Sustainable Communities and Waste

National Environmental Science Program

# Understanding and Defining Regional and Remote Areas: Criteria and Classifications for Australia

IP2.02.02 Finding Fit-for-Purpose Technological Recycling Solutions for Regional and Remote Communities

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# Understanding and Defining Regional and Remote Areas: Criteria and Classifications for Australia

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The Sustainable Communities and Waste Hub acknowledges all Aboriginal and Torres Strait Islander Traditional Custodians of Country and recognises their continuing connection to land, sea, culture, and community. We pay our respects to Elders past, present, and emerging. We support Aboriginal and Torres Strait Islander peoples and their aspirations to maintain, protect and manage their culture, language, land and sea Country and heritage.

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# Understanding and Defining Regional and Remote Areas: Criteria and Classifications for Australia

## Contents

# Introduction

Regional and Remote solutions is a key thematic area of the Sustainable Communities and Waste (SCaW) Hub, through which place-based, fit-for-purpose technology that address local needs across Australia are explored. Specifically, research in Impact Priority 2 (IP2) is being conducted to find technological recycling solutions for regional and remote communities. These communities face unique challenges when it comes to dealing with waste.

Some common examples include [1]:

- Limited or no kerbside collection – of the 23% of the LGAs that do not offer any kerbside collection, the majority were in remote and regional communities
- Distance from recycling facilities – due to travel distance, road quality and weather events, transportation to Municipal Recycling Facilities (MRFs) represents a more significant cost factor leading to recoverable waste being sent to landfill
- Limited sorting technology - technical upgrades to facilities are less viable, requiring more labour-intensive sorting and difficulty separating co-mingled, contaminated waste

In general, smaller populations and a lack of viable technology prevent recycling options enabled through economies of scale from being implemented. Instead, regional and remote communities require “economies of purpose” with tailored solutions. In developing frameworks and tools to enable these communities to identify opportunities to shift from linear to circular economies, it has been important to engage with stakeholders from areas with varying degrees of remoteness.

The definitions of regional and remote areas in Australia vary across different levels of government, reflecting diverse criteria and purposes. These definitions are largely shaped by the purpose for which the distinction is required. For example, the purpose could be to capture data, to make policy and investment decisions, to secure funding, or to meet administrative needs.

[1] Department of Cimate Change, Energy, the Environment and Water, 2024. Waste and Resource Recovery Data Hub - National waste data viewer. [Online] Available at: https://www.dcceew.gov.au/environment/protection/waste/how-we-manage-waste/data-hub/data-insights/national-data-viewer [Accessed November 2024].

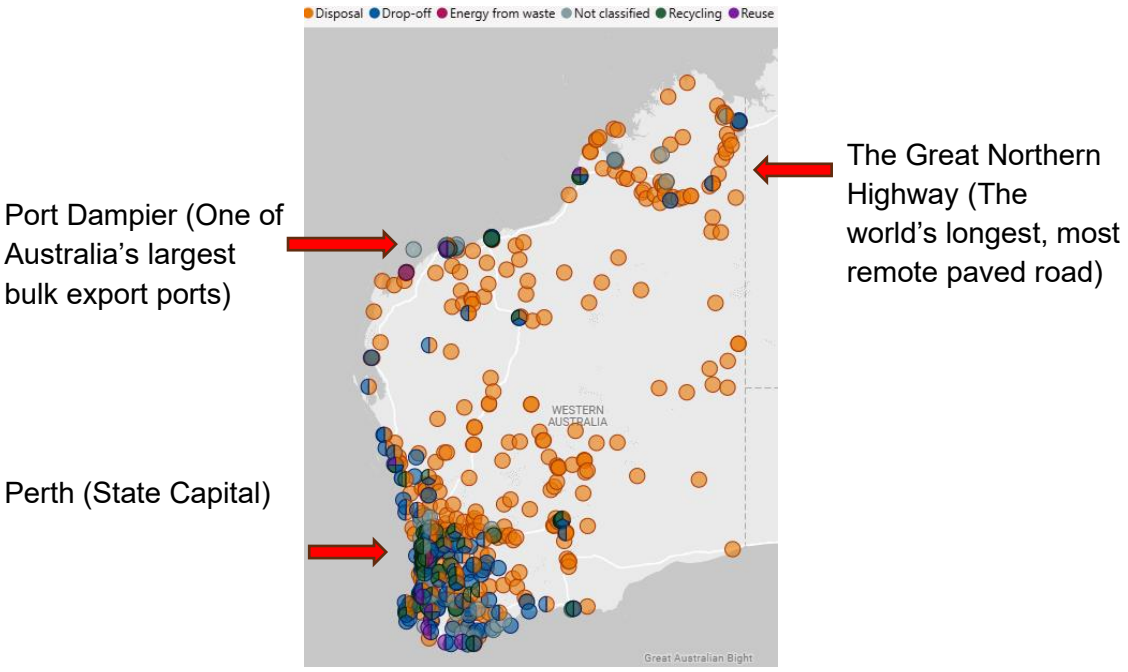


*Figure 1 - Waste Management Facilities often concentrate around major hubs and roads. [1] Recycling solutions also tend to concentrate around major hubs and service points, with disposal and landfill facilities making up a higher proportion the more remote the location is.*

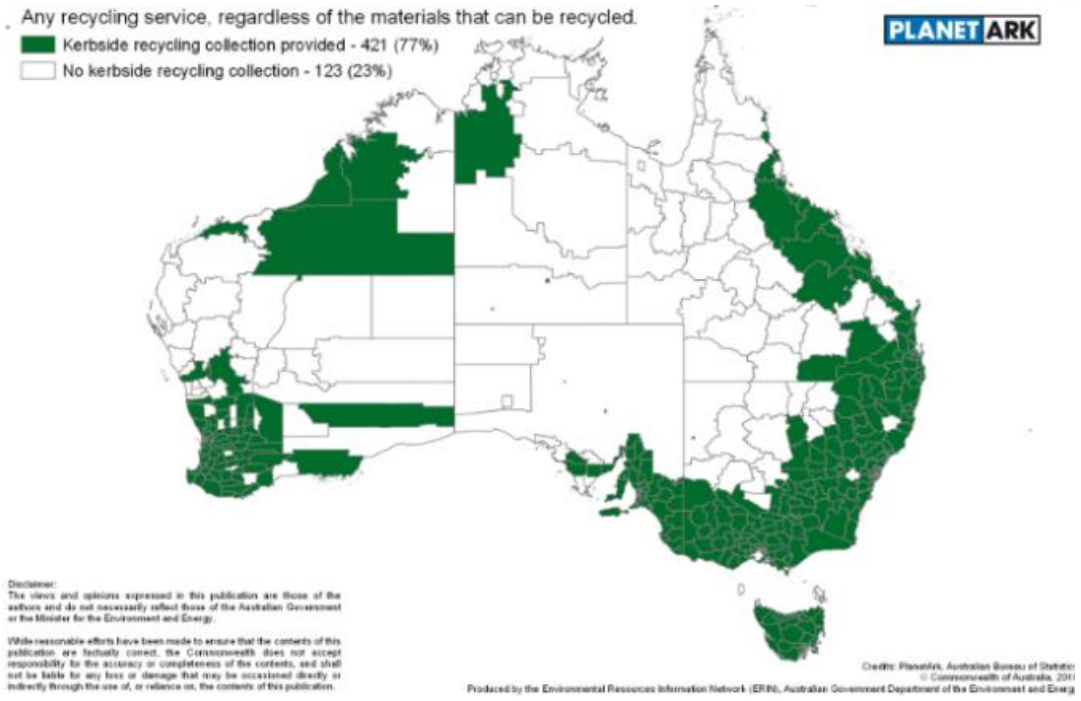


*Figure 2 - Map of kerbside recycling services [2] The challenges with recycling and waste management are highlighted once again by the lack of kerbside recycling collection for many of the regional and remote areas.*

2 Department of the Environment and Energy, 2018. Analysis of Australia's municipal recycling infrastructure capacity, Canberra: Commonwealth of Australia.

# Australian Remoteness Indicators

In deciding which remoteness indicator to structure future SCaW Hub research around, a literature review was conducted to analyse different indicators and how they systematically defined geographical remoteness.

## Accessibility / Remoteness Index of Australia (ARIA+)

*Developed by: Australian Centre for Housing Research*

Developed by the Australian Centre for Housing Research (formerly the "Hugo Centre") at the University of Adelaide, it was a leading indicator of remoteness in Australia as it was the official classification used by the Australian Bureau of Statistics (ABS) [3]. The index provided a score from 0 (high accessibility) to 15 (high remoteness) based on the road distance to population centres. This methodology regarded services as concentrated into Service Centres, categorised by their population. A 'distance value' was calculated for each category by dividing the distance (in kilometres) to the nearest service centre by the national average. Locations within a service centre scored 0 and a threshold of 3 caps any score higher than this to remove extreme values. These values were added together to give the final score [4]. A map using the 2021 Census data was provided on the ABS website (see Figure 3) [5]. The resulting index was a 1-kilometre grid covering all of Australia with each cell containing an ARIA+ score. It was purely geographic and did not incorporate any socio-economic considerations.

| Service Centre Category | Urban Centre Population | National average distance (km) |
|---|---|---|
| **A** | 250,000 + | 412 |
| **B** | 48,000 – 249,999 | 214 |
| **C** | 18,000 – 47,999 | 133 |
| **D** | 5,000 – 17,999 | 88 |
| **E** | 1,000 – 4,999 | 46 |

[3] Australian Centre for Housing Research, 2021. *Accessibility/ Remotenss Index of Australia (ARIA+).* [Online]
Available at: https://able.adelaide.edu.au/housing-research/data-gateway/aria#methodology [Accessed October 2024].
[4] Australian Bureau of Statistics, 2021. *Australian Statistical Geography Standard (ASGS) Edition 3.* [Online]
Available at: https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026 [Accessed October 2024].
[5] Australian Bureau of Statistics, 2021. Search Census Data. [Online]
Available at: https://www.abs.gov.au/census/find-census-data/search-by-area [Accessed October 2024].

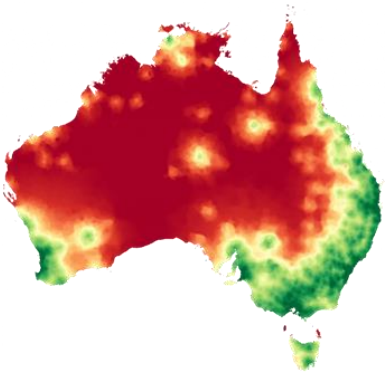

*Figure 3 - ARIA+ [6]*

## Australian Statistical Geography Standard (ASGS) Edition 3

*Developed by: Australian Bureau of Statistics*

The ABS defined 5 classes of geographic remoteness characterised by a measure of relative geographic access to services, as derived from ARIA+. An average for the ARIA+ grid values was calculated for each Statistical Area Level 1 (SA1) with the following corresponding ranges. Remoteness areas could change category over time for several reasons such as a population change or changing boundaries of urban centres and localities.

| Remoteness Area Category | Remoteness Area Name | Avg. ARIA+ Value Range |
|---|---|---|
| **0 or ASGS-RA1** | Major Cities of Australia | $0 < x \leq 0.2$ |
| **1 or ASGS-RA2** | Inner Regional Australia | $0.2 < x \leq 2.4$ |
| **2 or ASGS-RA3** | Outer Regional Australia | $2.4 < x \leq 5.92$ |
| **3 or ASGS-RA4** | Remote Australia | $5.92 < x \leq 10.53$ |
| **4 or ASGS-RA5** | Very Remote Australia | $x > 10.53$ |

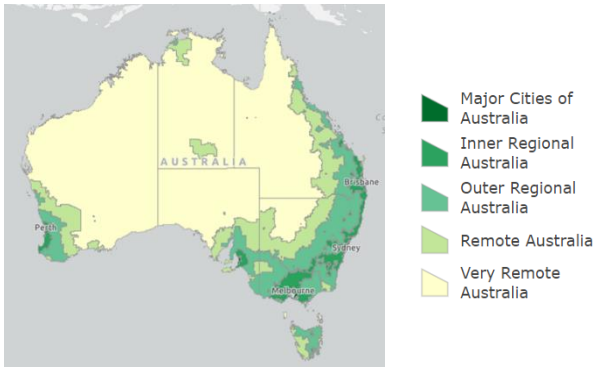


*Figure 4 – ASGS* [7]

[6] Map generated through ArcGIS. Content is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) | Esri, TomTom, Garmin, FAO, NOAA, USGS | Esri, TomTom, Garmin, FAO, NOAA, USGS

[7] Map generated through ArcGIS. Content is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) | Esri, TomTom, Garmin, FAO, NOAA, USGS | Esri, TomTom, Garmin, FAO, NOAA, USGS

The Australian Statistical Geography Standard (ASGS) replaced the Australian Statistical Geographical Classification (ASGC) in 2011.

The ABS Section of State (SOS) Structure of the ASGS also defined Urban and Rural based on population ranges. SOS categories of 0 and 1 were regarded as 'Urban' and SOS categories 2 and 3 as 'Rural'.

| Identifier | Name | Definition |
|---|---|---|
| **0** | Major Urban | A combination of all urban centres with a population of 100,000 or more |
| **1** | Other Urban | A combination of all urban centres with a population between 1,000 and 99,999 |
| **2** | Bounded Locality | A combination of all Bounded Localities |
| **3** | Rural Balance | The remainder of the state/territory |

Many organisations outside of the ABS have adopted this classification for defining regional, rural and remote locations. For example, the Australian Institute of Health and Welfare used the ASGS for comparing health outcomes based on remoteness [8] and the Australian Government's Tertiary Collection of Student Information [9].

| Remoteness Area | Population (%) |
|---|---|
| **Major Cities of Australia** | 71.59 |
| **Inner Regional Australia** | 17.93 |
| **Outer Regional Australia** | 8.43 |
| **Remote Australia** | 1.21 |
| **Very Remote Australia** | 0.84 |

## Modified Monash Model (MMM)

*Developed by: The Department of Health, Monash University*

The Modified Monash Model (MMM) was used by the Department of Health and Aged Care developing upon the original Monash Model which was created at Monash University. It was largely based on the ASGS with some alterations to assist in distributing workforce and resources to improve health care accessibility (e.g. encourage doctors to work in rural areas). More specific maps were available for each Primary Health Network on the department website [10]. The MMM also had a specific category for areas separated from the mainland whereas previous models, being derived from road distance, did not provide a specific index for these territories. The ASGS instead used a separate category ('Migratory-

[8] Australian Institue of Health and Welfare, 2024. *Rural and remote health.* [Online] Available at: https://www.aihw.gov.au/reports/rural-remote-australians/rural-and-remote-health [Accessed October 2024].
[9] Tertiary Collection of Student Information, 2024. *Regional and remote - Austarlian Statistical Geography Standard (ASGS) measure.* [Online] Available at: https://www.tcsisupport.gov.au/glossary/glossaryterm/Regional%20and%20remote%20-%20Australian%20Statistical%20Geography%20Standard%20%28ASGS%29%20measure [Accessed October 2024].
[10] Department of Health and Aged Care, 2019. *Modified Monash Model - Fact Sheet.* [Online] Available at: https://www.health.gov.au/resources/publications/modified-monash-model-fact-sheet?language=en [Accessed October 2024].

Offshore-Shipping), which included Norfolk Island, Cocos (Keeling) Islands, Christmas Island and Jervis Bay, but still excluded some offshore territories.

| Modified Monash Category | Inclusions |
|---|---|
| **MM 1 – Metropolitan area** | All areas categorised ASGS-RA1. |
| **MM 2 – Regional centres** | Areas categorised ASGS-RA 2 and ASGS-RA 3 that are in, or within 20km road distance, of a town with a population greater than 50,000. |
| **MM 3 – Large rural towns** | Areas categorised ASGS-RA 2 and ASGS-RA 3 that are not in MM 2 and are in, or within 15km road distance, of a town with a population between 15,000 and 50,000. |
| **MM 4 – Medium rural towns** | Areas categorised ASGS-RA 2 and ASGS-RA 3 that are not in MM 2 or MM 3 and are in, or within 10km road distance, of a town with a population between 5,000 and 15,000. |
| **MM 5 – Small rural towns** | All other areas in ASGS-RA 2 and 3. |
| **MM 6 – Remote communities** | All areas categorised ASGS-RA 4 and islands that are separated from the mainland in the ABS geography and are less than 5km offshore. |
| **MM 7 – Very remote communities** | All other areas that are categorised ASGS-RA 5 and populated islands separated from the mainland in the ABS geography that are more than 5km offshore. |

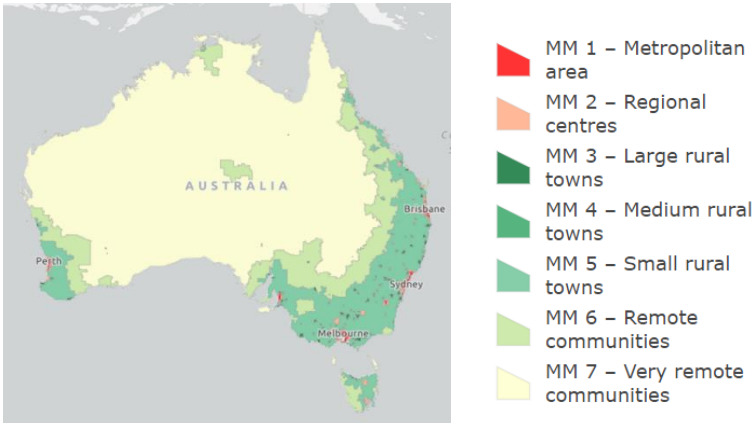


*Figure 5 – MMM* [11]

## Rural, Remote and Metropolitan Area (RRMA) Classification

*Developed by: Department of Primary Industries and Energy, Department of Human Services and Health*

[11] Map generated through ArcGIS. Content is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) | Department of Health and Aged Care | Esri, TomTom, Garmin, FAO, NOAA, USGS | Esri, TomTom, Garmin, FAO, NOAA, USGS

The Rural, Remote and Metropolitan Area (RRMA) Classification, developed in 1994 by the then Department of Primary Industries and Energy, was the first indicator of those mentioned to be developed. Each SLA not in a Metropolitan zone was given an index of remoteness constructed using its population density and distance to the centroid of urban centres. SLAs with an index value less than 10.5 were allocated to the Rural zone while a value of greater than 10.5 resulted in a Remote zone allocation. These three categories were logical for research and funding purposes but had weaknesses when compared to new models like ARIA+ [12].

## Socio-economic Indexes for Areas (SEIFA), Australia

*Developed by: Australian Bureau of Statistics*

The previous remoteness scores deliberately did not focus on socio-economic factors however the ABS also provided a ranking for relative socio-economic advantage or disadvantage using Census data [13]. Socio-economic Indexes for Areas was a collection of four indexes:

- Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)
- Index of Relative Socio-economic Disadvantage (IRSD)
- Index of Education and Occupation (IEO)
- Index of Economic Resources

## Regional Price Index (RPI)

*Developed by: Government of Western Australia*

The Regional Price Index (RPI) was developed by the Government of Western Australia for the public and private sector when considering remuneration for remotely located staff. It compared the costs of 185 goods and services in regional centres to Metropolitan Perth. Therefore, in this index, 'regional' referred to all regions outside of Metropolitan Perth [14].

[12] Australian Institue of Health and Wealth, 2004. *Rural, regional and remote health: a guide to remoteness classifications.* [Online]
Available at: https://www.aihw.gov.au/reports/rural-remote-australians/guide-to-remoteness-classifications/summary
[Accessed October 2024].
[13] Australian Bureau of Statistics, 2023. *Socio-Economic Indexes for Areas (SEIFA), Australia.* [Online]
Available at: https://www.abs.gov.au/statistics/people/people-and-communities/socio-economic-indexes-areas-seifa-australia/latest-release
[Accessed October 2024].
[14] Department of Primary Industries and Regional Development, Western Australia, 2024. *Regional Price Index 2023.* [Online]
Available at: https://library.dpird.wa.gov.au/rd_statistics/10/
[Accessed October 2024].

## Other definitions

Some organisations used broad, less formal definitions for regional and remote. Usually, to simply refer to any location that was not in a major city. For example, the Regional Australia Institute (RAI), an independent think tank advocating for a stronger economy and better quality of life in regional Australia, defined 'regional' as everything beyond the major capital cities of Sydney, Melbourne, Brisbane, Perth, Adelaide and Canberra [15]. Through this definition, regional Australia included almost 10 million people. Similarly, The Royal Flying Doctor Service used the term 'remote and rural' to describe all areas outside of major cities i.e. ASGS-RA 2 to 5 [16].

Regional Development Australia consisted of 53 committees each responsible for a 'region' as specified on their website. Each region consists of a grouping of LGAs with similar economic activity and infrastructure needs [17].

[15] Regional Australia Institute, 2024. *What is Regional Australia?.* [Online]
Available at: https://www.regionalaustralia.org.au/Web/About-Us/What-is-Regional-Australia.aspx
[Accessed October 2024].
[16] Royal Flying Doctor Service, 2024. *Defining Rural and Remote.* [Online]
Available at: https://www.flyingdoctor.org.au/what-we-do/research/defining-rural-remote/#:~:text=The%20Royal%20Flying%20Doctor%20Service,areas%20outside%20Australia's%20major%20cities.
[Accessed October 2024].
[17] Regional Development Australia, 2023. *RDA network.* [Online]
Available at: https://www.rda.gov.au/rda-network
[Accessed October 2024].

# Conclusion

| Index | Geographic factors | Access to Services | Socio-Economic factors | Utilisation in Australia | Latest Release |
|---|---|---|---|---|---|
| **ARIA+** | ✓ | ✓ | × | Policy and health in rural and remote areas | 2021 |
| **ASGS** | ✓ | ✓ | × | Statistical Analysis and Spatial Planning | 2021 |
| **MMM** | ✓ | ✓ | × | Workforce policies, funding, and health programs | 2019 |
| **RRMA** | ✓ | ✓ | ✓ | Largely superseded | 2004 |
| **SEIFA** | × | × | ✓ | Socio-economic Research | 2021 |
| **RPI** | ✓ | × | ✓ | Rural Health Policy | 2021 |

To have consistency throughout research conducted under IP2, the Australian Statistical Geography Standard (ASGS) will be used to classify the remoteness of geographic areas. Developed by the Australian Bureau of Statistics (ABS), the ASGS was widely recognised and adopted throughout Australia. It was also stable over time with an accurate statistical basis that used meaningful regions for boundaries. Furthermore, as a relatively new index, it presented up-to-date data with several webtools to enhance access the ASGS index for specific regions, making it useful when collating data from all over the country.