby and **Pink** – Monbulk.



Legend

- Other Tx
- Melbourne Tx and Upwey Tx
- Melbourne Tx and Selby Tx
- Melbourne Tx and Ferntree Gully Tx
- Melbourne Tx and Monbulk Tx
- Selby Tx
- Upwey Tx
- Monbulk Tx
- Ferntree Gully Tx
- Melbourne Tx

Figure 7: Percentage breakdown (rounded to the nearest percent) for each suburb in the survey area



4. Geelong area

Overview

The main Melbourne (Mt Dandenong) site is located about 95 km in the west-northwest direction from the City of Geelong and it is predicted to provide variable coverage in some parts of the area around Geelong. The Geelong repeater is located at Tower Montpellier Service Basin in the suburb of Highton, Geelong. It is a medium power site (4 kW effective radiated power (ERP)⁷) and its goal is to provide coverage in Geelong and surrounding areas, where the reception from the main Melbourne (Mt Dandenong) site may be deficient, particularly due to obstructions caused by the hilly terrain. The Geelong repeater operates on Block E. This repeater was planned on the basis that its coverage will be protected within suburban level reception against interference from other broadcasting services.

The survey area for the Geelong site is shown in Figure 8. The area was identified using the best server approach, that is, identifying areas where the local repeater provides the strongest signal compared to the Mount Dandenong transmitter. Most of the suburbs and towns in the entire survey area were considered easy to survey, with relatively minor number of commercial, industrial and high building areas in the city of Geelong being difficult to survey because the antennas were not visible. A total of 14 suburbs/local areas were surveyed with an overall sample size of around 4,400 antennas counted.

Figure 8: Repeater (green dot): Geelong repeater; survey areas (red oval): Geelong, Lara, Drysdale, Ocean grove, Barwon Heads, Torquay, Jan Juc.



⁷ ERP is the total power radiated by an antenna relative to a half wave-length dipole antenna.

Survey results

Survey results for the Geelong area are shown in Figure 9 and are overlaid on the best server plot. The actual percentage breakdowns corresponding to the results in Figure 9 are presented in Figure 11. The results are also compared to the coverage plot from the Mount Dandenong site in Figure 10.

It can be observed that in the areas north of the inner city of Geelong, such as Lara, Corio and Norlane, household antennas are almost exclusively pointing toward the Mount Dandenong site, where the coverage from that site is considered to be good.

In the areas south of Geelong, such as Torquey and Jan Juc, households almost exclusively point their antennas towards the Mount Dandenong site. The main reason for such choice of antenna orientation in these areas appears to be poor coverage from the Geelong repeater site, since the area is positioned behind a hill from the Geelong repeater.

In the inner city of Geelong, an increase in the number of UHF antennas pointing to the local repeater was observed. However, the main type of antennas are still VHF antennas pointing towards the Mount Dandenong site, with over 70% of the observed antennas falling into this category.

In other surveyed areas, however, this percentage is significantly lower and the uptake of the UHF antennas pointing towards the local Geelong repeater is significantly higher, being as high as:

- > 74% in Drysdale
- > 64% in Armstrong Creek
- > 54% in Clifton Springs.

In other areas, including Barwon Heads, Leopold, Wallington and Ocean Grove, around 40% of antennas in each area were pointed to the local Geelong site. The main reason for such an increase in the UHF antennas pointing towards the local repeater is likely because the coverage from the main Melbourne (Mt Dandenong) site in these areas is obstructed by the local terrain/hills, which can also be observed in the coverage prediction plot in Figure 10.

In many of the surveyed areas, the choice of the antenna depended on the local terrain, with the western sides of the local hills generally having larger proportion of UHF antennas pointing towards the local repeater. However, even in those areas, VHF antennas on tall masts pointing towards the main Melbourne (Mt Dandenong) site were not uncommon. Newer installations were also generally more likely to be UHF antennas pointing towards the local Geelong repeater, whereas many older antennas would be VHF pointing towards the main Melbourne (Mt Dandenong) site. Separate UHF and VHF antennas on the same mast both pointing towards the main Melbourne (Mt Dandenong) site were also relatively common.

Numerous masthead amplifiers and very tall antenna installations were observed across Geelong and the wider Geelong area, typically at 5 to 10 m in height. In Clifton Springs, it was observed that the antennas pointing towards the main Melbourne (Mt Dandenong) transmitter were installed both at roof height (nominally at 5 m) and at 10 m above the ground level. The antennas pointing towards the Geelong transmitter in Clifton Springs were mostly installed at roof height (nominally at 5 m) or lower. In Corio and Norlane more than 50% of the observed antennas were installed at 10 m above the ground level. In Lara, the majority of the observed antennas were installed

at 10 m above the ground level. In all other surveyed Geelong areas, most of the antennas observed were installed at roof height (nominally at 5 m) or lower.

Figure 9: Survey results overlaid on the coverage prediction plot – Geelong area. Coverage prediction background colour code: Yellow – Melbourne (Mt Dandenong) and Blue – Geelong

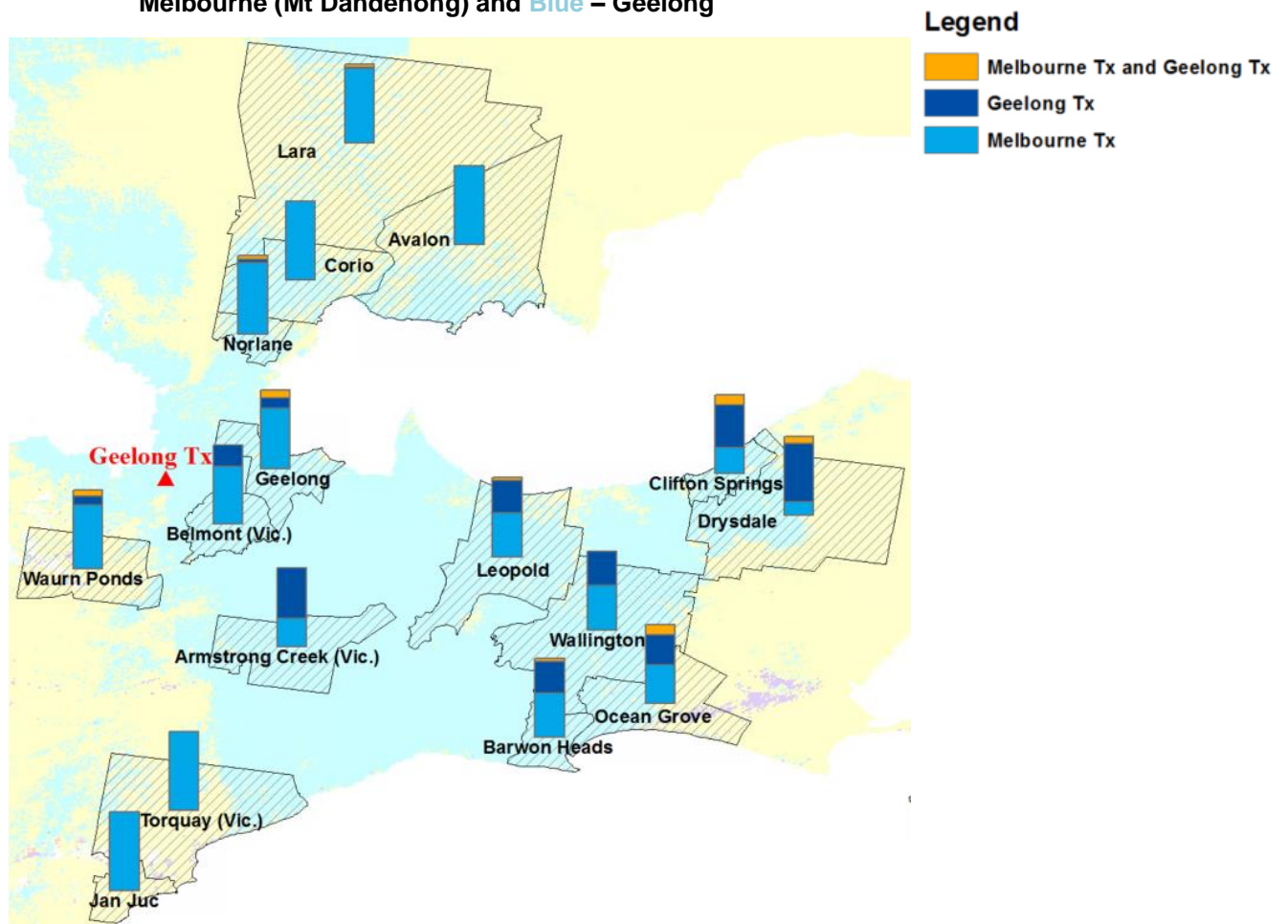
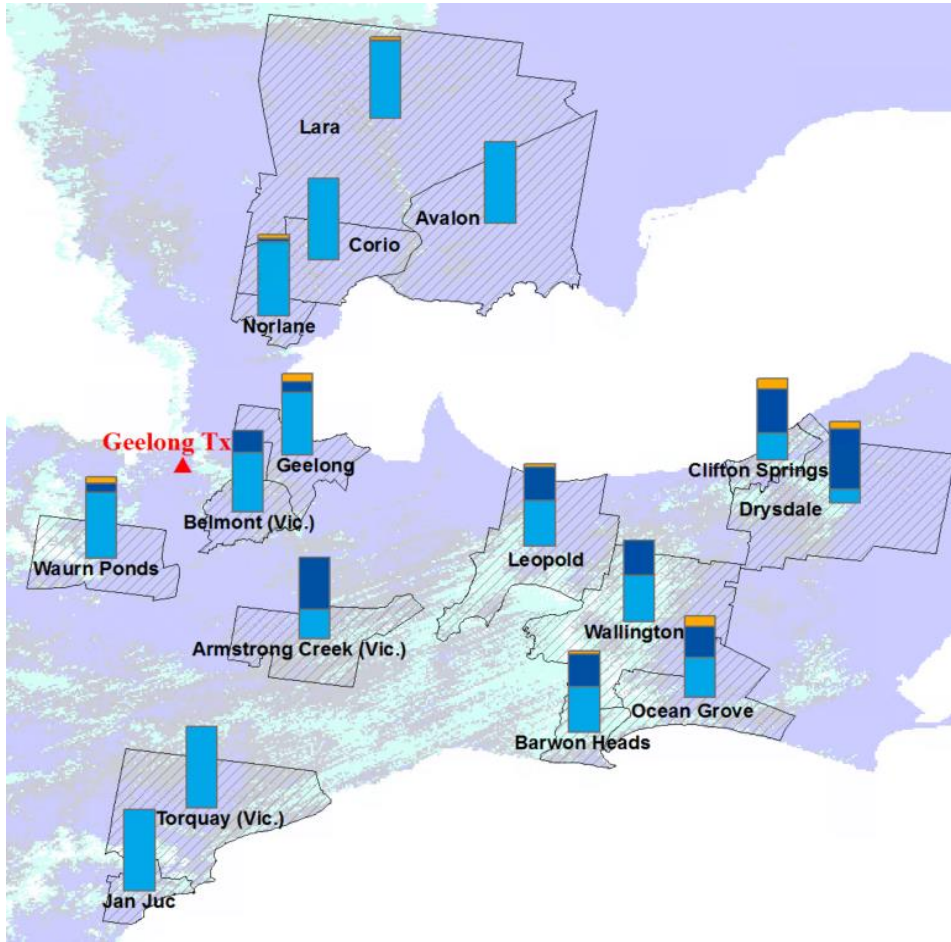


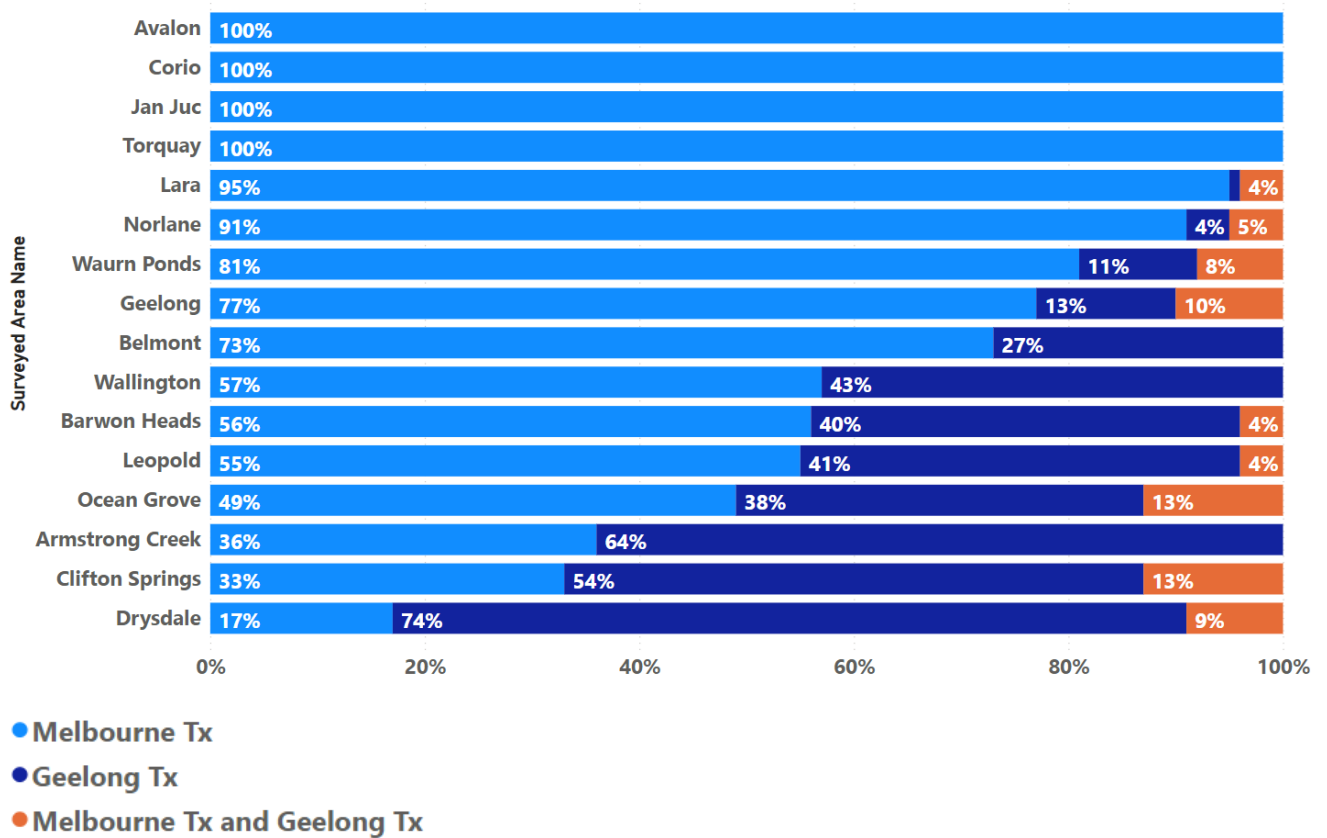
Figure 10: Survey results overlaid on the coverage prediction plot from the main Melbourne (Mt Dandenong) site. Coverage prediction background colour code: **Purple** – urban level, **Grey** – suburban level, **Blue** – rural level.



Legend

- Melbourne Tx and Geelong Tx
- Geelong Tx
- Melbourne Tx

Figure 11: Percentage breakdown (rounded to the nearest percent) for each suburb in the survey area – Geelong area



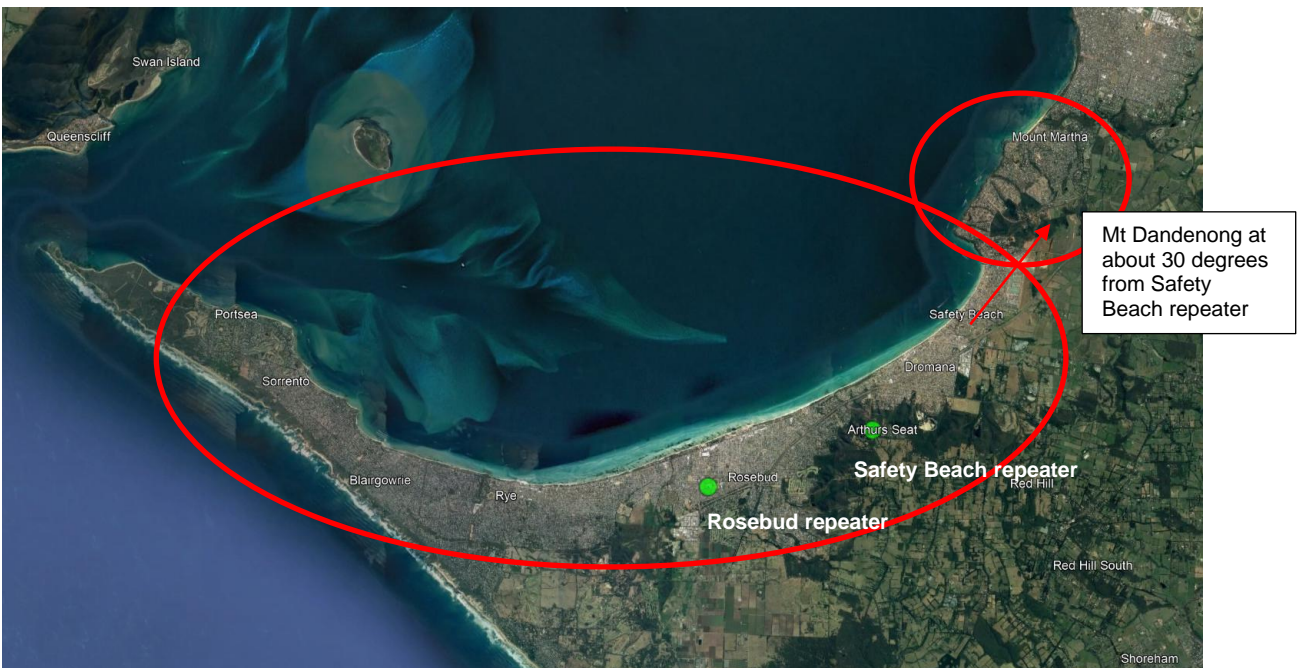
5. Mornington Peninsula area

Overview

The main Melbourne (Mt Dandenong) site is located about 65 km in the north-northwest direction from the Safety Beach (Arthurs Seat) repeater site and it is predicted to provide good coverage in the general area, with some parts predicted to have possible variable coverage due to hilly terrain. There are 2 local repeaters in the area, Safety Beach located at the Arthurs Seat and Rosebud located at the Monopole Council Offices, corner Besgrove St and Boneo Rd. These 2 repeaters operate in a SFN on Block D, and they were both planned on the basis that their coverage will be protected within suburban level coverage against interference from other broadcasting services.

The survey area for these 2 sites is shown in Figure 12. The area was identified using the best server approach, that is, identifying areas where the local repeaters provide strongest signal compared to the main Melbourne (Mt Dandenong) site. The area was generally easy to survey, with antennas on some dwellings on large land blocks (for example, rural properties) being more difficult to observe. A total of 12 suburbs/local areas were surveyed with an overall sample size of around 1,600 antennas counted.

Figure 12: Repeaters (green dots): Rosebud and Safety Beach repeaters; survey areas (red ovals): Safety Beach, Mount Martha, Dromana, Rosebud, Rye, Blairgowrie, Sorrento, Portsea.



Survey results

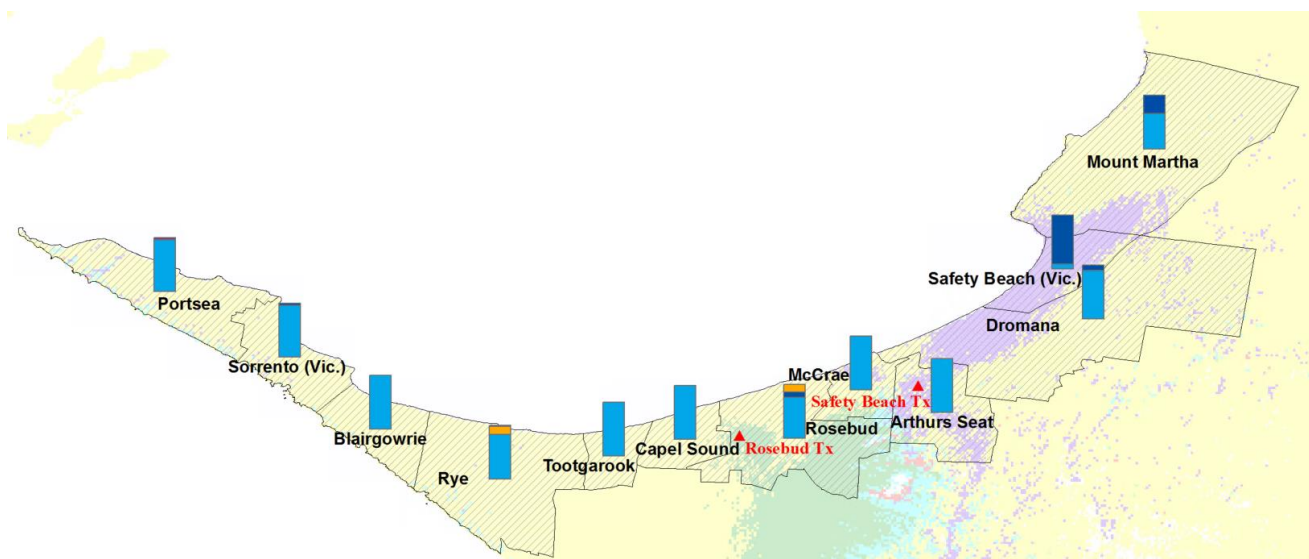
Survey results for the Mornington Peninsula area are shown in Figure 13 and are overlaid on the best server plot. The actual percentage breakdowns corresponding to the results in Figure 13 are presented in Figure 14. Household antennas were mostly VHF antennas pointing to the main Melbourne (Mt Dandenong) site. A notable exception was in Safety Beach, where a vast majority of the counted antennas (over 90%) were UHF antennas pointing to the local Safety Beach repeater. In addition, a significant proportion (around 34%) of the antennas observed in Mount Martha and

around 10% in Dromana and Rosebud were also UHF antennas pointed to this local repeater. This finding is not surprising given that there are significant terrain obstructions in those areas which are known to affect coverage from the main Melbourne (Mt Dandenong) site.

The Rosebud repeater does not appear to be the main choice in any of the surveyed suburbs, with around 15% of antennas surveyed in Rosebud and Rye identified as UHF antennas pointing to this site. In some areas, both Safety Beach and Rosebud sites (which also operate in an SFN) are orientated in very similar directions and therefore it is difficult to categorize to which site the antennas are pointing.

In Portsea, antennas observed were installed both at roof height (nominally at 5 m) and at 10 m above the ground level. In all other surveyed Mornington Peninsula areas, most of the antennas were observed installed at roof height (nominally at 5 m) or lower.

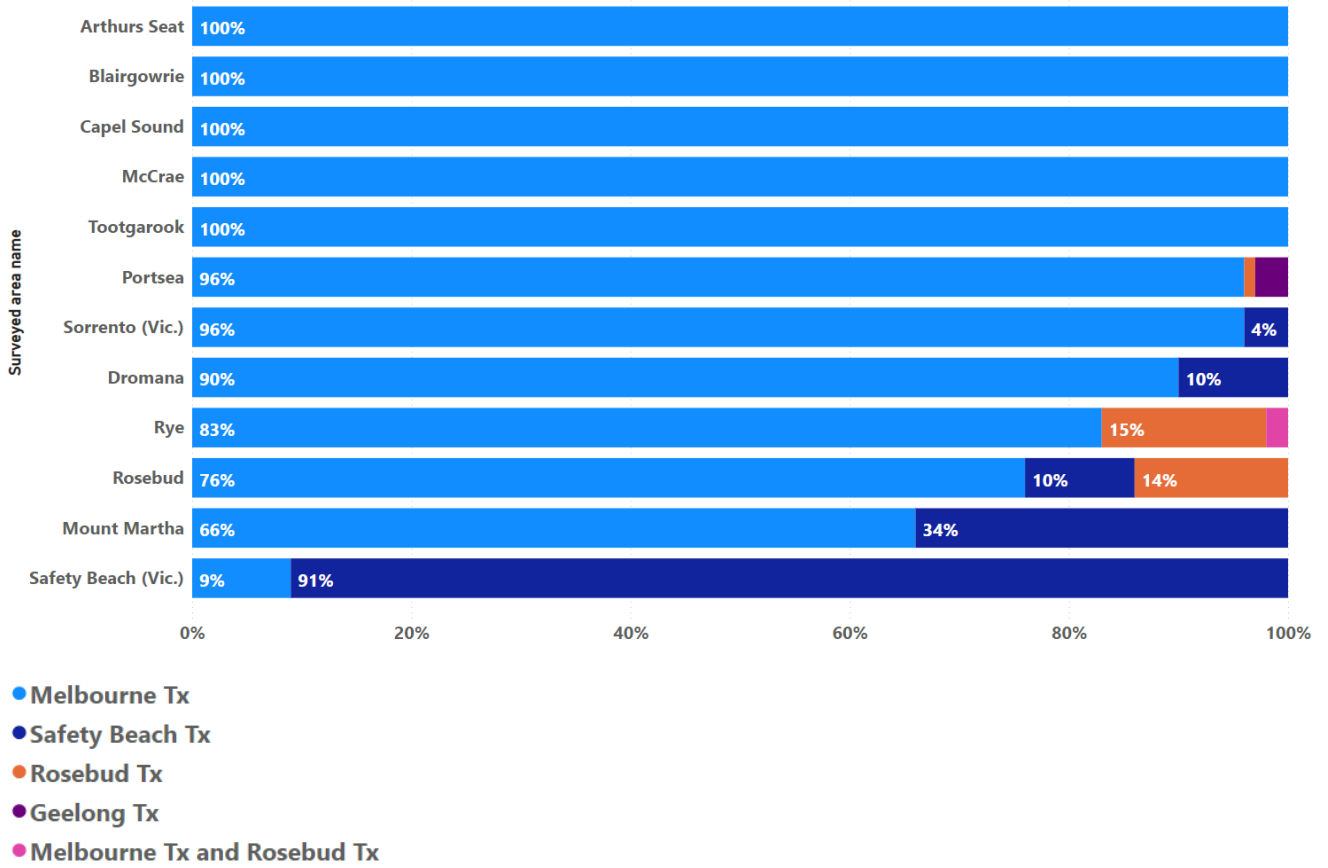
Figure 13: Survey results overlaid on the coverage prediction plot – Mornington Peninsula area. Coverage prediction background colour legend: Yellow – Melbourne (Mt Dandenong), Purple – Safety Beach and Green – Rosebud



Legend

- Melbourne Tx and Rosebud Tx
- Geelong Tx
- Rosebud Tx
- Safety BeachTx
- Melbourne Tx

Figure 14: Percentage breakdown (rounded to the nearest percent) for each suburb in the survey area – Mornington Peninsula



6. Great Ocean Road area (Anglesea/Aireys Inlet, Lorne and Wye River repeaters)

Overview

Parts of this area are outside the Melbourne TV1 licence area (except for Anglesea and Aireys Inlet). The TV coverage from the main Melbourne (Mt Dandenong) site is considered to be variable due to both distance from the main site and hilly terrain. Therefore, TV coverage in this area is provided by 3 additional sites – Anglesea/Aireys Inlet metro repeater (Block B), Lorne regional repeater (Block C) and Wye River (out of area⁸) metro repeater (Block C). Anglesea/Aireys Inlet and Wye River were both planned on the basis that their coverage will be protected to within suburban level reception against interference from other broadcasting services.

This survey area was identified by the ACMA based on the location of the local repeaters and populated areas along the Great Ocean Road and is shown in Figure 15. Some parts of the survey area were difficult to survey, and the focus of the survey was on the more residential areas along the Great Ocean Road. A total of 6 local areas were surveyed with an overall sample size of around 1,600 antennas counted.

Figure 15: Repeaters (green dots): Anglesea / Aireys Inlet, Lorne (regional) and Wye River repeaters; survey areas (red oval): Anglesea, Aireys Inlet, Fairhaven, Lorne, Wye River



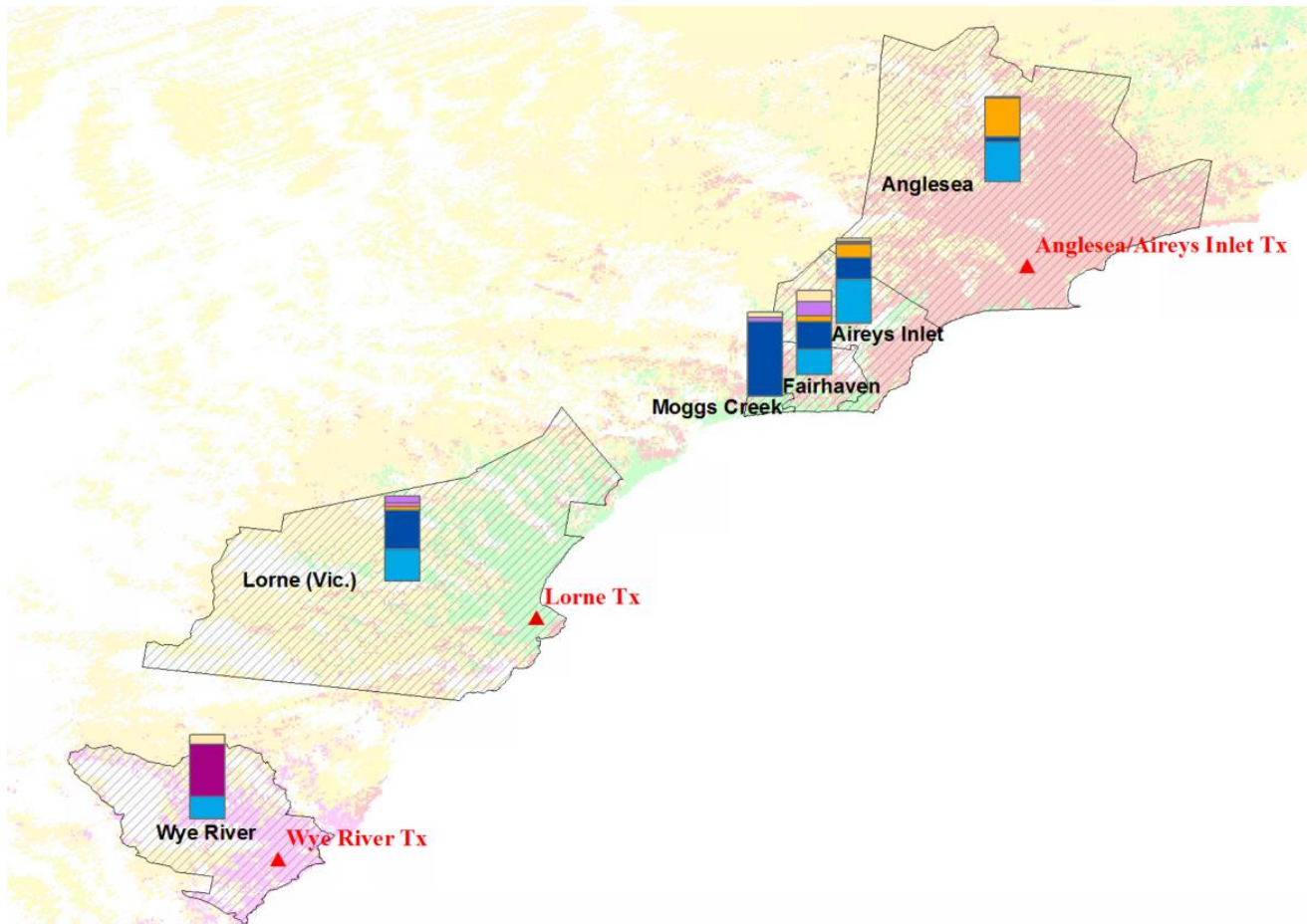
⁸ Out of area retransmission s.212 refers to the commercial services only since the national services are not limited by licence areas.

Survey results

Survey results for the Great Ocean Road area are shown in Figure 16 and are overlaid on the best server plot. The actual percentage breakdowns corresponding to the results in Figure 16 are presented in Figure 17. Household antennas were observed to be predominantly UHF antennas pointing to one of the local repeaters. However, in some areas a significant proportion of VHF antennas pointing to the main Melbourne (Mt Dandenong) site were also observed. It is worth noting that in both Anglesea and Aireys Inlet, around 50% of the antennas were VHF antennas pointing to Melbourne. In other areas that percentage was lower.

In all surveyed Great Ocean Road areas, most of the antennas were observed installed at roof height (nominally at 5 m) or lower.

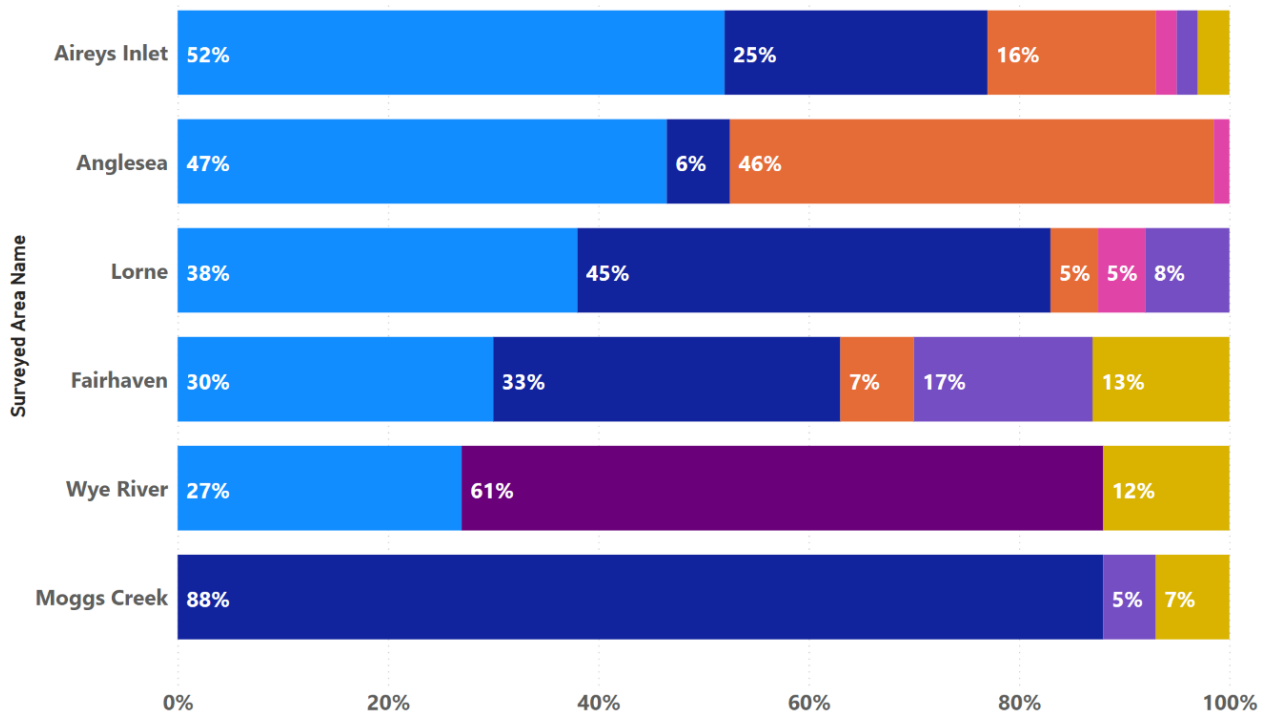
Figure 16: Survey results overlaid on the coverage prediction (best server) plot – Great Ocean Road. Coverage prediction background colour code: Yellow – Melbourne (Mt Dandenong), Red – Anglesea/Aireys Inlet, Blue – Lorne, and Pink – Wye River



Legend

- VAST
- Melbourne Tx and Lorne Tx
- Melbourne Tx and Anglesea Tx
- Wye river Tx
- Anglesea Tx
- Lorne Tx
- Melbourne Tx

Figure 17: Percentage breakdown (rounded to the nearest percent) for each suburb in the survey area – Great Ocean Road



- Melbourne Tx
- Lorne Tx
- Anglesea Tx
- Wye river Tx
- Melbourne Tx and Anglesea Tx
- Melbourne Tx and Lorne Tx
- VAST

7. Healesville, Marysville and Warburton areas

Overview

The Healesville, Marysville and Warburton areas are located at the eastern boundary of the Melbourne TV1 licence area. The survey areas for each town were selected based on the most populated areas and they are shown in Figure 18, Figure 19 and Figure 20. All 3 repeaters operate on Block C, with Healesville and Warburton also operating in an SFN. All 3 sites were also planned on the basis that their coverage will be protected to within suburban level reception against interference from other broadcasting services. A total of 6 local areas were surveyed with an overall sample size of around 2,000 antennas counted.

Figure 18: Repeater (green dot): Healesville repeater; survey areas (red oval): Healesville, Chum Creek, Badger Creek

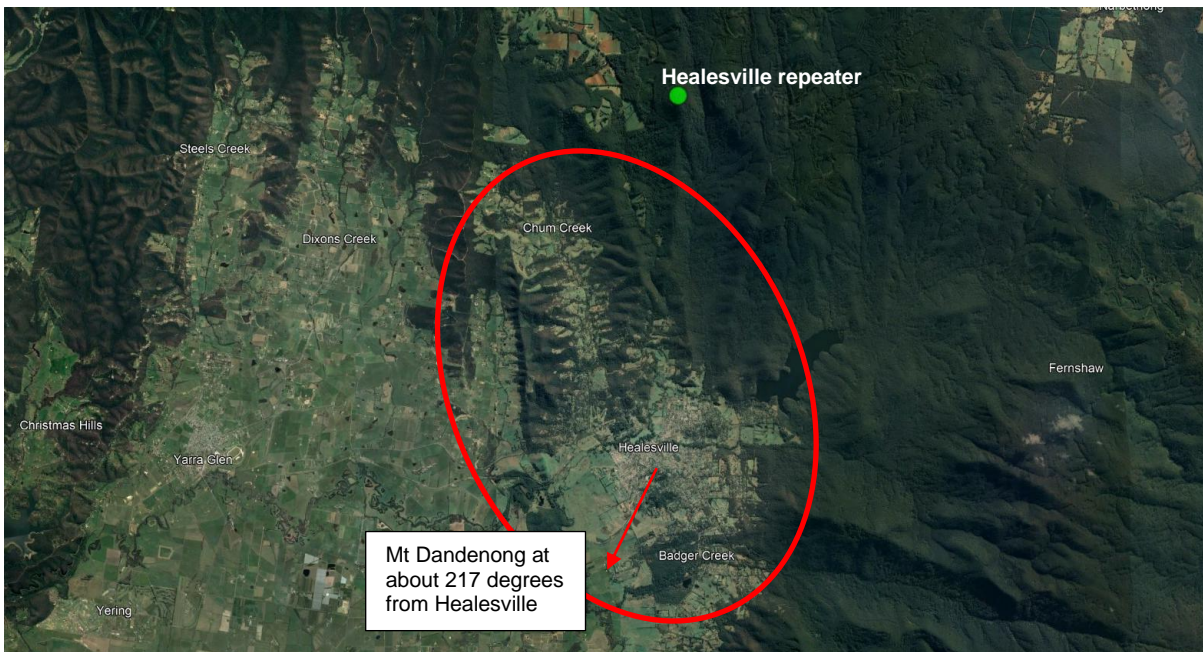


Figure 19: Repeater (green dot): Marysville repeater; survey areas (red oval): Marysville

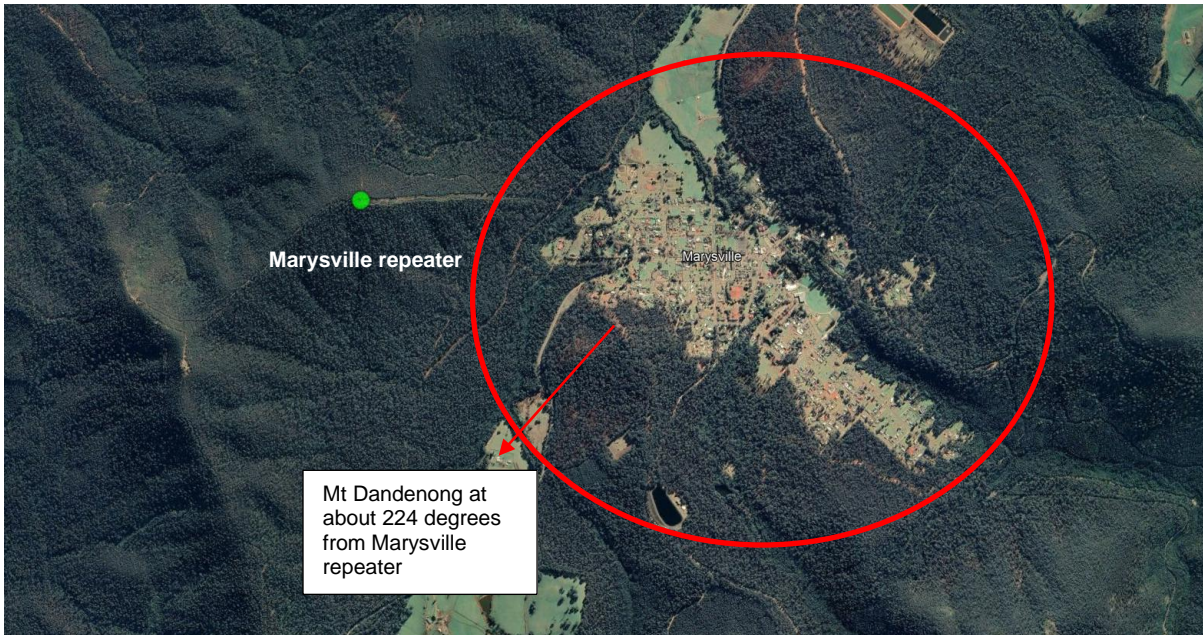
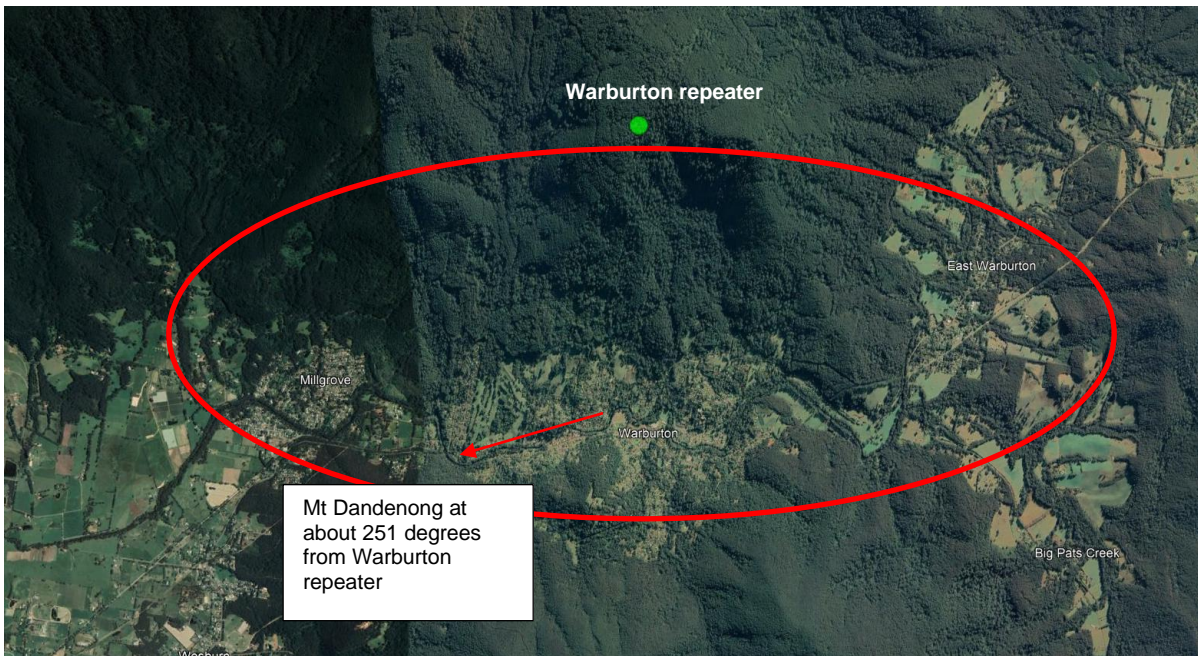


Figure 20: Repeater (green dot): Warburton repeater; survey areas (red oval): Warburton, East Warburton, Millgrove



Survey results

Survey results for the Healesville, Marysville and Warburton areas are shown in **Error! Reference source not found.** and are overlaid on the best server plot. The actual percentage breakdowns corresponding to the results in Figure 21 are presented in Figure 22. It can be observed that in Healesville over 50% of antennas were VHF antennas pointing towards the main Melbourne (Mt Dandenong) site. This might be

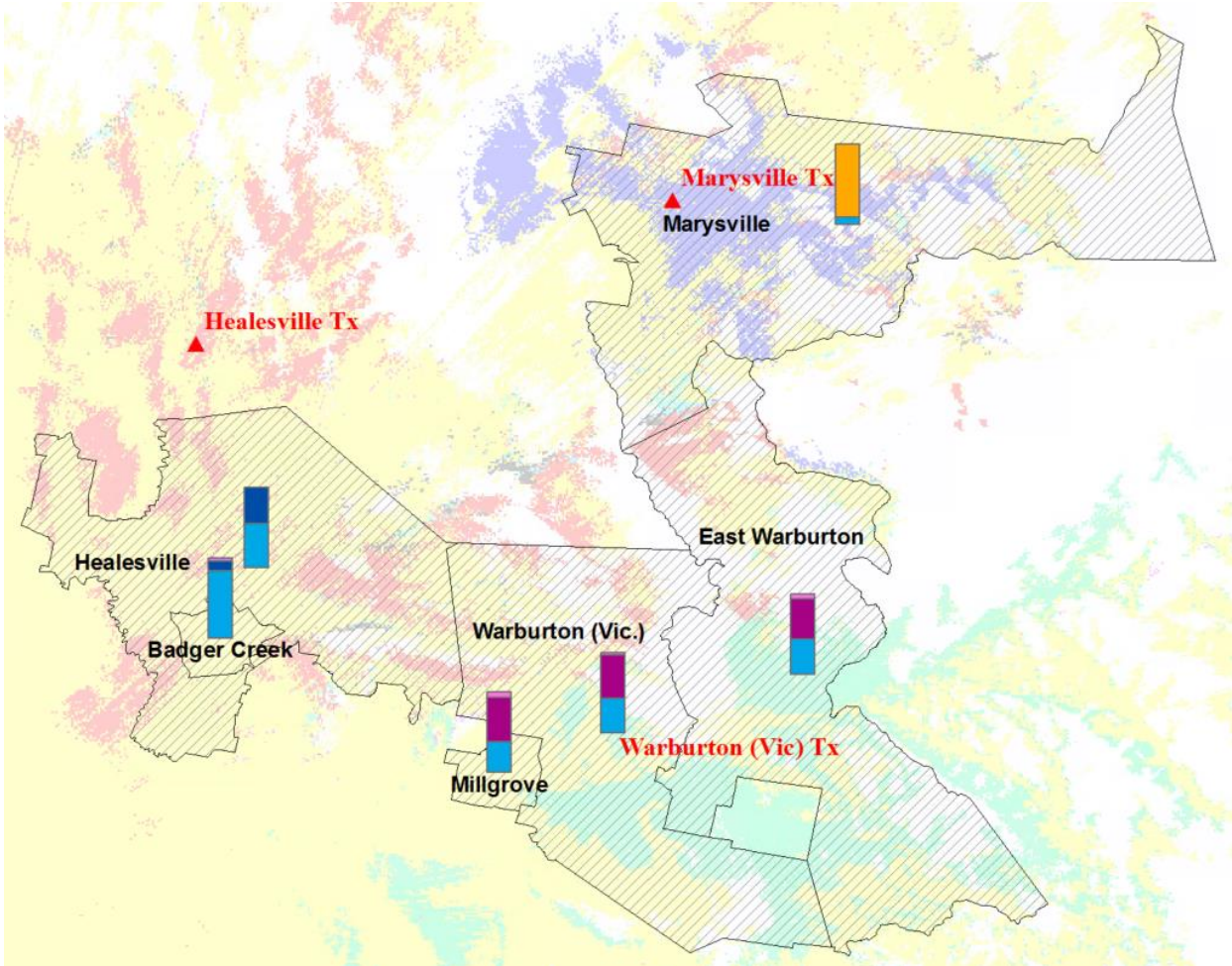
explained by the prediction results in Figure 21: showing that the main Melbourne (Mt Dandenong) site provides overall stronger signal in most of Healesville, relative to the local repeater.

In Warburton, where the coverage from the main Melbourne (Mt Dandenong) site is potentially more variable due to hilly terrain, the percentage of the UHF antennas pointing to the local site was over 50%, although the proportion of the VHF antennas pointing towards the main Melbourne (Mt Dandenong) site is still rather high at around 40% for each of the 3 surveyed areas in Warburton. The remaining cases are households with separate VHF and UHF antennas pointing to the main Melbourne (Mt Dandenong) site and local site, respectively.

In Marysville though, the vast majority of the antennas (over 90%) are UHF antennas pointing to the local repeater. Such an observation was expected since the coverage from the main Melbourne (Mt Dandenong) site is predicted to be patchy in that area.

In the surveyed Healesville, Marysville and Warburton areas, most of the antennas were observed installed at roof height (nominally at 5 m) or lower.

Figure 21: Survey results overlaid on the coverage prediction plot - Healesville, Marysville and Warburton. Coverage prediction background colour code: **Yellow** – Melbourne (Mt Dandenong), **Red** – Healesville, **Purple** – Marysville, and **Blue** - Warburton



Legend

- Melbourne Tx and Healsville Tx
- Melbourne Tx and Warburton Tx
- Warburton Tx
- Marysville Tx
- Healsville Tx
- Melbourne Tx

Figure 22: Percentage (rounded to the nearest percent) breakdown for each suburb in the survey area

