RANDELL ENVIRONMENTAL CONSULTING

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Victorian e-waste infrastructure network assessment report

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Victorian e-waste infrastructure network assessment report

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Executive Summary

The Victorian Government has committed to banning the disposal of e-waste to landfill, with implementation to come into effect on 1 July 2019. E-waste is growing three times faster than general municipal waste in Australia, and it contains both valuable and hazardous materials that can be recovered when they reach the end of their working life. The ban seeks to improve outcomes for e-waste recovery and recycling and to reduce the risk of negative impacts on the environment.

As a result of the ban, additional e-waste will flow into the existing resource recovery network as the community and business look for new disposal options. The current council owned network of transfer stations (TS) and resource recovery centres (RRC) is likely to be the preferred e-waste disposal route for domestic e-wastes, as these sites are accessible, well located and are already used for the recycling and recovery of other materials. Other sites, such as retail outlets and community hubs will augment this collection network, particularly for smaller niche items like mobile phones and batteries.

Randell Environmental Consulting Pty Ltd (REC), in partnership with Reincarnate Pty Ltd (Reincarnate) and Rawtec Pty Ltd (Rawtec), has been appointed by Sustainability Victoria (SV) to undertake a detailed assessment of Victoria's current e-waste collection and storage sites and identify an **E-waste Collection Network (or ECN)** that will provide Victorian's with reasonable access to e-waste sites of an agreed standard. As part of the commission REC has also provided SV with an estimate of the investment in new or upgraded infrastructure that is required to implement the ECN.

This network assessment aims to:

1. Assess the "current state" of Victoria's e-waste collection network, including mapping all of the sites currently accepting various e-waste categories across key infrastructure types, including council facilities, privately owned and operated facilities, sites that service existing product stewardship arrangements, and end-of-life product takeback programs for electrical and electronic waste.
2. Develop a detailed database of sites from which to draw information and for SV to use throughout the implementation of the ban and any related infrastructure funding.
3. Develop a site assessment tool, based on a set of agreed criteria, and use that tool to group sites in order of their local and state significance to establish the ECN.
4. Develop infrastructure options for site upgrades across the ECN that would enable compliance with the key requirements of AS/NZS 5377: 2013 *Australian and New Zealand Standard, Collection, storage, transport and treatment of end-of-life electrical and electronic equipment* (AS5377)[1].
5. Develop an initial set of costings for the ECN sites (including a high and low set of costing scenarios).

[1] **This project assumes the following as key requirements of AS/NZS 5377:2013: storing e-waste to avoid breakage; protecting e-waste from the elements/weather; storing e-waste on an impermeable and easily bunded surface; providing clear signage in e-waste collection and storage areas.**

Mapping of the current e-waste infrastructure network

REC has used GIS mapping and population coverage analysis, using the most recent 2016 census data, to assess the current coverage of four major site categories, including:

1. All resource recovery centre (RRC) sites[2]
    a. RRC sites currently accepting scrap metal
    b. RRC sites currently accepting e-waste
2. Household chemical collection (HCC) sites
3. National TV and computer recycling scheme (NTCRS) sites
4. MobileMuster sites.

Population coverage of these sites, mapped within a 10, 20 and 30-minute drive time, is presented in Table 1, and in more detail within the report.

Table 1 Drive time coverage analysis of all sites mapped across Victoria (10, 20, 30-minute aggregate drive times)

Site type	Within 10 minutes	Within 20 minutes	Within 30 minutes
All RRC sites	62%	97%	99%
Metro RRC sites	61%	96%	99%
Regional RRC sites	64%	90%	97%
Metro RRC sites accepting metals	59%	95%	98%
Regional RRC sites accepting metals	62%	89%	98%
Metro RRC sites accepting e-waste	59%	96%	98%
Regional RRC sites accepting e-waste	59%	88%	96%
All Victorian Permanent drop-off sites	33%	82%	90%
Metro Permanent drop-off sites	33%	90%	98%
Regional Permanent drop-off sites	28%	52%	63%
All Victorian NTCRS sites	80%	90%	94%
Metro NTCRS sites	89%	98%	98%
Regional NTCRS sites	51%	66%	78%
All Victorian MobileMuster sites	91%	96%	98%
Metro MobileMuster sites	96%	98%	99%
Regional MobileMuster sites	76%	84%	94%

The mapping and analysis of the existing infrastructure network found the following:

- The current RRC network provides extensive coverage to Victorians within a 30-minute drive-time window, including rural and remote areas where population density is low. The RRC network appears capable of providing coverage for almost all Victorians and should therefore be the primary network of e-waste collection sites that are able to meet the key requirements of AS5377 (the ECN).

[2] 'All RRC sites' includes all Council owned sites (269 sites) and significant privately-owned sites that our analysis indicated are open to the public for waste drop-off (11 sites).

- The analysis of existing sites suggests that no new sites will be required to support the implementation of the ban.
- The 269 Council owned sites can provide reasonable access to most Victorians supported by a complimentary network of 11 privately owned and operated RRC sites, which allow public access.
- The RRC network can be augmented by existing specialist sites, such as retail sites collecting mobile phones, TVs and computers under existing stewardship arrangements. Along with privately owned RRCs, these facilities could be targeted in areas where a clear network gap exists that is unable to be filled by a council owned RRC site.
- SV funds the ongoing collection, transport and treatment of household batteries, lamps and fluorescent lights through the state-wide Household Chemical Collection program across 30 Permanent drop-off sites in metropolitan and regional Victoria. Further development at these sites to provide collection and storage infrastructure for other e-waste categories is a logical progression in the development of these important sites.

Reasonable access definitions

REC undertook desktop analysis into current definitions of reasonable access across the Victorian Government and nationally, looking at policy areas such as waste management, emergency services (such as police, fire and ambulance) and community services (such as payphones and post boxes).

The key findings of this analysis were:

- The State of Victoria Department of Environment, Land, Water and Planning 2017, *Managing e-waste in Victoria Policy Impact Assessment* (PIA 2017) PIA 2017 provides the most relevant definition of reasonable access for the e-waste collection and storage network and the PIA is closely linked the NTCRS requirements.
- Definitions of access for other services are not easily translated as the community is likely to put greater importance on access to healthcare, emergency services and community services (such as post boxes) than waste management services.

Developing the Draft[3] ECN

REC developed the Draft ECN to meet reasonable access requirements by the following steps:

1. include the Council owned RRC network as the baseline sites, then profile and map these sites
2. identify gaps in the Council owned RRC network
3. look for alternative sites, such as privately owned RRCs, existing product stewardship drop-off locations or other relevant sites, to fill network gaps.

[3] During consultation and engagement with WRRGs, Councils and industry (discussed below), the Draft ECN was referred to as the 'Proposed ENC' (PECN). For clarity, this report now refers to the **Draft ECN** (i.e. the ENC presented during consultation and engagement) and the **Final ECN** (the resolved ECN that is recommended for implementation).

REC profiled the Council RRC network using a multi-criteria analysis (MCA) tool that has been developed in consultation with SV. RRC were grouped into 'primary', 'secondary' and 'tertiary' sites[4].

Following the initial MCA analysis and consultation with SV, WRRGs and Councils, the Draft ECN was developed and includes:

- 81 primary sites
- 41 secondary sites.

Mapping and drive time analysis was completed for the Draft ECN with analysis based on 2016 population across 10, 20 and 30-minute drive times and the results are presented in Table 14.

Table 2 Drive time coverage analysis of the 122 Draft ECN sites across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Vic Draft ECN sites	55%	96%	98%
Metro Draft ECN sites	55%	95%	98%
Regional Draft ECN sites	57%	89%	95%

The mapping and analysis of the 122 Draft ECN sites suggests that the network would provide access to around 98% of the statewide population and the metropolitan population within a 30-minute drive time. For regional areas the drive time mapping analysis indicates that 95% of regional and rural populations would have access to this network within 30-minute drive time.

REC completed analysis of the Draft ECN against the Policy Impact Assessment (PIA) examples of reasonable access levels (the 'medium' level) and found that the ECN meets and exceeds this level of access.

ECN infrastructure options analysis

REC completed analysis and industry consultation regarding practicable options for e-waste collection and storage and found the following key findings:

- Whilst there are a range of infrastructure options used to collect and store e-wastes, there are a limited number of options that will enable the key requirements of AS5377 to be met.
- State Government funding of non 'fixed' infrastructure (stillages, large skip bins and shipping containers) for the ECN is not recommended as the ownership/governance issues associated with movable infrastructure are too complex for infrastructure funding agreements and ongoing costs management.
- REC recommends funding the establishment of the ECN with a range of permanent and semi-permanent[5] fully enclosed e-waste collections and storage sites.

[4] Primary and secondary sites are the most significant in terms of the populations serviced and the amount of e-wastes that need to be collected and stored before processing. Tertiary sites are also important in e-waste collection but serve lower populations and generally receive much lower amounts of e-waste.

[5] Semi-permanent shedding is only recommended and included in costings for sites where it is not practical (i.e. the site is due to close) or appropriate (the site is on a landfill that requires rehabilitation) to install permanent infrastructure

Existing e-waste infrastructure site assessments

REC completed 148 site assessments[6] to analyse the current state of e-waste collection and storage infrastructure. The following key findings were made:

- Almost all sites included in the Draft ECN are not compliant with the key requirements of AS5377 for at least one category of e-waste, including the 'specified e-wastes' as defined in the *Draft Waste Management Policy (E-waste) 2018*.
- The significance of the non-compliance for different e-waste categories needs to be considered. For example, the collection of white goods (after de-gassing) with scrap metals collections in an uncovered 30-meter skip bin, has a much lower risk profile than TV and computers being collected in an uncovered 30-meter bin and located on a sawtooth (breakage and stormwater contamination is a higher risk for TVs and computers).
- The level of non-compliance with the key requirements of AS5377 for TV and computers is perhaps the most significant issue for the sites assessed. Following the agreed site assessment method, REC found that of the 135 sites assessed accepting TVs and computers, just 7 had infrastructure that is compliant with the key requirements of AS5377.
- To meet the key requirements of AS5377, the e-wastes that are currently disposed to landfill will need to be collected and stored in a similar manner to a TV and computers. The infrastructure upgrades required to provide compliant collection and storage for TVs and computers, if built to a sufficient size, will also enable the compliant collection of the main e-waste category that is currently going to landfill (small household e-wastes).
- The funding for RRC upgrades presents an opportunity to provide 'better practise' collection and storage options for TVs and computers and other wastes, such as gas bottles and mattresses, that have some similar storage requirements and are currently poorly stored across the Victorian RRC network.

Consultation and engagement on the Draft ECN with WRRGs, Councils and industry

Post completion of the state-wide assessment of e-waste collection infrastructure, REC and SV completed a statewide consultation and engagement program on the Draft ECN with:

- all Victorian Waste and Resource Recovery Groups and Councils
- representatives of the four current co-regulatory arrangements operating under the National TV and Computer Recycling Scheme (NTCRS) and several e-waste recyclers
- MobileMuster, the official recycling program of the mobile phone industry in Australia
- Lighting Council Australia, the peak body for Australia's lighting industry
- several Victorian and national e-waste recyclers.

[6] Note that 47 of the site assessments were completed by Reincarnate and REC under very recent separate site assessment projects for both the Goulburn Valley and Gippsland WRRGs. The permission provided by these regions to use the existing site assessment data and findings enabled significant time and cost savings in delivering this report.

Consultation included a detailed presentation on the project methodology, the infrastructure options and site upgrade assessments and a 'council-by-council' review of the Draft ECN for accuracy and adequacy.

The consultation and engagement with WRRGs aimed at identifying strategic gaps, issues and potential errors in the Draft ECN, such as:

- ECN sites planned for closure.
- Tertiary 'sites' not suited to the ECN, such as transfer trailers and drop-off points.[7]
- Gaps in the network driven by geographic distance rather than just population, for example areas to the far east, west and north-west of Victoria.
- Substitution of sites in ECN sites in close proximity due to council preferences for upgrades (only where this would not have a material impact on the ability of the network to meet the community's needs).

As a result of the consultation and engagement, three sites were removed from the ECN and an additional 22 sites were added, resulting in a net increase of 19 sites in the 'final ECN'.

Final ECN analysis

The outcome of the consultation and engagement sessions, based on negotiation and discussion with WRRGs, Councils and industry, was a net increase of 19 sites to the Draft ECN. The resulting Final ECN includes a total of 141 RRC sites across Victoria; 28 in metropolitan Melbourne and 113 across regional Victoria. Collectively, this network provides coverage to some 98% of Victorian's within a 30-minute drive time, with extensive coverage across both metropolitan and regional areas. The Final ECN exceeds all definitions of reasonable access that the have been identified.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented for both the Draft and final ECN in Table 26.

Table 3 Comparative drive time coverage analysis of the Draft and final ECN across Victoria (10, 20, 30-minute aggregate drive times)

Site type	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Victorian Draft ECN	55%	96%	98%
Metro Draft ECN sites	55%	95%	98%
Regional Draft ECN sites	57%	89%	95%
Final ECN sites (Victoria)	**56%**	**96%**	**98%**
Metro ECN sites	**55%**	**98%**	**98%**
Regional ECN sites	**57%**	**91%**	**98%**

The net addition the 19 additional sites, resulting from the consultation and engagement program, does not increase the overall network coverage when compared to the Draft ECN across a 30-minute drive time. However, regional coverage increases by 3% from 95% to 98% and coverage within a 20-minute drive time increases for both regional and metro areas by 2% and 3% respectively.

[7] The consultation process identified some 30 tertiary sites from the initial infrastructure site lists that were transfer trailers or similar, with around 109 permanent tertiary sites remaining.

In addition to sites being added to the network for the reasons outlined above, a number of sites had their infrastructure costing revised as a result of the consultation and engagement. The multi-criteria analysis tool, used in the assessment of the ECN, by default assumed that sites on top of an old landfill would likely require temporary infrastructure, such as temporary shelter structures. However, as noted during site visits and confirmed during consultation, in many cases the sites had ample room away from the old fill area (i.e. some or all of the site was adjacent to the old landfill area rather than on it) or had been fully rehabilitated and could support permanent shedding.

Final ECN infrastructure upgrades cost estimates

REC completed indicative costing estimates for the suggested upgrades required for the Final ECN. The following provides a summary. Appendix C includes the detailed data for each ECN site.

- The final ECN includes 141 sites and 131 of these sites need a significant upgrade to e-waste collection and storage infrastructure to be compliant with the key requirements of AS5377. This represents a net increase of 19 sites compared to the Draft ECN.
- Based on REC's estimates, the indicative cost to provide fully enclosed fixed shedding for the Final ECN of the preferred (higher cost) standard would be around $11 million. This assumes a four-bay skillion shed with 4.9m clearance[8]. The represents a circa $1.6 million increase compared to the Draft ECN costings.
- Based on REC's estimates, the indicative cost to provide fully enclosed fixed shedding for the Final ECN of the lower cost option would be around $6.7 million. This assumes a three-bay strip shed. This represents around a $1 million increase compared to the Draft ECN costings.
- For completeness, REC has also provided indicative costing for tertiary sites, which includes costing using small, residential grade shedding on a hardstand. To upgrade all tertiary sites would require an additional $2.7 million (high cost scenario).
- Whilst there is potentially enough funding to provide an upgrade to all sites across the RRC network, it is recommended that the ECN sites be the focus in the first instance to ensure that a network of well-funded compliant sites is in place. Should funding remain, then the upgrading of tertiary sites should also be considered.

The Table below provides the high-level summary of estimated costings for the infrastructure upgrades.

Table 4 Indicative cost estimates scenarios

Sites	High Cost Scenario	Low Cost Scenario
Final ECN sites (primary and secondary sites)	$11,004,483	$6,699,598
Tertiary sites	$2,698,798	$1,355,728
All sites (ECN plus tertiary)	$13,703,281	$8,055,326

[8] See Section 4.4 for detailed discussion of infrastructure solutions.

1. Introduction

The Victorian Government seeks to implement a ban on the disposal of electronic and electrical waste (e-waste) to landfill. Many types of e-waste have the potential to cause harm to the environment and human health from hazardous components, when disposed to landfill, and the diversion of e-waste from landfill offers an opportunity to recovery valuable materials such as precious metals and rare earth materials.

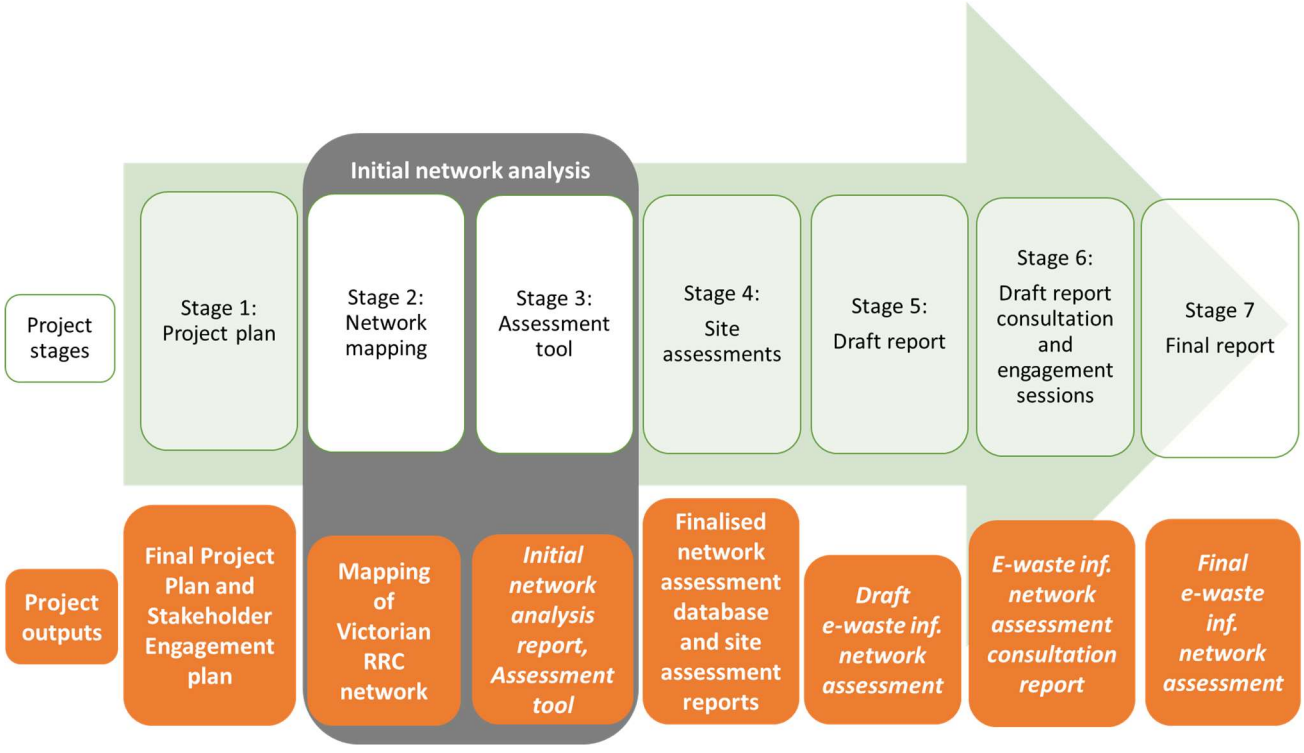
REC, in partnership with Reincarnate and Rawtec, has been appointed by SV to undertake a detailed assessment of Victoria's current e-waste collection and storage sites and identify an **e-waste collection network (or ECN)** that will provide Victorian's with reasonable access to e-waste sites of an agreed standard. As part of the commission REC has also provided SV with an estimate of the investment in new or upgraded infrastructure that is required to implement the ECN.

The implementation of a ban on e-waste is not a simple proposition. The e-waste stream in Victoria is broad, ranging from large whitegoods to small appliances and electronic toys. Collection and processing of e-waste exists across a number of systems, including:

- collection of scrap metals, which captures household appliances such as fridges, freezers, washers, dryers, microwaves and high metal content items
- disposal of smaller e-waste items, such as hair dryers and electronic toys, to landfill (current practice)
- collection of TVs, computers and computer peripheral products through the co-regulatory *National TV and Computer Recycling Scheme* (NTCRS).

REC has taken a staged approach in assessing Victoria's current e-waste collection and storage sites. REC's broad approach to the project deliver is presented in Figure 1 (this report is Stage 7).

Figure 1 Project delivery stages summary



This network assessment aims to:

1. Assess the "current state" of the e-waste collection network, including mapping all of the sites across key infrastructure types, including council facilities, privately owned and operated facilities, sites that service existing product stewardship arrangements, and end-of-life product takeback programs.
2. Develop a detailed database of sites from which to draw information and for SV to use throughout the implementation of the ban and any related infrastructure funding.
3. Develop a site assessment tool, based on a set of agreed criteria, and use that tool to group sites in order of their importance in making up the ECN of primary, secondary, and tertiary[9] sites.
4. Develop infrastructure options for the primary and secondary sites that would enable compliance with the key requirements of AS/NZS 5377: 2013 *Australian and New Zealand Standard, Collection, storage, transport and treatment of end-of-life electrical and electronic equipment* (AS5377)[10].
5. Develop an initial set of costings for the primary and secondary sites (including a high and low set of costing scenarios).
6. Develop infrastructure options for tertiary sites (that would enable compliance with the key requirements of AS5377.
7. Develop high and low-cost options for infrastructure upgrades at tertiary sites.

This report is structured in five parts, as follows.

Section 2 Current e-waste collection sites analysis

This Section presents the current state of e-waste collection sites and is structured across four major facility types:

- resource recovery centre infrastructure and similar
- existing 'permanent drop-off sites' for the free disposal of household batteries, lamps and fluorescent lights through SV's Household Chemical Collection program
- sites collecting mobile phones under the MobileMuster voluntary product stewardship scheme
- sites collecting TVs and computers as part of the National TV and Computer Recycling Scheme (NTCRS).

For each facility type, mapping and analysis has been undertaken to determine the current site coverage, based on drive-time intervals.

[9] Primary and secondary sites are the most significant in terms of the populations serviced and the amount of e-wastes that need to be collected and stored before processing. Tertiary sites are also important in e-waste collection but serve lower populations and generally receive much lower amounts of e-waste.

[10] **This project assumes the following as key requirements of AS/NZS 5377:2013: storing e-waste to avoid breakage; protecting e-waste from the elements/weather; storing e-waste on an impermeable and easily bunded surface; providing clear signage in e-waste collection and storage areas.**

Section 3 E-waste collection network (ECN) analysis

This Section provides:

- analysis of reasonable access criteria to be used in developing the ECN
- detail of the site profiling process and multi-criteria analysis (MCA) used in developing the ECN
- the initial ECN results and the consultation and gap analysis used in developing the Draft ECN
- the **Draft ECN**[11] analysis and mapping.

Section 4 ECN infrastructure options analysis

The current Victorian RRC network does not provide for e-waste collection and storage that enables compliance with the key requirements of AS5377. This Section presents practicable options for e-waste infrastructure at primary, secondary and tertiary sites, based on current practice, the key requirements of AS5377 and the likely requirements of the *Waste Management Policy (E-waste) 2018* ('the WMP'). Indicative costing for each of the infrastructure options (unit rate) that are recommended are also provided in this Section.

Section 5 ECN existing infrastructure assessments

This Section discusses the site assessment process that REC undertook to determine the existing infrastructure at the sites receiving e-waste. The discussion includes how REC assessed compliance against the key requirements of AS5377 (based on the agreed assessment method).

Section 6 Draft ECN consultation and engagement with WRRGs, Councils and industry

This section details the consultation and engagement undertaken on the Draft ECN with WRRGs, Councils and industry and the changes made as a result of consultation and engagement.

Section 7 Final ECN

This section presents and analyses the **Final ECN.**

Section 6 ECN infrastructure upgrades cost estimates

This Section brings together the findings of site assessments, consultation and engagement, and infrastructure options costing analysis to provide recommendations for upgrades and indicative costings for the ECN. The estimated costs for upgrades are provided by each Waste and Resource Recovery Group.

1.1 Method steps summary

Detailed discussion of the method followed for each step of the project is included throughout the report as required. Figure 2 below provides the 'method on a page' summary of the main steps completed to developing this report.

[11] During consultation and engagement with WRRGs, Councils and industry (discussed below), the Draft ECN was referred to as the 'Proposed ENC' (PECN). For clarity, this report now refers to the **Draft ECN** (i.e. the ENC presented during consultation and engagement) and the **Final ECN** (the resolved ECN that is recommended for implementation).

Figure 2 ECN development method

2. Current e-waste collection sites analysis

2.1 Data collection and development of site database

Step 1 of the project was to develop a comprehensive database of sites relevant for the collection and storage of e-waste. These sites included council owned and privately-owned RRC sites, as well as sites participating in relevant national product stewardship schemes and end-of-life product takeback programs.

Data on sites was provided by SV and its stakeholders and, in addition, some primary data was collected by REC through research and consultation. The key information sources that have informed the development of the site database include:

- Primary data on the priority e-waste sites provided by local government authorities to SV as part of a recent data collection survey
- Lists of RRC sites provided by SV that underpin the development of the *Statewide Waste and Resource Recovery Infrastructure Plan* (State Infrastructure Plan)
- Infrastructure schedules within each of the seven waste and resource recovery implementation plans (most of which include addresses and geocodes)
- Primary data collected by REC from each of the 79 Victorian council websites
- Primary data collected by Reincarnate and REC during recent projects on RRC infrastructure for Goulburn Valley Waste and Resource Recovery Group and Gippsland Waste and Resource Recovery Group
- Limited primary data provided by SV via the Victorian Recycling Industries Annual Survey (VRIAS)
- MobileMuster locations provided to SV by MobileMuster
- National TV and Computer Recycling Scheme (NTCRS) Victorian site locations provided to SV by the Department of Environment and Energy, Canberra.

2.2 Data cleaning and geocoding site data

REC used publicly available information, as well as direct consultation with WRRGs and local government officers to validate and 'clean' the various datasets. This included the removal or reclassification of some 30 sites from the council owned list that were either privately owned or had closed since the SV list was developed. The sites that have been removed are documented in the Assessment Tool, see 'RRN Exclusions' tab.

In addition, data was required to support the GIS mapping work to be undertaken, see Section 2.4, specifically geocode data. REC has crossed-checked the accuracy of this data as far as is practicable, however REC cannot guarantee the accuracy of third-party data sets provided as part of this project.

Several data sets were provided with no geocode locations or incomplete geocode locations, which are required for mapping with GIS programs. To convert these datasets, REC has used an online

batch geocoding tool which supports outputs of large numbers of site addresses into geocode format[12].

Note: in some instances, data for certain sites has been provided from different sources. For example, several RRC sites have been listed in regional waste and resource recovery implementation plans, the list of Permanent drop-off sites provided by SV and as sites collecting e-waste under the NTCRS. There may be some discrepancy between those data sets that were provided with geocodes and those where geocodes were established using batch processing. However, in these instances the margin of error is likely to be very small, mostly less than 100m, for example where a geocode has been taken from a site boundary rather than the centre of a site. This will not have a significant impact on the assessment.

2.3 E-waste categories and collection infrastructure analysis

There is a broad range of waste and resource recovery sites that currently collect e-waste, depending on the type of e-waste and the nature of the site. This can range from mobile phone outlets participating in Mobilemuster to large resource recovery centres with dedicated collection and storage areas for e-waste.

As part of the development of the landfill ban, SV has mapped e-waste types across 10 categories, based on the type of product / material and the likely collection and processing pathway. In order to map the current state of the e-waste infrastructure network, REC has aligned the 10 e-waste category types with the existing site types which is reflected in the mapping outputs, see Table 5.

We have done this in two ways:

- Main sites – the most suitable sites for the collection of this material, based on infrastructure, current trends and size of network
- Other sites – sites that could be suitable collection points if gap exists in the main site network.

Table 5 SV e-waste categories and main and secondary sites receiving

E-waste category	Main site	Other sites
Category A ▪ refrigerators ▪ washing machines ▪ cookers ▪ microwaves ▪ electric fans ▪ air conditioners	Council owned RRC/TS sites that collect scrap metal	Privately-owned RRC/TS sites that collect scrap metal Commercial scrap metal yards (drop-off) Scrap metal collectors
Category B(1) ▪ welding, soldering, milling ▪ automatic dispensers ▪ medical devices	E-waste processors Commercial scrap metal yards (drop-off) Scrap metal collectors	
Category B(2) ▪ monitoring & control equip	E-waste processors Commercial scrap metal yards (drop-off)	

[12] Batch geocoding provided by Doogal - https://www.doogal.co.uk/BatchGeocoding.php

E-waste category	Main site	Other sites
	Scrap metal collectors	
Category C ▪ irons ▪ toasters ▪ coffee machines ▪ hair dryers ▪ electric tools ▪ sewing machines ▪ musical instruments ▪ hi fi	Council owned RRC/TS sites	Privately-owned RRC/TS sites
Category D ▪ computers ▪ monitors ▪ laptops ▪ mice, keyboards, routers ▪ printers ▪ CRT TVs ▪ flat screen TVs	NTCRS sites Council owned RRC/TS sites collecting e-waste outside of the NTCRS	Council owned RRC/TS sites **not** currently collecting e-waste Privately-owned RRC/TS
Category E(1) ▪ fluorescent lamps ▪ high intensity discharge lamps ▪ compact fluorescent lamps	FluoroCycle sites Permanent drop-off sites Council owned RRC/TS sites collecting fluorescent lights outside of FluoroCycle	Council owned RRC/TS sites **not** currently collecting fluorescent lights Privately-owned RRC/TS
Category E(2) ▪ LEDs	Permanent drop-off sites Council owned RRC/TS sites	Privately-owned RRC/TS sites
Category E(3) ▪ mobile phones	MobileMuster sites	MobileMuster bins located at RRC/TS sites collecting other types of e-waste
Category F(1) ▪ toys ▪ game consoles ▪ portable audio & video ▪ remote controls	Council owned RRC/TS sites	Privately-owned RRC/TS sites
Category F(2) ▪ Photosensitive semiconductor devices	Council owned RRC/TS sites	Privately-owned RRC/TS sites Future takeback programs

This alignment suggests, at least for the initial network mapping, that the RRC/TS network, Permanent drop-off sites and the existing collection systems for product stewardship schemes will form the 'backbone' of the ECN.

Category B1 and B2 are the exceptions as these relate primarily to commercial and industrial (C&I) e-wastes, which are not expected to be managed via the RRC/TS network. Commercial e-wastes are typically taken directly for processing by e-waste recyclers or directly to metals recyclers.

There are a range of waste and resource recovery sites that may be suitable for the collection of e-waste under the implementation of a ban. However, it will be important that these sites have the

infrastructure to enable compliance with the key requirements of the AS5377 wherever possible (particularly for 'specified e-waste' types) and that the sites be readily accessible. The *Draft Waste Management Policy e-waste (2018)* section 8 states that e-waste service providers (including RRC) will be deemed as compliant with the policy if the requirements of AS5377 are met. We understand that AS5377 compliance is particularly relevant to 'specified e-waste'[13].

Considering the analysis of sites receiving e-waste, presented in Table 5, REC focused the initial network assessment mapping using the following existing set of facilities:

1. Council and privately-owned resource recovery centres infrastructure and similar
2. Existing 'permanent drop-off sites' for the free disposal of household batteries, lamps and fluorescent lights through SV's Household Chemical Collection program
3. Sites collecting mobile phones under the MobileMuster voluntary product stewardship scheme
4. Sites collecting TVs, computers and computer peripheral products as part of the National TV and Computer Recycling Scheme (NTCRS).

2.4 GIS mapping of all sites collecting and storing e-waste

Maps for this report have been created using the Maptitude geographical information system (GIS). This software uses a standard Australian Census population overlay in order to provide population and demographic analysis.

However, at the time of writing the Maptitude package does not include the most recent 2016 population data captured during the most recent Australian census. REC has therefore used specific population data by suburb (normal residence) and mapped each suburb using geocode location provided by Australian Towns List. Three population centres – Airport West, Melbourne Airport and Moorabbin Airport – were geocoded separately using Google Maps.

The result is a 2016 population mapping layer (using 2016 ABS census data) that REC has used to inform the drive time analysis and all population coverage provided in this report.

All e-waste sites were mapped in Maptitude in the following presentations:

1. All RRCs[14] by:
    - all sites
    - sites currently accepting metals
    - sites currently accepting e-waste
2. Existing 'permanent drop-off sites' for the free disposal of household batteries, lamps and fluorescent lights through SV's Household Chemical Collection program
3. MobileMuster sites
4. NTCRS sites.

For each presentation of the different types of e-waste collection sites, the following maps were prepared:

[13] Defined as: means waste rechargeable batteries, cathode ray tube monitors and televisions, flat panel monitors and televisions, information technology and telecommunications equipment, lighting and photovoltaic panels.
[14] 'All RRC sites' includes all Council owned sites (269 sites) and significant privately-owned sites that our analysis indicated are open to the public for waste drop-off (11 sites).

- all **Victorian** sites with drive times (10, 20 and 30-minute intervals)
- all **metropolitan** sites with drive times (10, 20 and 30-minute intervals)
- all **regional** sites with drive times (10, 20 and 30-minute intervals).

In addition, the same set of Victorian metropolitan and regional sites drive time mapping was mapped against relative population.

Drive time analysis is used throughout the report as one of the measures of e-waste collection site network coverage. This analysis is also undertaken using Maptitude GIS and the following should be noted:

- Drive-time points begin from the geocode location plotted in the mapping software and are analysed in 10-minute intervals from 0 – 30 minutes (i.e. 10 minutes, 20 minutes, 30 minutes)
- Estimates of "network coverage" refer to the percentage of Victorians (often separated into metropolitan areas and regional areas throughout the report) that can access one of the sites mapped within a 30-minute drive time. This is calculated using 2016 ABS census data mapped by suburb and plotted in Maptitude. It should be noted that suburb data is restricted to single points in the map taken at the geocode point for each suburb. Therefore, in some instances the outer parts of a suburb may be excluded where the drive time rings do not reach the geocode point.
- "Average" drive speeds are assumed for all road types. This helps to account for peak periods where traffic is high and ensures conservative estimates for both city and country travel time (rather than assuming higher speeds on quieter roads).

REC has adopted 30 minutes as a reasonable upper limit to drive times based on a review of a range of minimum access criteria from a range of waste and non-waste related services, see Section 3.1.

Appendix A includes the detailed analysis of the current e-waste collection sites and also includes all of the mapping which is referred to above. The summary analysis is provided below.

2.5 Summary analysis of e-waste collection network mapping

The analysis presented in Appendix A of the report aims at establishing the "current state" of the e-waste collection network in Victoria. Appendix A includes detailed analysis and mapping of population coverage of four major site categories, including:

1. All RRC sites[15]
    a. RRC sites currently accepting scrap metal
    b. RRC sites currently accepting e-waste
2. Permanent drop-off sites
3. NTCRS sites
4. MobileMuster sites

Population coverage of these sites, mapped within a 10, 20 and 30-minute drive time, is presented in Table 6.

[15] 'All RRC sites' includes all Council owned sites (269 sites) and significant privately-owned sites that our analysis indicated are open to the public for waste drop-off (11 sites).

Table 6 Drive time coverage analysis of all sites mapped across Victoria (10, 20, 30-minute aggregate drive times)

Site type	Within 10 minutes	Within 20 minutes	Within 30 minutes
All RRC sites	62%	97%	99%
Metro RRC sites	61%	96%	99%
Regional RRC sites	64%	90%	97%
Metro RRC sites accepting metals	59%	95%	98%
Regional RRC sites accepting metals	62%	89%	98%
Metro RRC sites accepting e-waste	59%	96%	98%
Regional RRC sites accepting e-waste	59%	88%	96%
All Victorian Permanent drop-off sites	33%	82%	90%
Metro Permanent drop-off sites	33%	90%	98%
Regional Permanent drop-off sites	28%	52%	63%
All Victorian NTCRS sites	80%	90%	94%
Metro NTCRS sites	89%	98%	98%
Regional NTCRS sites	51%	66%	78%
All Victorian MobileMuster sites	91%	96%	98%
Metro MobileMuster sites	96%	98%	99%
Regional MobileMuster sites	76%	84%	94%

The analysis and mapping presented in the table above can be summarised as follows.

- The existing RRC network of 280 sites, will underpin e-waste collection under the proposed landfill ban, is extensive, with sites located across metropolitan Melbourne and regional areas. This includes sites in very remote parts of the state, servicing small rural populations. Around 99% of the population can access an RRC site within a 30-minute drive time from their homes. Analysis of RRC site locations using population density overlays indicates that sites are well located to cover most, if not all, population centres.
- A large number of RRC facilities already collect scrap metals, which is important as metals-rich e-waste products, such as fridges, freezers, microwaves and washers, are already captured in high-volumes through this network. 240 RRC sites accept scrap metals for recycling, providing coverage for around 98% of the population within a 30-minute drive time.
- Similarly, some 228 RRC sites already accept e-waste in some form, predominantly TVs and computers, either as part of the NTCRS or through recyclers attached to the NTCRS. Drive time analysis shows that 98% of metropolitan residents and 96% of residents in regional Victoria can access an RRC that accepts e-waste within a 30-minute drive time.
- As part of the RRC network, SV funds the ongoing collection, transport and treatment of household batteries, lamps and fluorescent lights through the state-wide Household Chemical Collection program across 30 Permanent drop-off sites in metropolitan and regional Victoria. The Permanent drop-off sites network provides coverage to around 90% of Victorians within a 30-minute drive time, however this is heavily biased toward Melbourne with coverage in metropolitan areas being 98% compared to 63% for regional Victoria (although Permanent drop-off sites are well located in regard to regional population centres).

- There are several product stewardship schemes that are relevant to e-waste collection and recycling in Victoria. The NTCRS has 245 collection points across Victoria, including retailers, council facilities and RRC sites (both council and private). This network provides coverage of 94% across Victoria within a 30-minute drive time. Similarly, the MobileMuster voluntary stewardship scheme has more than 700 Victorian sites, with coverage of 98% of Victorians within a 30-minute drive time.

Key findings of the current e-waste site collection sites

The mapping and analysis of the current e-waste collection sites found the following:

- The current RRC network provides extensive coverage to Victorians within a 30-minute drive-time window, including rural and remote areas where population density is low. **The RRC network appears capable of providing coverage for almost all Victorians, and should therefore be the primary network of e-waste collection sites that are able to meet the key requirements of AS5377 (the ECN).**
- The analysis of existing sites suggests that no new sites will be required to support the implementation of the ban.
- The 269 Council owned sites can provide reasonable access to most Victorians supported by a complimentary network of around 11 privately owned and operated RRC sites, which allow public access.
- The RRC network can be augmented by existing specialist sites, such as retail sites collecting mobile phones, TVs and computers under existing stewardship arrangements. Along with privately owned RRCs, these facilities could be targeted in areas where a clear network gap exists that is unable to be filled by a council owned RRC site.
- SV funds the ongoing collection, transport and treatment of household batteries, lamps and fluorescent lights through the state-wide Household Chemical Collection program across 30 Permanent drop-off sites in metropolitan and regional Victoria. Further development at these sites to provide collection and storage infrastructure for other e-waste categories is a logical progression in the development of these important sites.

3. E-waste collection network (ECN) analysis

3.1 Defining reasonable access for e-waste collection and storage sites

Prior to commencing the site profiling, the REC team investigated existing definitions and precedent for "reasonable access" that may be applied to the e-waste infrastructure network to ensure the appropriate level of access is being provided.

This was undertaken using desktop analysis of policy and regulatory settings that may be appropriate, either outright or as a similar proxy that could be applied to waste management facilities and levels of access.

The following areas were investigated to assess reasonable access levels and definitions:

- Waste management and resource recovery
- Healthcare services
- Emergency services, including police, fire and ambulance
- Community services, including payphones and post boxes.

The commentary provided in this section of the report provides an overview of our findings on reasonable access definitions.

3.1.1 Managing e-waste in Victoria Policy Impact Assessment

Whilst the State of Victoria Department of Environment, Land, Water and Planning 2017, *Managing e-waste in Victoria Policy Impact Assessment* (PIA 2017) does not strictly nominate coverage area, the policy impact and cost-benefit analysis do include examples of a definition of access to assist in the costing and analysis and this is summarised in Table 7.

Table 7 Examples of reasonable access levels modelled in the PIA 2017

Region	Medium (preferred)	High	Low
Metropolitan	One permanent drop-off point for every 250,000 people plus, mobile collection events in municipalities that don't have permanent points or are large in area.	Kerbside collection service for every municipality (domestic).	One permanent drop-off point for every 250,000 people.
Regional	One permanent drop-off point for every municipality plus, one for every other town of 4000 people plus, mobile collection events for every other town of 2000.	One permanent drop-off point for every municipality plus one for every other town of 1000 people.	One permanent drop-off point for every municipality plus, one for every other town of 4000 people.
Commercial	Commercial collection services used for commercial e-waste.	Commercial collection services used for commercial e-waste.	Commercial collection services used for commercial e-waste.

The preferred option as presented in the PIA 2017 draws heavily on the NTCRS definitions (see below) and was modelled by the Department of Environment, Land, Water and Planning (DEWLP) as providing 99% coverage in metropolitan areas and 88% in regional areas, using a 20-minute drive-time window.

3.1.2 National TV and Computer Recycling Scheme

The definition of reasonable access for the e-waste collection network for the current product stewardship framework (the NTCRS) is provided in the *Product Stewardship (Television and Computers) Regulations 2011*[16].

Under the regulations, the reasonable access general requirements are outlined as follows (bolding added):

1) *Access to a collection service is reasonable if access is provided in accordance with this regulation.*
2) *A reference in this regulation to:*
    a) *a distance is the distance by road; and*
    b) *the population of an area or town is the population of the area or town as determined in the 2006 Census of Population and Housing, published on the website of the Australian Bureau of Statistics; and*
    c) *the centre point of a town is the point of intersection of the latitude and longitude identified as the location of the town in the Gazetteer of Australia 2010 Release, published by Geoscience Australia in February 2011.*

Metropolitan areas

3) *For each metropolitan area, the number of collection services provided in each financial year must at least* ***equal the population of that area divided by 250 000*** *and rounded up to the closest whole number.*

Inner regional areas

4) *At least one service must be provided for every* ***town of 10 000 people*** *or more in each financial year.*
5) *A service will be provided to a town mentioned in subregulation (4) if the service is* ***available within 100km*** *of the centre point of that town.*

Outer regional areas

6) *At least one service must be provided for every* ***town of 4 000 people*** *or more in each financial year.*
7) *A service will be provided to a town mentioned in subregulation (6) if the service is* ***available within 150km*** *of the centre point of that town.*

Remote areas

8) *At least one service must be provided for* ***every town of 2 000 people*** *or more, once every 2 financial years.*
9) *A service will be provided to a town mentioned in subregulation (8) if the service is* ***available within 200km*** *of the centre point of that town.*

[16] DoE, 2011. Product Stewardship (Television and Computers) Regulations 2011, Department of Environment and Energy, accessed 17 October 2017.

3.1.3 Other examples of reasonable access in the provision of government services

Whilst not an exhaustive list, the following provides some high-level commentary related to current reasonable access requirements and definitions for other various government and community services that were identified.

Regional Development Victoria

Regional Development Victoria (RDV) has published guidance in *Thinking Regional and Rural* (TRR)[17], which aims to increase awareness and understanding of regional and rural issues. TRR is designed to assist identify, monitor and assess the potential impacts of policy and legislative proposals upon regional and rural Victoria. It comprises five high-level considerations:

- Economy
- Accessibility
- Social and Community
- Environment
- Equity.

Whilst TRR does not provide set definitions of accessibility for regional Victoria, it does note that each of the different policy areas can have varying impacts on communities in regional and remote areas. Rather than providing guidelines, TRR notes that policy, programs and regulations should consider:

- Accessibility for communities in regional and remote areas, which is defined as "ease of approach between locations, as measured by the distance travelled, cost of travel, and time taken" (pg 15).
- Distances and population density in the provision of services.
- Whether remote communities be disadvantaged by a 'one size fits all' approach.
- Whether there are opportunities for policy, legislation or the provision of services to benefit geographically-isolated communities.

Australia Post

Australia Post provides details of its accessibility goals through its Community Service Obligations (CSOs), which are outlined under the Australian Postal Corporation Act 1989 (the APC Act)[18]. These are in place to ensure that Australia Post provide all communities with fair and reasonable access to postal services.

The current CSOs require Australia Post to maintain a comprehensive network of mail lodgement infrastructure, mandating that this must include at least 10,000 Street Posting Boxes[19] across Australia. Section 27 of the APC Act notes that:

[17] RDV 2017. Thinking Regional and Rural, accessed 17 October 2017
[18] Commonwealth Consolidated Acts. Australian Postal Corporation Act 1989, accessed 24 October 2017.
[19] Australia Post, 2017. Group Street Posting Box Policy, Australia Post, accessed 24 October 2017.

4) *Australia Post shall ensure:*
   d) *that, in view of the social importance of the letter service, the service is reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business*

In addition, the CSO standards require Australia Post to maintain at least 4,000 postal outlets, including 2,500 outlets in rural and remote areas of Australia.

Payphone Locations

The *Telecommunications Universal Service Obligation (Location of Payphones) Determination 2011*[20], outlines criteria for installing new payphones which aims to protect the existing coverage as the advancement of mobile phones increases.

The determination sets out criteria for areas for new payphone locations, which needs to meet a set of criteria set out under 3 categories. Category 1 sites are major sites such as retail shopping centres and transport hubs. Additional payphones are determined based on radius from the Category 1 sites as is presented in Table 8 and Table 9.

Table 8 Category 2 payphone locations – eligible places and areas

Places and areas	Specified radius
Retail Centres	1 km
Entertainment venues	1 km
Transport hubs	1 km
Health and Community facilities	1 km
Residential communities in cities and towns with average or high level of home telephone connection	2 km
Residential communities (including caravan parks and holiday units) in cities and towns with low home phone connection	1 km
Industrial or commercial areas	2 km
Small villages and towns (including holiday areas) with a permanent population of 200 or more persons	40 km
Places and areas within state or national parks, where there are permanent facilities and regular park staff visits	40 km
Small service centres on highways and major roads in rural and remote areas where there is adequate mobile phone coverage	100 km
Small service centres on highways and major roads in rural and remote areas where there is inadequate mobile phone coverage	100 km
Small remote communities, including Indigenous outstations with a permanent population of 20 or more adults or a total population of 50 or more persons	Radius not specified

[20] Australian Communications and Media Authority, 2017. Telecommunications Universal Service Obligation (Location of Payphones) Determination 2011, accessed 17 October 2017.

Table 9 Category 3 payphone locations – eligible places and areas

Places and areas	Specified radius
Small villages and towns (incl. holiday areas) with a permanent population of two hundred or more persons	40 km
Places and areas within state or national parks, where there are permanent facilities and regular park staff visits	100 km
Small service centres on highways and major roads in rural and remote areas where there is adequate mobile phone coverage	250 km
Small service centres on highways and major roads in rural and remote areas where there is inadequate mobile phone coverage	200 km
Small remote communities, including Indigenous outstations with a permanent population of 20 or more adults or a total population of 50 or more persons	Radius not specified

Emergency services

There is little publicly available information related to the positioning and access requirements for emergency services such as fire, ambulance and police. A review of government services prepared by the Productivity Commission in 2017 (PC 2017) does however point to performance indicators that are relevant to this discussion. The report notes that ambulance services are not based on drive-time or per capita metrics, rather they related to response times based on the criticality of each incident.

Whilst direct consultation with the relevant government departments may result in a better understanding of requirements for emergency services provision, it is likely that the community would value these services far higher than access to a drop-off location for e-waste.

Key findings of reasonable access review

- **The PIA 2017 provides the most relevant examples of reasonable access for the ECN and the PIA is closely linked the NTCRS requirements for co-regulatory arrangements.**
- Definitions of access for other services are not easily translated as the community is likely to put greater importance on access to healthcare, emergency services and community services (such as post boxes) than waste management services.

3.2 Profiling RRCs collecting and storing e-waste

As illustrated in Section 2, the existing Council owned RRC network of 269 sites, will underpin e-waste collection under the proposed landfill ban, however, it may not be possible, or necessary, for SV to fund upgrades at all of these sites.

The REC Team has therefore developed a process for profiling sites to determine the E-waste Collection Network (ECN) that would provide reasonable access and be upgraded to enable compliance with the key requirements of AS5377.

The Council owned RRC network (269 sites) is best placed to underpin the majority of the ECN in Victoria as these sites are:

- located across all areas of Victoria, from highly populated metropolitan areas to more sparsely populated areas in rural and regional Victoria
- already well known to the community as waste disposal points
- already accepting a range of waste materials, including metals and e-waste (TVs and computers)
- generally, have the footprint and practices to facilitate e-waste drop-off and collection.

Therefore, our approach to developing the ECN to meet reasonable access requirements has been to:

1. include the council owned RRC network as the baseline sites, then profile and map these sites
2. identify gaps in the Council owned RRC network
3. look for alternative sites, such as privately owned RRCs, existing product stewardship drop-off locations or other relevant sites, to fill network gaps.

3.2.1 Multi-criteria analysis for Council owned RRC profiling

A multi-criteria analysis (MCA) tool has been developed in consultation with SV to profile the council owned RRC network using quantitative data. The MCA tool is built around the following criteria, which are presented alongside the scoring scale in Table 10.

Site significance – This criterion relates to the listings of site significance in the Statewide Waste and Resource Recovery Infrastructure Plan (SWRRIP) and the seven Waste and Resource Recovery Implementation Plans (WRRIPs). Sites of state, regional and local importance are categorised within the tool to reflect the fact that the current suite of infrastructure planning documents have already been publicly vetted and this should be reflected in the site profile.

Hubs – sites that are currently being used to centralise e-waste from surrounding smaller sites within a municipality. These sites were considered important to highlight as they often will receive all material within the municipality it resides opposed to the immediate population the site serves.

Site category – Site category refers to the categories for RRC sites presented in the SV *Guide to better practice at resource recovery centres*. These categories are based on site throughput, with Category 1 sites being the smallest (<1,000 tonnes throughput per annum) and Category 3 sites being the largest (>30,000 tonnes throughput per annum). Note that while the model includes this criterion, REC has 'switched' this criterion off as it the site category was adequately addressed by the population range criteria.

Population range – Each site was mapped against the population it services using 2016 ABS census data. In most cases this is suburb data, however for sites servicing larger catchments, statistical area data was used instead.

Population growth – The generation of e-waste is linked to population and as such the tool includes a criterion for population growth based on Victoria in Future 2016 data by local government area (LGA). However, it should be noted that whilst the tool includes this criterion, it has been turned off for the site profiling process as it is based on percentages and this was resulting in a considerable bias toward specific LGA areas despite relative population in numbers being low (for example, a town growing from 500 people to 1,000 people is growing at 100% despite only having an additional 500 residents).

Estimated e-waste throughput (tonnes) – The estimated e-waste throughput for each site was calculated on a per capita basis, using data provided in the *E-waste Material Flow Analysis and infrastructure assessment* (REC, 2015).

Accepts metals and e-wastes – Sites that currently accept metals are assumed to have existing infrastructure and practices in place to support the collection of e-waste, including degassing of refrigerants. Sites that accept metals and also accept e-waste (mostly TVs and computers) are assumed to have existing infrastructure and practices in place to support the collection of e-waste. These sites were considered more significant than sites that don't currently collect metals or e-waste.

Table 10 MCA criteria and score for site profiling

CRITERIA							SCORE
Site significance	Hub	Site category	Population range	Population growth	Estimated e-waste (Tonnes)	Accepts metals and/or e-waste	**Criteria score**
				<0%		None	**0**
Local	Hub	Category 1	<2,000	0% - 20%	< 10	Either	**1**
			2,001 - 4,000	>20%	10- 50	Both	**2**
Regional		Category 2	4,001 - 10,000		50 - 100		**3**
			10,001 - 30,000		100 - 500		**4**
State		Category 3	>30,000		> 500		**5**

3.3 Initial ECN analysis

The MCA tool was used to assess all of the 269-council owned RRC sites within the site database[21] and profile sites as being of primary, secondary or tertiary significance in providing reasonable access.

Each site was given a numeric total score based on the criteria and scoring outlined above. The median score was calculated to be nine and this was set as the threshold for tertiary facilities. To provide more granular results, those sites at or above the average were further differentiated into primary and secondary significance, based on their scores. The results of the MCA analysis are presented in Table 11.

Table 11 Initial ECN MCA groupings

ECN grouping	Score range	No. of Sites
Primary (P) (highest significance)	> 11	71
Secondary (S)	9-11	52
Tertiary (T)	<9	146

The 123 primary and secondary Council sites (only) were mapped and analysed for network coverage based on a 30-minute drive-time and the results are detailed below.

3.3.1 Primary sites

Initially, the REC Team mapped and analysed the primary Council sites to test whether they alone would provide the required level of access. The analysis, which is presented in Table 12, suggests that both regional and metropolitan coverage would be lower than the NTCRS coverage[22] (90% Victoria within 20 minutes) and the regional coverage in the PIA 2017 analysis (88% regional coverage within 20 minutes).

Table 12 Initial ECN drive time coverage analysis of Council primary sites only (10, 20, 30-minute aggregate drive times)

Site type	Within 10 minutes	Within 20 minutes	Within 30 minutes
Primary sites only – all Victoria	48%	88%	95%
Primary sites only – metro	49%	91%	98%
Primary sites only – regional	45%	72%	83%

In addition to shortcomings in overall coverage, using primary sites alone would leave some 28 out of Victoria's 79 local government areas (LGAs) without a designated site for e-waste collection and storage. This is likely to present an issue of equity as SV has expressed a desire to ensure, as far as is practicable, that each LGA has at least one main site for e-waste collection and storage.

[21] As noted previously, the criteria for population growth was not used for the final assessment due to its disproportionate impact on the site rankings. However, population growth is factored into the projections for e-waste generation which were considered in the infrastructure solutions analysis of this report.

[22] Note the coverage of primary sites only exceeds NTCRS coverage in regional areas but is lower for metropolitan areas and across Victoria overall

3.3.2 Primary and secondary sites

To provide increased coverage, the REC Team mapped and analysed all primary and secondary Council sites. The analysis, which is presented in Table 13, shows significantly improved network coverage across regional and metropolitan areas, particularly within the 10 – 20-minute drive time period.

Table 13 Initial ECN drive time coverage analysis of Council primary and secondary sites (10, 20, 30-minute aggregate drive times)

Site type	Within 10 minutes	Within 20 minutes	Within 30 minutes
Primary and secondary sites – all Victoria	51%	93%	97%
Primary and secondary sites – metro	50%	94%	98%
Primary and secondary sites – regional	55%	85%	91%

Given the high levels of coverage provided by inclusion of primary and secondary sites (only) in the initial ECN, REC then moved to consult with WRRGs and Council and also assess compliance of this initial ECN of sites against the requirements of the PIA (so called Gap filling analysis), which is discussed below.

3.4 Initial ECN gap analysis

3.4.1 WRRG and Council consultation and engagement on initial ECN

Upon completion of the initial network analysis and mapping tasks, REC engaged with WRRGs and Councils regarding the sites that were identified in the initial ECN.

WRRGs and Council feedback was sought regarding the sites that were included in the ECN and asked to comment on sites that should or should not be included.

Importantly, this process identified several sites that should be included in the ECN ***and*** several that should not. Most of the WRRG and Council suggestions pointed to the need to improve the mapping of populations served by each site in the initial ECN analysis. Once the populations served data was reviewed and amended, the ECN aligned closely with WRRG and Council suggestions of sites for inclusion in the ECN. This consultation and engagement highlighted the importance of 'ground-truthing' the ECN analysis with those that operate the network.

3.4.2 Testing initial ECN against PIA requirements

Gap analysis conducted against the PIA preferred methodology involved assessing:

- Does every regional municipality have primary or secondary council site?
- Does every regional urban centre of 4,000+ have a primary or secondary council site servicing the site within 30 mins drive time at a minimum?
- Does the metropolitan region have enough council sites for every 250,000 people?

Despite the greater coverage provided by the addition of the secondary sites, analysis of primary and secondary sites against these tests highlighted a number of gaps.

The filling of the Council primary and secondary site network resulting in the addition of:

- two private sites in regional Victoria to service Warrnambool and Colac urban centres
- five private sites in Metropolitan Melbourne to:
    - Cardinia
    - Casey
    - Melbourne
    - Whittlesea
    - Kingston.

The addition of the private sites within the metropolitan region provided excess coverage in relation to the example methods in the PIA however filled gaps within councils without public facilities.

3.5 Draft ECN analysis

From the MCA and gap filling analysis presented in the preceding sections of this report, the Draft ECN was developed, which includes:

- 81 primary sites
- 41 secondary sites.

Mapping and drive time analysis was completed for the Draft ECN with analysis based on 2016 population across 10, 20 and 30-minute drive times and the results are presented in Table 14.

Table 14 Drive time coverage analysis of the 122 Draft ECN sites across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Vic Draft ECN sites	55%	96%	98%
Metro Draft ECN sites	55%	95%	98%
Regional Draft ECN sites	57%	89%	95%

The mapping and analysis of the 122 Draft ECN sites suggests that the network would provide access to around 98% of the statewide population and the metropolitan population with within a 30-minute drive time. For regional areas the drivetime mapping analysis indicates that 95% of regional and rural populations would have access to the network within 30-minute drive time.

Drive time analysis of Draft ECN sites is presented as follows:

- Figure 3 Drive time analysis of the Draft E-waste Collection Network across Victoria at 10, 20 and 30-minute drive time intervals
- Figure 4 Drive time analysis of the Draft E-waste Collection Network across Victoria at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 5 Drive time analysis of the metropolitan Draft E-waste Collection Network at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 6 Drive time analysis of the regional Draft E-waste Collection Network at 10, 20 and 30-minute drive time intervals mapped against population density.

Figure 3 Drive time analysis of the Draft E-waste Collection Network across Victoria at 10, 20 and 30-minute drive time intervals

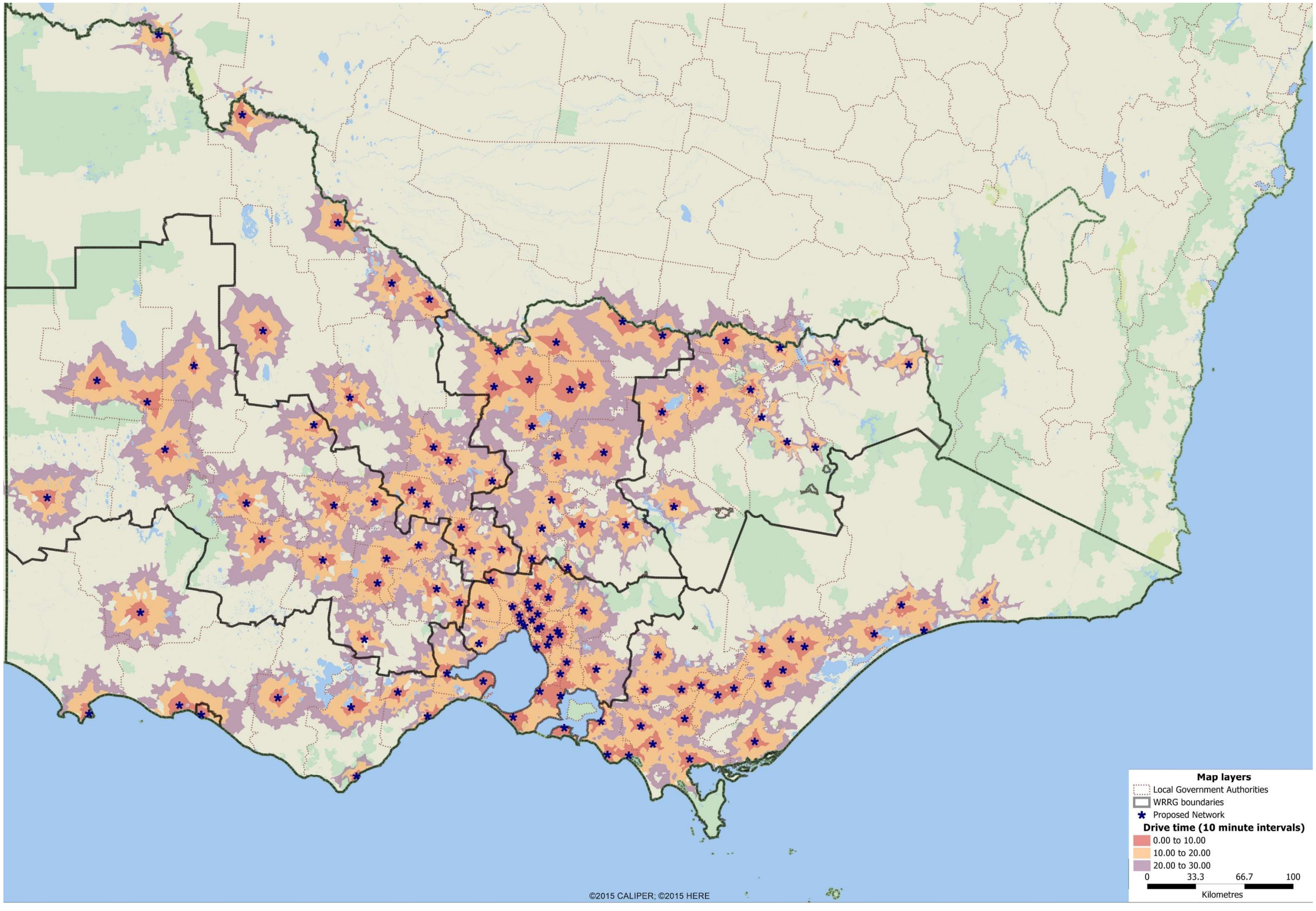


Figure 4 Drive time analysis of the Draft E-waste Collection Network across Victoria at 10, 20 and 30-minute drive time intervals mapped against population density

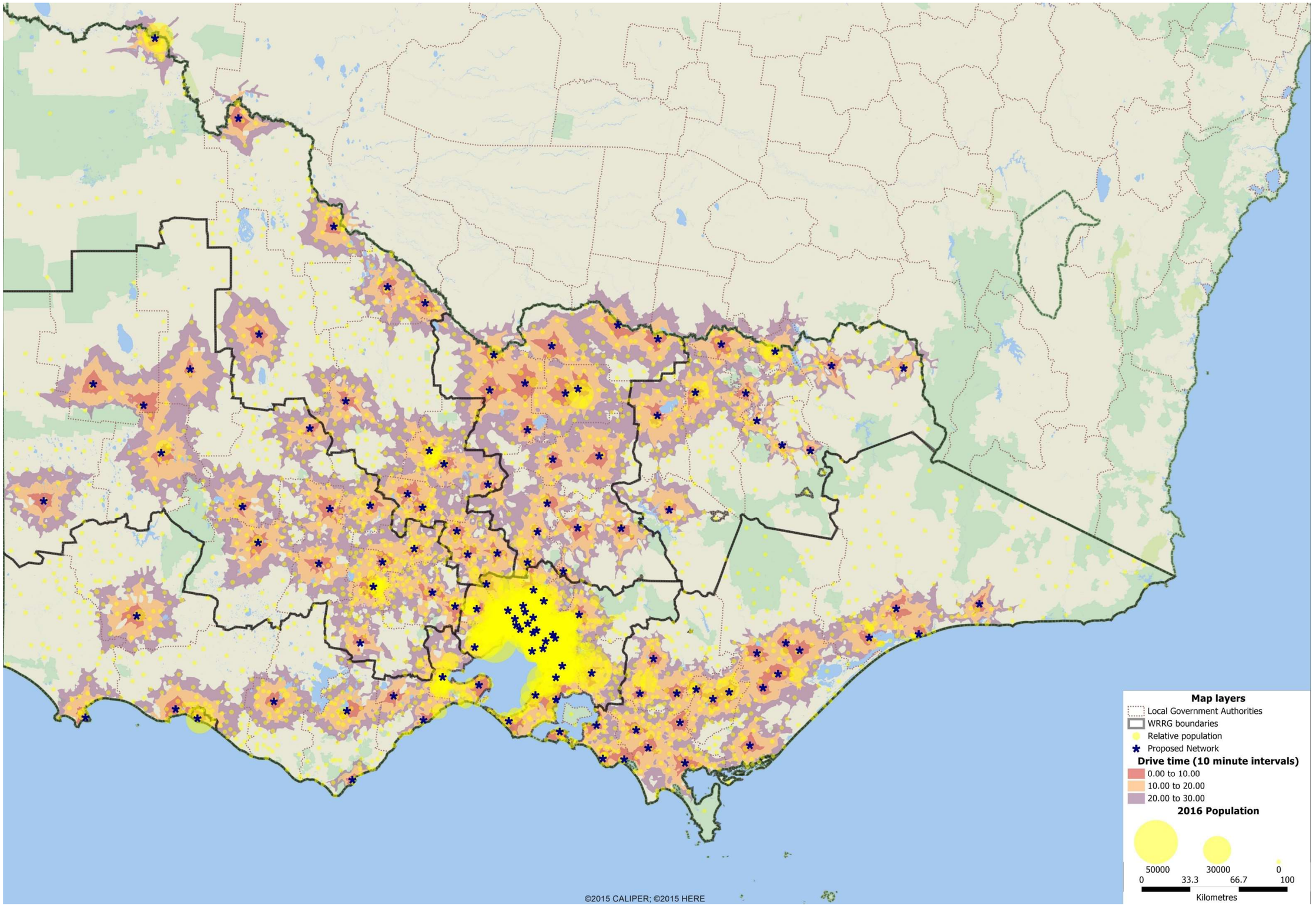


Figure 5 Drive time analysis of the metropolitan Draft E-waste Collection Network at 10, 20 and 30-minute drive time intervals mapped against population density

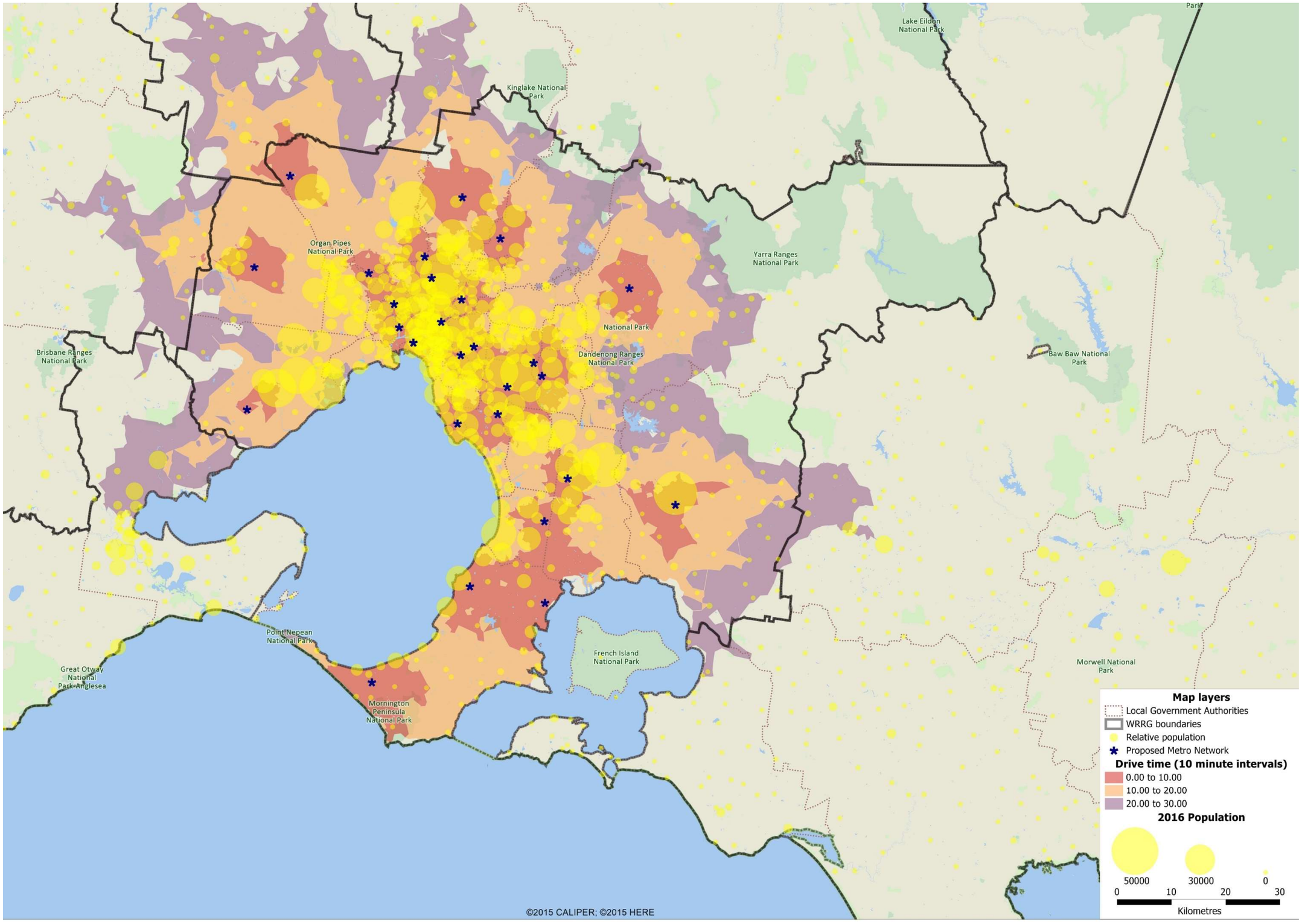
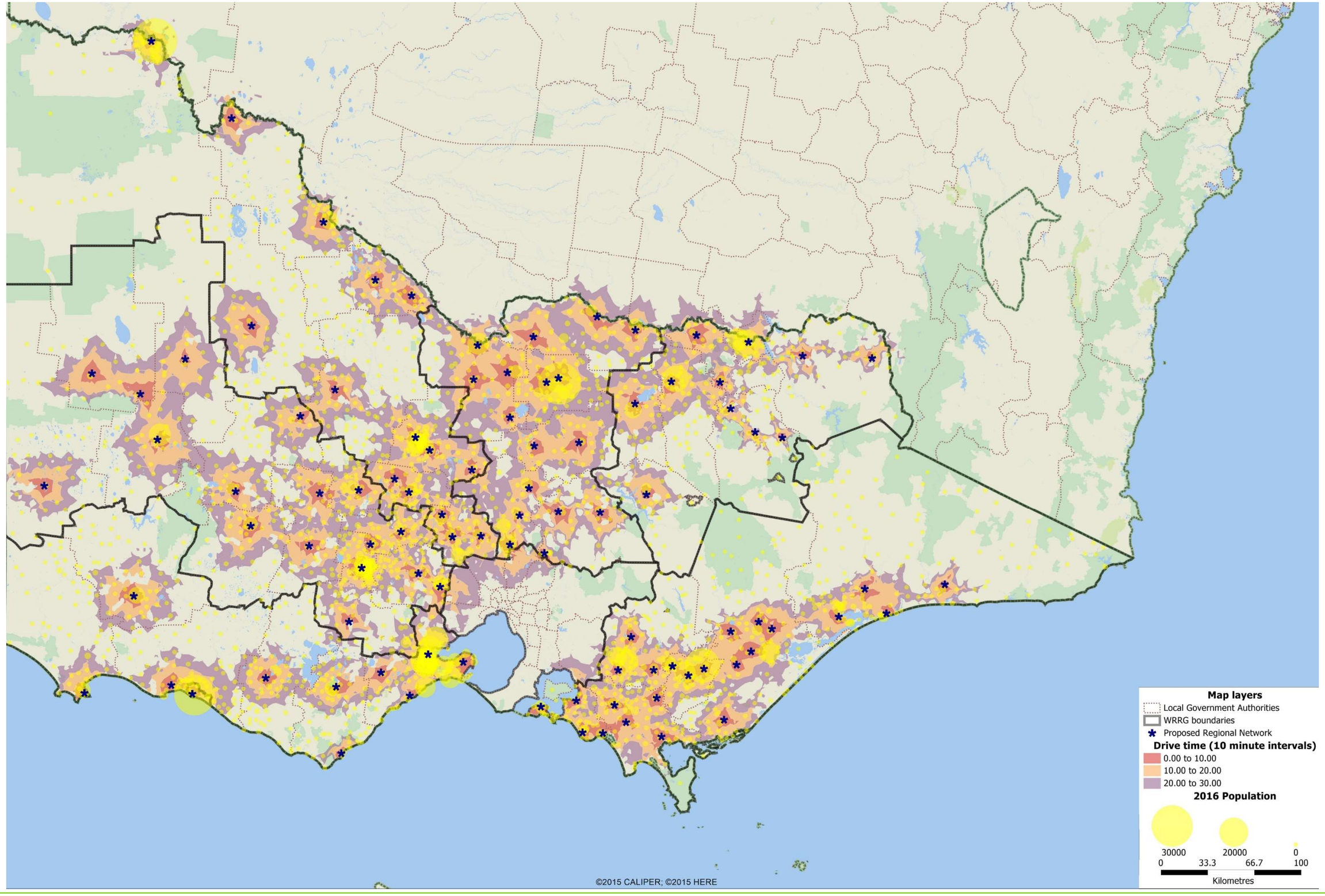


Figure 6 Drive time analysis of the regional Draft E-waste Collection Network at 10, 20 and 30-minute drive time intervals mapped against population density



3.5.1 Draft ECN versus reasonable access definitions

Using the mapping of the Draft ECN and analysis of its network coverage, REC undertook an assessment of the Draft ECN against the reasonable access requirements outlined in the NTCRS, PIA and RDV's *Thinking Regional and Rural*. The analysis, which is presented in Table 15, suggests that the Draft ECN met and exceeded all of the recommended reasonable access requirements.

Table 15 Assessment of the ECN against the recommended reasonable access requirements

Reasonable access requirement	Draft ECN Assessment	Comments
NTCRS Requirements		
Metropolitan areas – number of services must at least equal the population of that area divided by 250 000 and rounded up to the closest whole number.		The NTCRS requirements, based on Melbourne's current population of roughly 6 million people, would be a minimum of 24 metropolitan sites. The ECN includes some 30 metropolitan sites, thus significantly exceeds this requirement.
Inner regional areas – at least one service is available within 100km of every town of 10,000 people or more.		Mapping of population centres of 10,000 or more indicates that all inner regional areas are serviced by a ECN site within 100km. In most instances, population centres of this size have a site within a 10km radius.
Outer regional areas – at least one service is available within 150km of every town of 4,000 people or more.		Mapping of population centres of 4,000 or more indicates that all inner regional areas are serviced by a ECN site within 150km.
Remote areas – at least one service is available within 200km of every town of 2,000 people or more.		Mapping of population centres of 2,000 or more indicates that all inner regional areas are serviced by a ECN site within 200km.
PIA Equity of Access Example		
Metropolitan areas – one permanent drop-off point for every 250,000 people.		As per the NTCRS analysis above
Regional areas - One permanent drop-off point for every municipality		All 48 regional LGAs, with the exception of the Borough of Queenscliffe, has at least one ECN site within its municipality. The Borough of Queenscliffe does not have a council or privately-owned RRC within its borders, and recommends residents use the nearby Drysdale RRC which is included as a ECN site.
plus one permanent drop-off point for every other town of 4,000 people		As per the NTCRS analysis above, there is a permanent ECN site for each town of 4,000 people or more.

plus mobile collection events for every other town of 2,000 people		As per the NTCRS analysis above, there is a permanent ECN site for each town of 2,000 people or more, which exceeds the PIA requirements.
Thinking Regional and Rural Considerations		
Programs should consider accessibility for communities in regional and remote areas, which is defined as "ease of approach between locations, as measured by the distance travelled, cost of travel, and time taken:		Considerable work has been undertaken to ensure that regional and rural areas have good access to ECN sites, with a maximum 30-minute drive time modelled throughout. The additional work to bring in the 52 secondary sites was done deliberately to increase regional and rural coverage. Analysis has been done using travel times with consideration for proximity, with the most appropriate site in the closest proximity preference.
Programs should consider "distances and population density in the provision of services"		All mapping and analysis presented in the report has considered population density in the provision of services. Separate maps that plot relative population (essentially population density) have been produced for all infrastructure types.
Programs should consider "whether remote communities be disadvantaged by a 'one size fits all' approach"		The MCA approach has been undertaken using a number of different criteria and population size is not heavily weighted in relation to other factors. This ensures that a one size fits all approach is not taken.

Key findings of Draft ECN analysis

- The inclusion of primary and secondary Council owned RRC sites, profiled using a MCA, provides a comprehensive network of e-waste collection and storage facilities across Victoria.
- Gap analysis of primary and secondary sites against the requirements of the RA examples in the PIA and WRRG and Council consultation, resulted in the adding of several regional and metropolitan sites to the Draft ECN.
- The Draft ECN would provide 98% of the metropolitan and 95% of the rural population with an e-waste collection and storage site that enables compliance with the key requirements of AS5377 within 30-minutes' drive.
- The Draft ECN met and exceeded the 'reasonable access' example in the PIA.

4. ECN infrastructure options analysis

This section outlines RRC infrastructure options for the collection of different groupings of e-wastes under the proposed Victorian e-waste landfill ban.

REC has developed infrastructure options that will enable the implementation of AS5377 key requirements[23] to the extent that is thought to be practicable across the ECN network **and** considering the variable risk profile of the different groups of e-wastes.

The e-waste groupings and infrastructure options, consider the following important references:

- State of Victoria Department of Environment, Land, Water and Planning 2017, *Managing e-waste in Victoria Policy Impact Assessment* (PIA 2017)
- State of Victoria Department of Environment, Land, Water and Planning 2017, *Draft Waste Management Policy (E-waste) 2018*
- Environment Protection Act 1970 *Waste management policy (Siting, Design and Management of Landfills) 2004*
- C.P. Balde, R. Kuehr, K. Blumenthal, S. Fondeur Gill, M. Kern, P. Micheli, E. Magpantay, J. Huisman (2015), *E-waste statistics: Guidelines on classifications, reporting and indicators*. United Nations University, IAS - SCYCLE, Bonn, Germany. 2015. (UNU 2015b). Available at: http://unu.edu/news/news/harmonization-of-e-waste-statistics.html#files.
- UK Government 2016, *Collection of waste electrical and electronic equipment (WEEE) from designated collection facilities (DCFs): code of practice* ("WEEE code of practice"), available at: https://www.gov.uk/government/publications/waste-electrical-and-electronic-equipment-weee-collection-code-of-practice/collection-of-waste-electrical-and-electronic-equipment-weee-from-designated-collection-facilities-dcfs-code-of-practice#dcf-operator-responsibilities
- AS/NZS 5377: 2013 *Australian and New Zealand Standard, Collection, storage, transport and treatment of end-of-life electrical and electronic equipment*
- Reincarnate, REC 2017 *FINAL e-waste self-assessment checklist.*
- Global Compliance Certification, *AS NZS 5377 Self-assessment tool.*
- EPA Victoria 2017, *Management and Storage of Combustible Recyclable and Waste Materials – Guideline* (EPA Vic 2017)

4.1 E-waste groupings (for RRC infrastructure)

E-wastes have been grouped for the purposes of RRC infrastructure provision. The following grouping of e-wastes are proposed:

1. Large household appliances
2. Computers, TVs and peripherals (NTCRS)
3. Small household appliances, tools, toys, and other consumer e-goods

[23] This project assumes the following as key requirements of AS/NZS 5377:2013: storing e-waste to avoid breakage; protecting e-waste from the elements/weather; storing e-waste on an impermeable and easily bunded surface; providing clear signage in e-waste collection and storage areas.

4. Lighting
5. Batteries
6. Solar (photovoltaic) panels (PVs) Palacon space in shedding.
7. MobileMuster collections
8. Intractable waste[24]

Notes on e-waste groupings for RRC infrastructure:

- **Battery types** are often not listed as a separate category of e-wastes (see Table 5) because batteries are often embedded into other e-goods. However, for RRC infrastructure separate collection of batteries occurs currently and the need for improved battery segregation is growing due to the increase in high output and potentially flammable battery chemistries such as lithium-ion (Li-ion) (which is now the dominant chemistry in power tools and computers).
- As per UK WEEE code of practice 2016, **PV panels** are allocated a separate grouping but are not expected to be disposed to RRC in significant amounts until round 2025 when end-of-life volumes of PV panels are projected to enter Victoria's waste stream in significant volumes.
- It is assumed that mobile phones are collected via the '**MobileMuster**' network and do not require additional RRC infrastructure provision.
- The **'Intractable waste'** grouping has been included mainly to cater for smoke alarm tonnages. Mixing smoke alarms into the recycling steam could cause major issues. If the Tellus facility is established then smoke alarms could be collected and sent for long-term containment. Currently, landfill appears to be the most practicable solution. However, based on SV's direction, REC has included this as a separate grouping which will require some form of collection receptacle within RRCs.

Commercial e-goods: as per the e-waste PIA 2017 and UK WEEE code of practice 2016, commercial e-wastes are assumed to be managed by waste collection companies and taken directly for reprocessing at the end-of-life. The RRC is assumed to cater to domestic e-wastes only and the groups above to not include commercial e-wastes or e-waste from commercial sources.

4.2 Industry consultation and engagement regarding infrastructure solutions

To support the development of infrastructure solutions, REC undertook targeted consultation with industry throughout the site assessment process discussed in Section 5. This included discussions with:

- Outlook environmental
- Western District Employment Access (WDEA)
- Sims Recycling Solutions
- ANZRP[25].

[24] Wastes that are unable to be recovered, treated and/or disposed of by technology and methods available within Australia and approved by the EPA

[25] Note this was a limited discussion only as ANZRP expressed concerns about confidentiality and information sharing

Whilst this has not been a comprehensive industry consultation program (which is likely to come after the completion of this report and finalisation of the WMP), it has provided valuable insight into the potential issues, concerns and opportunities related to the implementation of the e-waste ban.

The following points summarise the industry discussions:

- Some industry players expressed concerns about the potential move away from 30m^3 bulk bins for e-waste collection and transport. It was noted that this is logistically the most efficient form of transport, particularly for high volume sites needing longer distances to transport such as regional centres (Bairnsdale, Shepparton for instance). Larger bins reduce the frequency of movements which is often the biggest cost, and this helps keep costs down. It was further noted that hand stacking, at least the first layer of a large bin (by staff or customers) can reduce overall breakage.
- A number of not-for-profit operators who use manual dismantling provided a contradictory view. One organisation in particular noted that material breakage from bulk hauled bins (such as the 30m^3 bins referred to above) result in significant breakage, particularly at the point of receipt where they are often tipped onto the ground for sorting and processing. Breakage not only constitutes an environmental and human health risk, it increases workload and does not support whole dismantling of e-waste into its constituent parts. In some cases, breakage is so bad that the loads are rejected and disposed of at councils own cost. These organisations welcome a move toward smaller skips and stillage's, with one group suggesting bins as large as 15m^3 could still be used with hand loading, which would reduce breakage and still be relatively cost effective in terms of transport.
- A number of the not-for-profit organisations expressed concerns about end markets for "other e-waste" and the lack of a recycling rebate as these items are not captured through any product stewardship arrangement. It was noted (and visually observed at least 3 sites) that on-selling plastics is becoming increasingly difficult with dropping markets and prices. The introduction of more e-waste will compound these issues as many (such as toys and vacuum cleaners) will not be captured in the existing scrap steel stream. Having said this, the industry appears to have the capacity to process additional e-waste if there is a financial incentive to do so.
- There was recognition by some of the industry consultees that ultimately the market will respond to what the customers require, which means that if new collection arrangements (for example, smaller stillage) are required then the industry will react accordingly. However, the lack of mobile plant for shifting and loading e-waste receptacles at many RRCs was noted as a barrier. Whilst industry participants suggested they could use trucks with cranes and forklifts, this would add significant transportation costs.

4.2.1 E-waste processing industry collection options provided to RRC

REC discussed collection options for e-waste types and categories that are currently provided by the e-waste processing industry (to Council under a collection contract). This is relevant as some infrastructure solutions will be better suited to specific collection arrangements (for instance, sites using hook lift or roll on, roll off skip bins are likely to need greater height clearance for trucks to load and unload. The following collection options were identified during our consultant with industry:

1. 30m^3 bin located on a 'sawtooth' drop off (breakage of e-waste is expected).

2. Walk-in hooklift bin (with end open), customers drop e-waste near the bin and then site staff carry or supervise. Can be 30m3 down to low-sided hook lift ($10m^3$ - $15m^3$).
3. 20 or 40-foot shipping containers (with open door), customers drop e-waste near the bin and then site staff carry or supervise.
4. E-waste is placed on the ground next to a 30m3 skip bin then council staff load into bin using a loader. This can reduce the bin hire cost but leads to double handling and significant breakage.
5. E-waste placed directly into cages / stillage's, stacked on top of each other, need a forklift at the site to double stack stillage's. If a forklift is not available onsite a truck with a tail-lift is required which adds to collection costs. Stillage's need careful management and can be easily damaged.
6. Bulka bags, lower volume sites, e-waste stacked on the ground until they have enough to fill a couple of bags (as the bags can degrade over time if left in weather). If the site has covered areas, e-waste can be placed directly into bulka bags. Can be linked with scrap steel collection and they are picked up at the same time.
7. E-waste loaded straight onto pallets then wrapped with shrink wrap, not an option if much volume as can be hard to stack e-waste in an efficient way. Avoids bin costs and also allows them to move pallets.

4.3 Infrastructure options summary

REC has developed infrastructure options that enable the implementation of the key requirements of AS5377 to the extent that is thought to be 'reasonably practicable' (as required by *Draft Waste Management Policy (E-waste) 2018*).

Appendix B includes an extract from Reincarnate, REC 2017 *E-waste self-assessment checklist* that summarises the requirements of AS5377.

REC has considered the variable risk profile of collecting and storing different groups of e-wastes. As per the PIA 2017 and the *Draft Waste Management Policy (E-waste) 2018* list of specified e-waste, the following e-wastes are noted as having higher concentrations of hazardous substances:

- information technology (IT) equipment (including mobile phones)
- televisions
- computers and computer peripherals
- photovoltaic systems
- fluorescent lighting
- rechargeable batteries.

All other e-wastes are assumed to have a lower risk profile and therefore require less stringent compliance with AS5377[26].

REC has provided what is thought to be a practicable interpretation of the standard that allows for:

- non-weather proof storage of e-waste such as large household appliances

[26] AS5377 does not differentiate between lower risk e-wastes such as white goods and mercury containing globes (for example).

- the mixing of lower risk profile e-wastes with scrap metals.

Options that are presented in Table 16 are in order of preference (i.e. preferred option first).

During the development of the options, REC considered if different options should be developed for sites that are of primary, secondary and tertiary significance for the ECN. REC found that the options for high tonnage sites were simply a larger version of the same option recommended for tertiary sites. Hence the options outlined below are generic and would be scaled to suit the tonnages received.

For any of the options outlined below the following would also be required:

- appropriate signage
- staff training
- site supervision
- a secure site.

4.3.1 Considerations for shed infrastructure

Recent site assessments by the project team in the Gippsland and Goulburn Valley regions have provided significant learnings regarding RRC covered areas; in particular issues with the covered and bunded areas provided for waste oil collection points, as shown in Figure 1.

Figure 7 roofed and bunded waste oil disposal point

A simple roofed and bunded area could provide sufficient weathering and stormwater protection for e-wastes (to meet AS5377 requirements). However, rainwater is prone to filling the bunded area, which then creates a contaminated stormwater issue that requires treatment.

REC considered the following shedding options:

1. Roof only with hardstand and bunding to prevent contaminated water/liquid discharge. Not recommended as the bund fills with rainwater which then requires treatment. Also, not a secure storage of e-wastes (relies on site fencing being secure).
2. Roof and three-walled shed with hardstand and bunding. The shed can still fill with stormwater if the weather comes from the 'wrong' direction. Also, not a secure storage of e-wastes (relies on site fencing being secure).
3. Fully enclosed shed. Bunding may not be required if the batteries are in bunded collection units. Any bunding would not fill with rain water. Costs would be slightly higher per site. Provides secure storage of e-wastes.

REC recommends that, where possible, fully enclosed shedding should be provided due to the issues noted above.

Similarly, REC has concerns with the use of covered skip bins (for example, skip bins with sealed lids) and shipping containers. Whilst these could be made compliant with the key requirements of AS5377 (for example, a lockable shipping container that is carefully hand stacked) there are issues associated with ownership and governance over mobile storage infrastructure of this nature. It is likely that, in the case of skip bins, the site would need to lease a number of bins (and potentially pay for upgrades to lids to ensure they are watertight) to ensure that there are empty bins that can go to site when full ones need to be collected. REC has therefore avoided recommending these infrastructure types in the report (see commentary regarding "fixed infrastructure" below).

An important consideration for infrastructure solutions relates to site constraints. A number of sites within the ECN are on closed landfills which require rehabilitation with some sites likely to close for this reason. Permanent shedding may not be appropriate for these sites and as such REC has provided options for 'semi-permanent' shedding, such as marquee style covered areas or 'shipping container shelters'.

Table 16 presents the infrastructure options considered for e-waste collection and storage that provide would enable the highest level of compliance with AS5377 (by e-waste grouping).

Table 16 ECN infrastructure options summary by e-waste grouping

Group 1 Large household appliances	Group 2 Computers, TVs, IT (NTCRS)	Group 3 Small household appliances, tools, toys, and other consumer e-goods	Group 4 Lighting	Group 5 Batteries	Group 6 PV panels, 7 Mobile phones, 8 Intractable
Examples of types of e-waste for each group					
- refrigerators - washing machines - cookers - microwaves - electric fans - air conditioners	- computers - monitors - laptops - mice, keyboards, routers - printers - CRT TVs - Flat screen TVs (LCD, LED, plasma)	- irons - toasters - coffee machines - hair dryers - electric tools - sewing machines - musical instruments - toys - game consoles - cameras - portable audio & video - remote controls	- fluorescent lamps - high intensity discharge lamps - compact fluorescent lamps - LEDs	- rechargeable batteries - car batteries - Li-ion batteries	- photosensitive semiconductor devices
'Reasonably practicable' RRC infrastructure options					
Option 1: - Hooklift bin storage on 'sawtooth' - Guard rails - Hardstand - Separate area for cooling goods storage and degassing.	Option 1: - Fully enclosed shed of a determined minimum size (to handle at least four stillages, one for e-waste groups 2, 3, 4, 5) - Concrete flooring - Collection units.	Option 1: - Fully enclosed shed of a determined minimum size (to handle at least four stillages, one for e-waste groups 2, 3, 4, 5) - Concrete flooring - Collection stillages.	Option 1: - Fully enclosed shed for storage of tubes, etc. in appropriate collection box. - Concrete flooring.	Option 1: - Fully enclosed shed for batteries in bunded pallets - Bunded pallets for separate storage of different chemistries - Concrete flooring.	Option 1: - Fully enclosed shed for storage of panels, phones, etc. in appropriate collection boxes. - Concrete flooring.
Option 2: - Scrap metal pile storage - Hardstand - Separate area for cooling goods storage and degassing.	Option 2: - Semi-permanent covered area for sites with development constraints - Concrete hardstand area - Storage in stillages or skip bins up to 15m^3.	Option 2: - Semi-permanent covered area for sites with development constraints - Concrete hardstand area - Storage in stillages or skip bins up to 15m^3.	Option 2: - Covered area for storage of tubes in appropriate collection box - Concrete hardstand area.	Option 2: - Covered area for storage of batteries in bunded pallets - Bunded pallets for separate storage of different chemistries - Concrete hardstand area.	Option 2: - Covered area for storage of panels, phones, etc. in appropriate collection box - Concrete hardstand area.
	Option 3 (not preferred): - Large hook-lift bin with lid and	Option 3 (not preferred): - Large hook-lift bin with lid and			

Group 1 Large household appliances	Group 2 Computers, TVs, IT (NTCRS)	Group 3 Small household appliances, tools, toys, and other consumer e-goods	Group 4 Lighting	Group 5 Batteries	Group 6 PV panels, 7 Mobile phones, 8 Intractable
	an open end to allow stacking of e-waste OR shipping container, weather proof - Concrete hardstand area - Staff to load wastes into the container to avoid OHS risks to customers[27].	an open end to allow stacking of e-waste OR shipping container, weather proof - Concrete hardstand area - Staff to load wastes into the container to avoid OHS risks to customers.			

[27] Hooklift bin maybe required if site cannot be serviced by a container truck, due to access issues or there may simple not be a container truck with a crane for loading available.

4.4 ECN infrastructure solutions

Ultimately the type, size and nature of infrastructure for the compliant collection and storage of e-waste will need to be addressed on a site by site basis, in close consultation and engagement with the appropriate site owner and/or operator. However, for the purposes of this project, it is important that REC present infrastructure options based on our matrix in Table 16 and appropriate cost estimates to allow SV to assess the likely number of sites at which it can fund upgrades.

We have considered a large number of infrastructure types, ranging from sheds and covered areas to covered skips and shipping containers. However, as noted previously REC has opted for "fixed" infrastructure for all scenarios as the ownership and governance issues associated with movable infrastructure becomes too complex for infrastructure funding agreements and ongoing costs management. For the purposes of this report, fixed infrastructure refers to infrastructure that is not designed for regular movements on and off RRC sites, including:

- sheds
- covered areas
    - temporary shelters, such as shipping container covers which may be moved but require significant disassembly and reassembly.

Infrastructure excluded from the definition of fixed infrastructure includes:

- skip bins
- shipping containers
- stillages.

It is likely that in many cases fixed infrastructure will need to be complemented with skips and stillages for storage and transport, however these are recognised as being operational costs that would sit out of a funding process designed to facilitate compliant infrastructure.

REC has developed a low cost and high cost option for each infrastructure type to allow SV to understand the likely upper range and lower range of costs.

For each infrastructure scenario, we have developed a **"fully installed"** price which includes provisions:

- hardstands
- site preparation works
- assembly and site services (mostly electricity).

Prices for shedding have been sourced from two sources – Now Buildings[28] and Wide Span Sheds[29] – both of which provide detailed costing in their brochures. All other costs (e.g. civils, preliminaries etc.) have been derived from the Rawlinson's Australian Construction Handbook[30]. All costs are exclusive of GST. An allowance for **a contingency (10% of total cost)** has also been included.

[28] Now Buildings - https://www.nowbuildings.com.au/ accessed 28 November 2017
[29] Wide Span Sheds - https://www.sheds.com.au/ accessed 28 November 2017
[30] Rawlinsons - https://www.rawlhouse.com.au/publications/rawlinsons-australian-construction-handbook

4.4.1 ECN default infrastructure option

Sites where there are no significant barriers to expansion or upgrade would be upgraded with fully enclosed shedding of a size that would facilitate the compliant storage of different types of e-waste. Fully enclosed shedding provides the best means of enabling compliance with the key requirements of AS5377 and should be the default position for site upgrades. In these instances, REC has applied the following infrastructure solution:

High cost solution	Low cost solution
Four-bay industrial skillion	Three-bay storage strip shed
Length – 20m	Length – 12m
Width – 9m	Width – 9m
Height – 4.9m	Height – 3.3m
Fully installed total cost - $94,050	**Fully installed total cost - $57,804**
Cost per m^2 - $523	**Cost per m^2 - $535**
	

4.4.2 ECN sites with constraints to development

At sites where there are barriers that restrict expansion or upgrades, such as sites where the status of landfill rehabilitation restricts construction of permanent infrastructure, we have applied the following infrastructure solution:

High cost solution	Low cost solution
Shipping container shelter	Temporary marquee shelter
Length – 12m	Length – 9.1m
Width – 8m	Width – 7.9m
Height – 4.6m	Height – 4.2m
Fully installed total cost - $38,728	**Fully installed total cost - $21,188**
Cost per m² - $403	**Cost per m² - $281**
	

REC notes that there are a large number of existing sites that are not included in the Draft ECN, which are mostly small regional sites (tertiary sites) accepting small quantities of waste. REC has also developed a high and low-cost infrastructure solution for these sites. This has enabled REC to develop costings for all Council RRC sites across the state and therefore allows SV to understand what funding may be required to upgrade all RRC sites. The following infrastructure solution has been applied tertiary sites.

4.4.3 Indicative options for tertiary sites (additional to the Draft ECN)

For the purpose of costing upgrades to tertiary sites[31] we have applied the following infrastructure solution:

High cost solution	Low cost solution
Three-bay residential strip shed	Single-bay residential
Length – 9m	Length – 7m
Width – 6m	Width – 3.5m
Height – 2.5m	Height – 2.5m
Fully installed total cost - $25,095	**Fully installed total cost - $12,590**
Cost per m^2 - $465	**Cost per m^2 - $514**

These infrastructure types have been applied to REC's database of site findings to develop costs for potential upgrades, which are presented in Section 8.

Key findings of e-waste collection and storage infrastructure review

- Whilst there are a range of infrastructure options used to collect and store e-wastes, there are a limited number of options that will enable compliance with the key requirements of AS5377.
- State Government funding of non 'fixed' infrastructure (stillages, large skip bins and shipping containers) for the ECN is not recommended as the ownership/governance issues associated with movable infrastructure are too complex for infrastructure funding agreements and ongoing costs management.
- REC recommends funding the establishment of the ECN with a range of permanent and semi-permanent fully enclosed e-waste collection and storage sites.

[31] These infrastructure solutions and costs should be seen as indicative only as we did not visit the majority of tertiary sites and are unsure of the exact site conditions at these facilities.

5. ECN existing infrastructure assessments

5.1 Site assessment method

To complete the assessment of the ECN existing infrastructure, REC undertook a program of site assessments at sites, which included:

- primary sites identified in the Draft ECN
- secondary sites identified in the Draft ECN
- key 'tertiary' sites that were identified by WRRGs and/or LGAs as being strategically important or geographically important (as discussed in Section 3.4.1).

In addition, desktop assessments were undertaken for the Gippsland and Goulburn Valley regions sites that were included in the ECN, as the project team has recently undertaken detailed assessments of transfer station and resource recovery infrastructure in these regions. The site reports from the detailed assessments in Gippsland and Goulburn Valley, which already contained assessments of e-waste storage and management, were used to complete site-specific e-waste assessments to align with this project's requirements. Consultation with both groups and SV was also undertaken to ensure any significant data gaps were managed.

Site assessments were undertaken using a mobile reporting platform called "FastFieldForms". Using this platform, REC developed a mobile assessment tool for iPads aimed at capturing information, data and photographs of e-waste collection and storage across the following sections:

- Site conditions – including siting issues or constraints, former land-use, machinery on site and scope for further development
- Site infrastructure – including what e-wastes are accepted and how they are stored, such as skip bins, covered areas, sheds and hardstands
- Collection process – including how e-waste is collected and transported, the frequency of collection, volumes / quantities collected and cost of service
- AS5377 key requirements assessment – for each e-waste type, the sites compliance against the key requirements of AS5377 were assessed (following an agreed set of assessment criteria).

Assessment against AS5377 key requirements is not a straight forward task and it is worth noting that there is some interpretation of the standard required. The project team has endeavoured to apply the assessments consistently across all sites, however it is likely that there will be some variation between the different project team members in terms of the interpretation of compliance on a site by site basis. The compliance assessment has been described briefly in Table 17.

Table 17 Overview of e-waste compliance against AS5377 key requirements

AS5377 Key requirement	Site assessment	Examples of infrastructure assessment
Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	Yes	Storage areas where staff and customers do not have to come into contact with stockpiled materials and where breakage of material is minimised. For example, where e-waste is stored in smaller stillage's and there is minimal evidence of breakage, glass or sharp materials.
	No	Storage areas where material is stockpiled on the ground and customers and staff must enter these areas. For example,

AS5377 Key requirement	Site assessment	Examples of infrastructure assessment
		large metals stockpiles where there are sharp edges and broken materials across the ground.
	Partially	Storage areas that are mostly compliant but where some concerns are evident, such as smaller skip bins that require customers to lift e-waste over the top which may create manual handling issues, or where bins are set off a sawtooth and breakage may result when dropping from height.
Does the infrastructure ensure e-waste breakage is minimised?	Yes	Sites that promote protection of e-waste, such as small stillage's that are hand-loaded directly from a trailer or boot, or where staff members help customers to stack material neatly.
	No	Sites that require e-waste to be dropped from height, such as from a sawtooth / elevated platform, or where material is pushed from a trailer or boot into a pile on the ground.
	Partially	Sites where infrastructure mostly prevents breakage, for example where a large skip is used but staff take care when loading and unloading, or where stillage's are used but they have been overfilled.
Does the infrastructure protect the e-waste from exposure to the elements?	Yes	Infrastructure that provides full cover from the weather, such as a fully enclosed shed or shipping container.
	No	Sites where e-waste is stored in the open, such as an open skip or loose pile on the ground in an uncovered area of the site.
	Partially	Sites where e-waste is mostly protected from the weather, such as covered areas that don't have sides which are mostly dry but allow rain to enter when it is windy, or sites using skip bins with lids that may leak.
Does the infrastructure prevent breakage during packaging, loading and transport?	Yes	Sites using smaller stillage's that are stacked using forklifts, or smaller roll on, roll off skip bins that are hand stacked.
	No	Sites using large skips that are bulk loaded and hauled where breakage cannot easily be avoided.
	Partially	Sites where material is not well stacked and/or is overflowing and some breakage is likely.
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	Yes	Sites where infrastructure ensures that e-waste is stored undercover and on a hardstand and/or where sites have dedicated stormwater treatment (unlikely).
	No	Sites where e-waste is stored in the open without bunding or a hardstand or stored in an uncovered skip where water will pool in bins and come out when the bin is emptied.
	Partially	Sites where covered areas have hardstands but are not bunded or where covered areas don't provide adequate protection from water ingress.
Are the receptacles clearly labelled to identify the contents?	Yes	Sites where skip bins and stillage's are clearly labelled as to the type of e-waste that is being stored.
	No	Sites where skip bins and stillage's are not labelled.
	Partially	Sites where skip bins and stillage's have some labelling, such as generic "e-waste" labels.

The examples provided above do not represent all the possible scenarios, rather they provide common storage conditions encountered during the site visits and how these were assessed against AS5377 key requirements.

5.2 ECN existing infrastructure assessment results

The existing infrastructure assessment findings are presented in the following ways to support SV and its partners in decision making:

- Individual site assessment reports have been provided separately to this report. These site reports contain photographs and site assessment findings across the e-waste categories.
- A database of raw data is included within the accompanying Microsoft Excel file called *PREC082 Site Assessment*. The database will allow SV to extract data for use via its Power BI system.
- Summary findings which are presented in this section of the report (below).

It is important to note that the data and information presented in this Section of the report relates to the 148 sites that were assessed by the REC project team. We have included all our findings, rather than just the findings from the 122 sites included in the Draft ECN, to provide a greater level of detail on the state of the current network.

REC has attempted to distil the significant amount of data collected in the site assessments into a few key areas which seek to highlight:

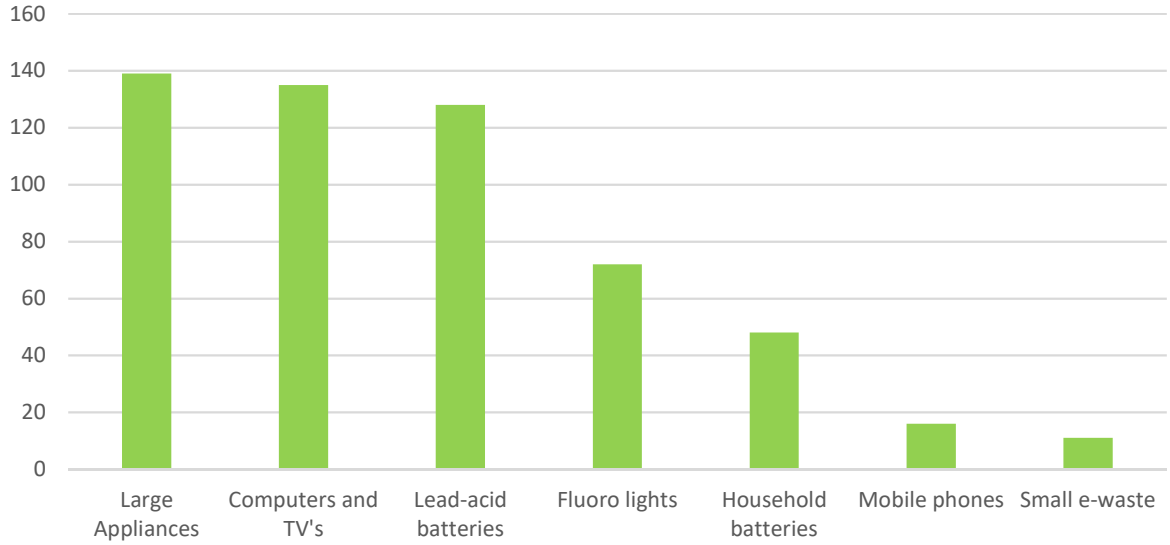
- overall compliance with the key requirements of AS5377
- the types of e-waste (and related materials) accepted at sites
- the way in which they are collected and stored
- the current infrastructure that is used for collection and storage.

A significant number of the sites assessed are currently 'accepting'[32] large appliances / metals (139 sites) and TVs and computers (135 sites), through which a considerable amount of e-waste is already collected for recycling. Similarly, the acceptance of lead-acid batteries (128 sites is also widespread. Less common however are sites that accept fluorescent lights (72 sites), household batteries (48 sites), mobile phones (16 sites) and small appliances / other e-waste[33] (11 sites). An overview of the materials accepted at the 148 sites assessed is presented in Figure 8.

[32] It should be noted that for the purposes of this report, REC has **only counted sites that are collecting the target materials as separated streams for recycling.** This means that we have not counted sites that will accept e-waste material for disposal in landfill or as mixed waste.

[33] Note that some sites accept smaller e-waste in the same receptacle as TVs and computers. We have not counted these sites as they are not separating the material for recycling and in some instances this practice goes against the requirements of the NTCRS. See section on Strategic Network Issues.

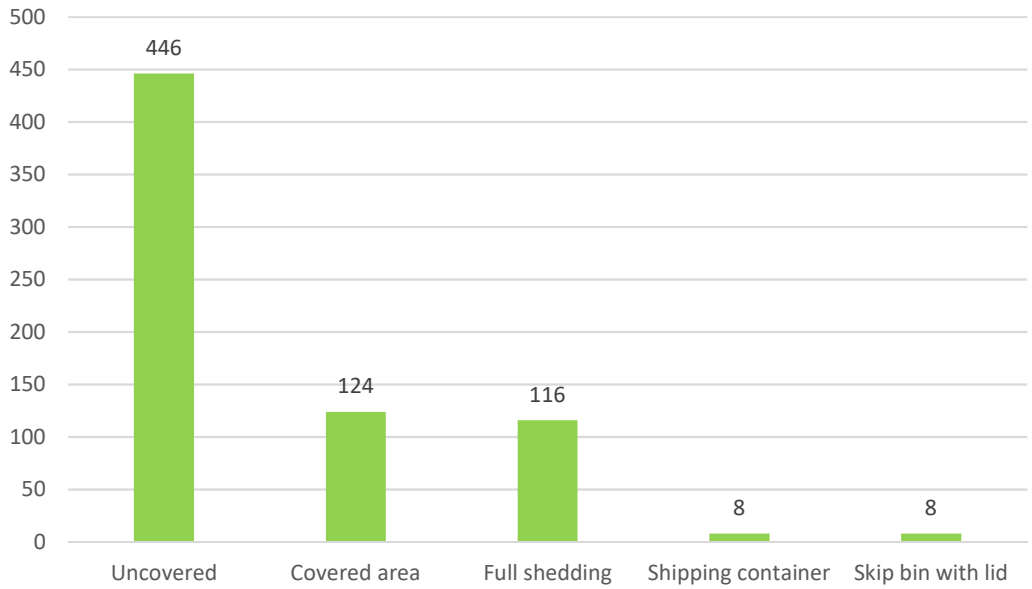
Figure 8 Number of sites assessed that receive and seperate e-waste for recycling



The type and condition of infrastructure for storage and collection of e-waste differs across the sites visited. To be compliant with the key requirements of AS5377, e-waste is to be stored in a manner which reduces exposure to the elements and stops water ingress into e-waste areas.

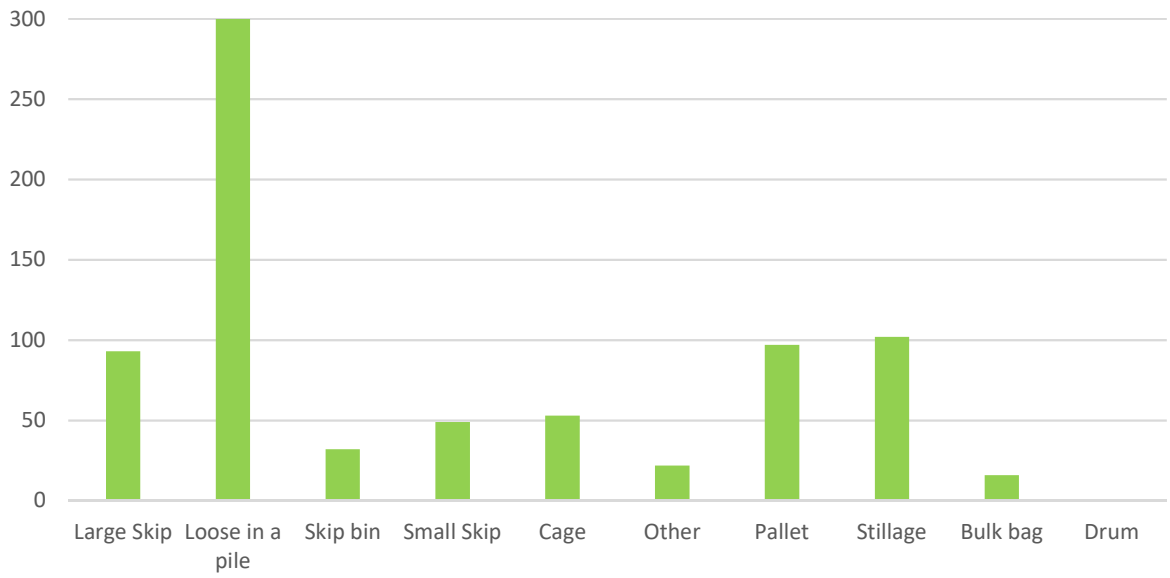
Figure 9 shows the types of infrastructure used for the storage of e-waste across the 148 sites assessed. The data shows a lack in sheds and covered areas with 63% of e-wastes across all sites being stored uncovered and in the open.

Figure 9 Types of infrastructure used for storage of e-waste (total number of materials assessed across all sites)



Similarly, common storage methods for e-waste and related materials presented in Figure 10 highlight a lack of receptacles at many sites, with around 40% of e-waste across all sites being stored loosely in a pile on the ground.

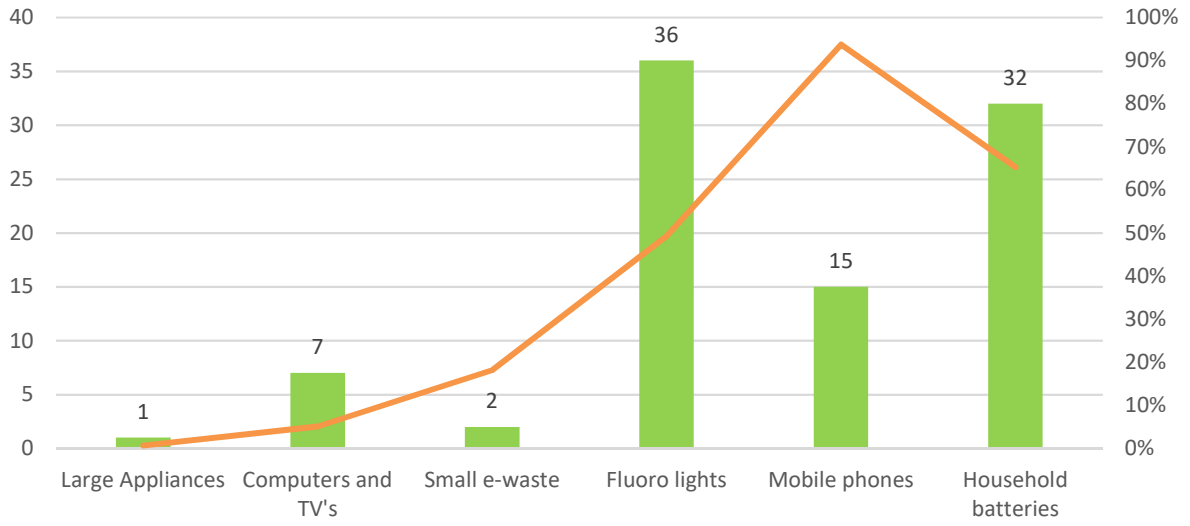
Figure 10 Storage methods for e-waste (total number of materials across all sites assessed)



Perhaps the most important findings from the site assessment relate to how and if sites are currently meeting the key requirements of AS5377, as this will likely drive the degree to which upgrades are required across the proposed network of sites. The data suggest that in most instances, e-waste is not being collected and stored in line with the key requirements of AS5377. To comply with the key requirements of AS5377, e-waste needs to be stored in shed or suitable covered area with a bunded hardstand, with a process that minimises breakage and with appropriate signage.

The data presented in Figure 11 shows that compliant storage for large appliances is very low, with just one site meeting the AS5377 requirements. Around 5% of sites (7 sites) accepting TVs and computers and 18% of sites (2 sites) accepting small appliances and other e-waste were found to be meeting the requirements of the standard. Compliance rates for smaller items were considerably higher, with 49% of sites accepting fluorescent tubes, 61% of sites accepting mobile phones and 88% of sites accepting household batteries found to be doing so in line with AS5377.

Figure 11 Sites assessed to be storing e-waste compliant with key requirements of AS5377 (number of sites per category and percentage of sites per category)



The data presented in this section supports a contention that the current network for collection and storage of e-waste at RRCs requires significant investment in order to enable the key requirements of AS5377 to be met. This is particularly relevant for the storage of computers and TVs, which are a 'specified e-waste' under the *Draft Waste Management Policy (E-waste) 2018* due to the risk of hazardous materials being released into the environment.

REC has provided specific commentary below on the individual waste streams assessed during the site assessments and the current level of non-compliance with the key requirements of AS5377.

5.2.1 Large household appliances (high steel content)

The clear majority of sites assessed accept large appliances and metals, due mainly to the Councils being paid for scrap steel wastes for many years. Whilst large, metals rich e-wastes such as fridges and dishwashers are widely accepted, visual inspection of metals collection areas suggest that many other e-waste types, including microwaves, fans, and an odd solar panel are commonly collected through this network.

In general, metals are either stored loosely on the ground or in large 30m^3 skip bins located off an elevated sawtooth area. In instances where the material is stockpiled on the ground, it is transferred into 30m^3 skips using a loader for bulk haulage. In both scenarios, loaders are commonly used to compact material in the bins to improve transport efficiency. This clearly encourages the breakage of e-waste collected through the scrap steel waste stream.

Storage areas for large appliances / metals are, in most cases, uncovered. Just 11% of sites assessed have some form of cover, mostly sites that have a covered area over the entire sawtooth area. An overview of site compliance against key requirements of AS5377 for large appliance e-wastes is presented in Table 18

Table 18 Overview of compliance against key requirements of AS5377 for large appliance e-wastes (number of sites)

Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	
Yes	24
No	49
Partially	65
Does the infrastructure ensure e-waste breakage is minimised?	
Yes	1
No	124
Partially	16
Does the infrastructure protect the e-waste from exposure to the elements?	
Yes	4
No	126
Partially	11
Does the infrastructure prevent breakage during packaging, loading and transport?	
Yes	3
No	125
Partially	13
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	
Yes	8
No	120
Partially	13

Of all the e-waste types explored during the site assessments, large appliances have the lowest level of compliance against the key requirements of AS5377. Whilst it could be argued that the majority of e-waste types entering this stream are not "specified e-waste", the Draft Waste Management Policy (E-waste) 2018 notes that:

> *"6 (2) A person must take all reasonable steps to eliminate or reduce the risk of harm to human health and the environment associated with e-waste"*

Large stockpiles of metals (which include large appliances and other e-waste) were commonly observed at RRC facilities, with both customers and staff required to physically enter the stockpile area (i.e. to drop-off their waste metals). Broken and damaged materials, sharp edges and glass were observed through many of the stockpile areas, suggesting these sites are not managing risks appropriately.

Examples of current storage infrastructure for large appliances / metals are presented in Figure 12.

Figure 12 Examples of storage of large appliances / metals observed during the site assessments

It is worth noting that 76% of sites (105 sites) accepting metals were found to have a separate area for degassing of fridges and freezers prior to inclusion in the scrap metal pile. Those sites not degassing large refrigerated appliances prior to disposal may be in contravention of regulations that control the emissions of ozone depleting substances[34].

5.2.2 Computers, TVs, IT (NTCRS)

The introduction of the NTCRS has allowed for a considerable expansion of the collection network for TVs and computers in Victoria. However, of the 136 sites assessed that accept TVs and computers, just 7 had infrastructure that enables compliance with the key requirements of AS5377. Whilst there were a broad range of configurations for TVs and computers across the sites, the gaps in meeting the key AS5377 requirements include:

- Sites where TVs and computers are stored loosely on the ground and in the open, in some instances this occurs at smaller sites with the material being aggregated at a hub site (often into large, 30m3 bins). There is no protection from the elements nor does the infrastructure (or lack of) prevent potentially hazardous material from entering the stormwater.

[34] Including the *Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995*

- Sites where skip bins are located off the sawtooth, with material dropping from height into the bin, causing significant breakage. In most cases there is no cover over the sawtooth area and bins do not have lids.
- Sites where TVs and computers are stored on the ground and then lifted with a front-end loader into a large bin, which is often compacted by the loader to improve transport efficiency.

The site assessment data suggests that TVs and computers are most commonly stored uncovered (75% of sites assessed) and in skip bins or stillages (65% of sites assessed). An overview of compliance against key requirements of AS5377 for TVs and computers is presented in Table 19.

Table 19 Overview of compliance against key requirements of AS5377 for storage of Computers, TVs, IT (NTCRS) (number of sites)

Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	
Yes	44
No	32
Partially	60
Does the infrastructure ensure e-waste breakage is minimised?	
Yes	39
No	60
Partially	37
Does the infrastructure protect the e-waste from exposure to the elements?	
Yes	21
No	94
Partially	21
Does the infrastructure prevent breakage during packaging, loading and transport?	
Yes	43
No	55
Partially	38
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	
Yes	20
No	77
Partially	39

TVs and computers are recognised as specified e-waste in the *Draft Waste Management Policy (E-waste) 2018*, suggesting that appropriate management of this e-waste will be required in minimising the risks for e-waste collection and storage in Victoria.

Examples of current storage infrastructure for TVs and computers are presented in Figure 13.

Figure 13 Examples of storage of TVs and computers observed during the site assessments

5.2.3 Small household appliances, tools, toys, and other consumer e-wastes

The site assessments indicate that only a very small portion of the network currently accepts small household appliances, tools, toys, and other consumer e-wastes as separate e-waste for collection and recycling. Of the sites assessed, just 11 sites were observed to be accepting these e-wastes for recycling, however it must be noted that this does not include sites which actively allow smaller e-waste items to be mixed in with TVs and computers. Of these sites, 18% (2 sites) are storing the material in line with the requirements of AS5377. Sites where smaller e-waste is accepted as a separated stream are predominantly stored uncovered in a skip bin or stillage.

An overview of compliance against key requirements of AS5377 for small household appliances, tools, toys, and other consumer e-wastes TVs and computers is presented in Table 20

Table 20 Overview of compliance against key requirements of AS5377 for storage of small household appliances, tools, toys, and other consumer e-wastes (number of sites)

Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	
Yes	7
No	0
Partially	4
Does the infrastructure ensure e-waste breakage is minimised?	
Yes	6
No	2
Partially	3
Does the infrastructure protect the e-waste from exposure to the elements?	
Yes	3
No	7
Partially	1
Does the infrastructure prevent breakage during packaging, loading and transport?	
Yes	6
No	2
Partially	3
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	
Yes	2
No	4
Partially	5

Examples of current storage infrastructure for small household appliances, tools, toys, and other consumer e-wastes are presented in Figure 14.

Figure 14 Examples of storage of small household appliances, tools, electonic toys, and other consumer e-wastes observed during the site assessments

5.2.4 Lighting (fluorescent lights)

Lamps and fluorescent lights are collected as part of SV's Household Chemical Collection programs permanent drop off points, which were assessed as part of the site assessments. The collection and storage of fluorescent lights is generally done in line with, or at least close to, the key requirements of AS5377. In general, the material is collected in corflute boxes with lids which sit on pallet, however kerbside 'wheelie bins' are also commonly used. The key issue impacting compliant storage of fluorescent lights is protection from the elements, with 16 of the 73 sites (22%) storing the material in an uncovered area.

An overview of compliance against key requirements of AS5377 for fluorescent lights is presented in Table 21.

Table 21 Overview of compliance against key requirements of AS5377 for storage of fluorescent lights (number of sites)

Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	
Yes	66
No	4
Partially	3
Does the infrastructure ensure e-waste breakage is minimised?	
Yes	62
No	4
Partially	7
Does the infrastructure protect the e-waste from exposure to the elements?	
Yes	41
No	16
Partially	16
Does the infrastructure prevent breakage during packaging, loading and transport?	
Yes	58
No	5
Partially	10
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	
Yes	56
No	8
Partially	9

Examples of current storage infrastructure for fluorescent lights are presented in Figure 15.

Figure 15 Examples of storage of fluorescent lights observed during the site assessments

5.2.5 Mobile phones

Mobile phones are collected at 16 of the sites assessed, 15 being stored under conditions that are compliant with the key requirements AS5377. In most cases, mobile phones are stored in small receptacles in the gatehouse or in a shed and at least half of these sites are part of the MobileMuster program (the number is likely to be higher than this, however site operatives were often unsure if they were part of the program or not).

An overview of compliance against key requirements of AS5377 for mobile phones is presented in Table 22.

Table 22 Overview of compliance against key requirements of AS5377 for storage of mobile phones (number of sites)

Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	
Yes	16
No	0
Partially	0
Does the infrastructure ensure e-waste breakage is minimised?	
Yes	16
No	0
Partially	0
Does the infrastructure protect the e-waste from exposure to the elements?	
Yes	15
No	0
Partially	1
Does the infrastructure prevent breakage during packaging, loading and transport?	
Yes	16
No	0
Partially	0
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	
Yes	16
No	0
Partially	0

5.2.6 Household batteries

Household batteries (usually <5kg) are accepted at 49 of the sites assessed, mostly in mixed kerbside 'wheelie bins' or drums where batteries of all types are disposed, ranging from small alkaline batteries to larger rechargeable batteries from power tools. More than 60% of sites assessed are storing household batteries in line with the key requirements of AS5377, however as for fluorescent lights the key issue remains a lack of covered areas and sheds at some sites. Batteries are also collected as part of the SV HCC permanent drop off points.

An overview of compliance against key requirements of AS5377 for household batteries is presented in Table 23.

Table 23 Overview of compliance against key requirements of AS5377 for storage of household batteries (number of sites)

Does the current infrastructure prevent exposure of workers and customers to unsafe practices and/or hazardous materials?	
Yes	45
No	3
Partially	1
Does the infrastructure ensure e-waste breakage is minimised?	
Yes	44
No	4
Partially	0
Does the infrastructure protect the e-waste from exposure to the elements?	
Yes	33
No	7
Partially	9
Does the infrastructure prevent breakage during packaging, loading and transport?	
Yes	46
No	2
Partially	1
Does the infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	
Yes	41
No	6
Partially	2

Examples of current storage infrastructure for household batteries are presented in Figure 16.

Figure 16 Examples of storage of household batteries observed during the site assessments

5.3 ECN infrastructure strategic issues

Whilst the site assessment process has provided quantitative data that has informed the assessments above, it has also provided insights into key strategic issues that will need to be considered in the implementation of the landfill ban. These issues have been highlighted mostly through the REC team's interaction with WRRGs, LGA officers attending site visits and by site operatives. Some of the key issues we have identified are explored in Table 24.

Table 24 Overview of strategic network issues

Issue	Explanation / commentary
Size of storages as smaller remote sites	Site operatives in remote areas of Victoria noted issues associated with collections and collection frequency, specifically the volumes required to encourage contractors to collect e-waste material. Remote areas may therefore have to aggregate material at a central point until such time as a collection will be viable (i.e. when they could provide a truck full of e-waste for transport and processing in Melbourne (most likely). This is an important consideration when planning infrastructure solutions. There is a tendency to assume that small sites only require small storage areas because they receive lower tonnages of e-waste, however, the need to aggregate e-wastes under compliant conditions to enable efficient collection logistics also needs to be considered.
AS5377 compliant storage of large appliances / metals	The site assessments highlight the difficulty in applying AS5377 evenly across all e-waste types. The metals waste stream is largely a bulk stream with large bins and use of front-end loaders. At many sites, the space needed to manage incoming metals is so large as to prohibit the construction of shedding or covered areas, at least for the purposes of e-waste management only. It is likely that lower cost infrastructure solutions will need to be applied here, for example getting stockpiled scrap material off the ground and into bins off a sawtooth to avoid the risks of storage on the ground and customers entering into the stockpile areas.
Relationship between infrastructure solution and receptacle size	Similarly, site operators have commented on the need to ensure that infrastructure solutions take into consideration the receptacle size used for e-waste collection. Sites that use hook-lift or roll on, roll off skip bins would require shedding that has sufficient height to allow for collection to take place. Equally, where smaller stillage's are being used there should be consideration for forklift height and turning circles.
Industry preference for large 30m^3 bins	A large number of sites are currently collecting and storing e-waste in large 30m^3 skip bins (or similar), either off the sawtooth or on another part of the site (generally loaded with a front-end loader). These bins are the preference for several e-waste recyclers due to the ease of transport (empty bin comes and a full bin leaves) and economies of scale that can be generated. However, it is difficult to see any infrastructure solution where the use of these bins would be in line with AS5377, specifically requirements to minimise breakage of e-waste. A move to smaller skip bins may take some time to achieve and could require industry consultation to deliver.
Mixed e-waste collections	The site assessments also indicate that several sites are accepting small appliances / other e-waste in the same receptacles as TVs and computers, resulting in mixed loads of e-waste. This presents a number of challenges, including how TVs and computers are recognised in the NTCRS which would require them to be separated for weighing.

Key findings of existing e-waste infrastructure site assessment

- Almost all sites included in the Draft ECN are not compliant with the key requirements of AS5377 for at least one category of e-waste.
- The significance of the non-compliance for different e-waste categories needs to be considered. For example, the collection of white goods (after de-gassing) with scrap metals collections in an uncovered 30-meter skip bin, has a much lower environmental risk profile than TV and computers being collected in an uncovered 30-meter bin and located on a sawtooth.
- The level of non-compliance with the key requirements of AS5377 for TV and computers is perhaps the most significant issue for the sites assessed. Following the agreed site assessment method, REC found that of the 135 sites assessed accepting TVs and computers, just 7 had infrastructure that enables compliance with the requirements of AS5377.
- To meet AS5377, the e-wastes that are currently disposed to landfill will need to be collected and stored in a similar manner to a TV and computers. The infrastructure upgrades required to provide compliant collection and storage for TVs and computers, if built to a sufficient size, will also enable the compliant collection of the main e-waste category that is currently going to landfill (small household e-wastes).

6. Draft ECN consultation and engagement with WRRGs, Councils and industry

REC and SV completed a statewide consultation and engagement program on the Draft ECN with:

- all Victorian Waste and Resource Recovery Groups and Councils
- representatives of the four current co-regulatory arrangements operating under the National TV and Computer Recycling Scheme (NTCRS) and several e-waste recyclers
- MobileMuster, the official recycling program of the mobile phone industry in Australia
- Lighting Council Australia, the peak body for Australia's lighting industry
- several Victorian and national e-waste recyclers. .

Consultation and engagement included a detailed presentation on the project methodology, the infrastructure options and site upgrade assessments and a 'council-by-council' review of the Draft ECN for accuracy and adequacy.

The consultation and engagement sessions were very well received and a summary of the key issues raised is provided below.

- There was good support for the Draft ECN and the coverage that if offers Victorians, however some adjustments are required to:
  - provide improved coverage for areas with highly transient populations (i.e. tourist areas)
  - address gaps in the network in the east, west and north-west where large geographic distances exist between population centres
  - consider that sites in Melbourne are heavily biased toward the eastern suburbs despite the majority of population growth occurring in the north and west (new site/s in the West may be needed in the future).
- The implementation of infrastructure funding should remain flexible to provide councils with opportunities to find the 'best fit'. This could include e-waste funding being used as part of broader site upgrades, bespoke solutions for heavily constrained sites (particularly in metropolitan Melbourne) and 'template' designs for potential shedding.
- Additional costs, such as signage, temporary fencing, relocation of existing infrastructure and additional geotechnical excavations on landfill sites should be factored into the funding envelope.
- Funding should be set aside for smaller e-waste collection points, such as bespoke cabinets located at council offices and libraries. These solutions are already being utilised by a number of metropolitan and regional councils in Victoria and interstate.
- Councils remain concerned about costs associated with recycling non-NTCRS e-wastes, specifically small consumer goods that will be captured by the ban. E-waste recyclers noted an interest in collecting and recycling this material if all costs can be met.[35]

[35] Key issues highlighted in GREY: these issues were noted through consultation however responding to these issues is beyond the scope of this report.

- The industry has concerns about the readiness of councils to respond to the ban, with many being unaware of their requirements and the potential implications of the WMP. The education program should look to target councils as well as households.
- There is a lack of clarity and guidance on how the *Waste Management Policy (Resource Recovery Facilities)* and accompanying *Combustible Waste and Recycling Materials Guideline* (CWRM) Guideline applies to e-waste being stored indoors.

6.1.1 Summary of changes to Draft ECN following consultation and engagement

The consultation and engagement aimed at identifying strategic gaps, issues and potential errors in the Draft ECN, such as:

- ECN sites planned for closure.
- Tertiary 'sites' not suited to the ECN, such as transfer trailers and drop-off points.[36]
- Gaps in the network driven by geographic distance rather than just population, for example areas to the far east, west and north-west of Victoria.
- Substitution of sites in ECN sites in close proximity due to council preferences for upgrades (only where this would not have a material impact on the ability of the network to meet the community's needs).

As a result of the consultation and engagement, three sites were removed from the ECN and an additional 22 sites were added, resulting in a net increase of 19 sites in the 'final ECN'. A summary of the sites added and removed (or substituted) is presented in Table 25.

Table 25 Sites added and removed (or substituted) from the Draft ECN following consultation and engagement

Additions	Removed (or substituted)
Alvie	Inverloch
Timboon	Rosedale
Casterton	Wedderburn
Mortlake	
Lorne	
Mallacoota	
Omeo	
Venus Bay	
Nathalia	
Lake Bolac	
Snake Valley	
Kaniva	
Hopetoun	
Murtoa	
Sea Lake	
Boort	
Inglewood	
Ouyen	

[36] The consultation process identified some 30 tertiary sites from the initial infrastructure site lists that were transfer trailers or similar, with around 109 permanent tertiary sites remaining.

Additions	Removed (or substituted)
Falls Creek	
Mt Hotham	
Mt Buller	
Wesburn	

In addition to sites being added to the network for the reasons outlined above, a number of sites had their infrastructure costing revised as a result of the consultation and engagement. The multi-criteria analysis tool, used in the assessment of the ECN, by default assumed that sites on top of an old landfill would likely require temporary infrastructure, such as temporary shelter structures. However, as noted during site visits and confirmed during consultation, in many cases the sites had ample room away from the old fill area (i.e. some or all of the site was adjacent to the old landfill area rather than on it) or had been fully rehabilitated and could support permanent shedding.

The costs for around 18 sites were therefore upgraded from the constrained site costs (temporary shelter costing) to the default shedding costs, which is an increase of around $36,000 for the 'low-cost option' and $55,000 for the 'high cost option'.

7. Final ECN analysis

The outcome of the consultation and engagement sessions, based on negotiation and discussion with WRRGs, Councils and industry, was a net increase of 19 sites to the Draft ECN. The resulting Final ECN includes a total of 141 RRC sites across Victoria; 28 in metropolitan Melbourne and 113 across regional Victoria. Collectively, this network provides coverage to some 98% of Victorian's within a 30-minute drive time, with extensive coverage across both metropolitan and regional areas. The Final ECN exceeds all definitions of reasonable access that the have been identified.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented for both the Draft and final ECN in Table 26.

Table 26 Comparative drive time coverage analysis of the Draft and final ECN across Victoria (10, 20, 30-minute aggregate drive times)

Site type	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Victorian Draft ECN	55%	96%	98%
Metro Draft ECN sites	55%	95%	98%
Regional Draft ECN sites	57%	89%	95%
Final ECN sites (Victoria)	**56%**	**96%**	**98%**
Metro ECN sites	**55%**	**98%**	**98%**
Regional ECN sites	**57%**	**91%**	**98%**

The net addition the 19 additional sites, resulting from the consultation and engagement program, does not increase the overall network coverage when compared to the Draft ECN across a 30-minute drive time. However, regional coverage increases by 3% from 95% to 98% and coverage within a 20-minute drive time increases for both regional and metro areas by 2% and 3% respectively.

The makeup of the final ECN is presented in Figure 17 and 18 below.

Figure 17 Overview of final ECN sites by WRRG

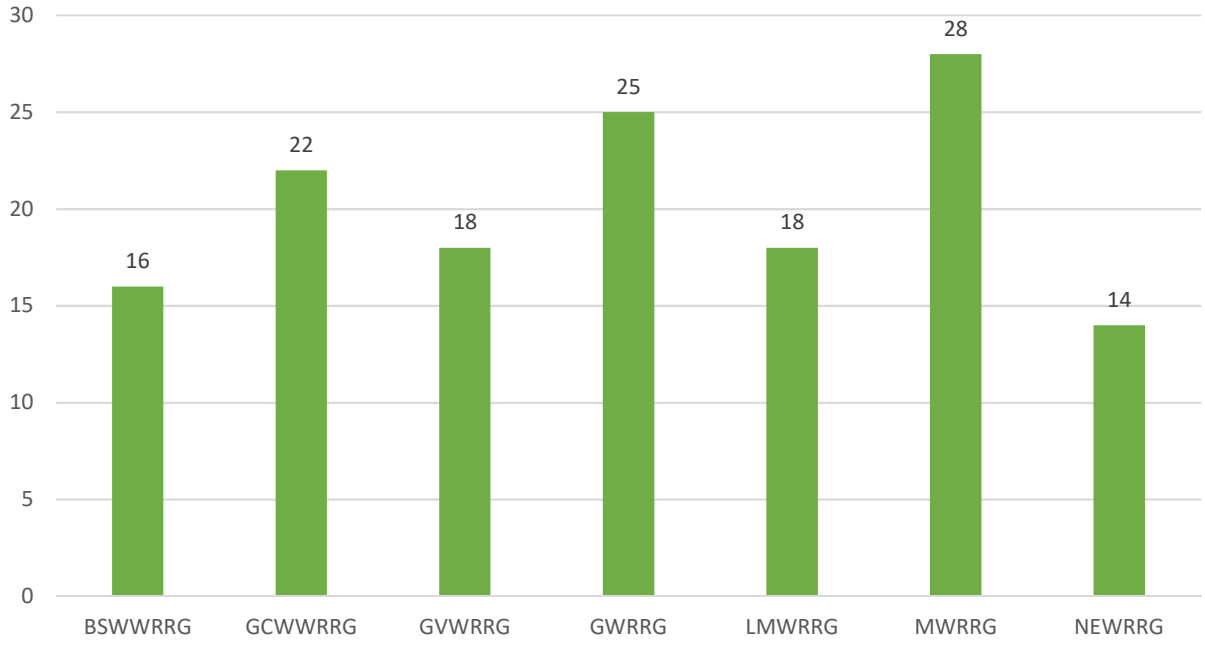
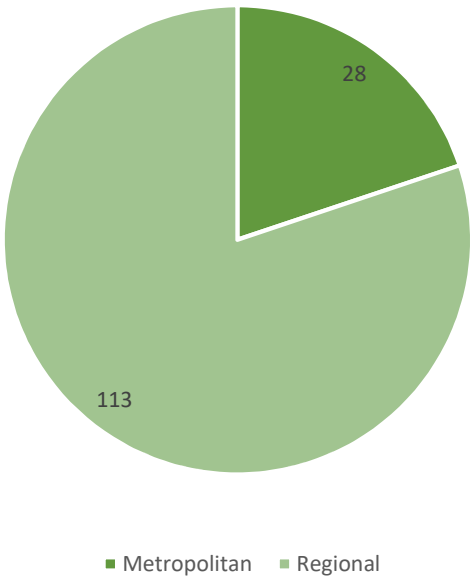


Figure 18 Overview of final ECN sites broken down by regional sites and metropolitan sites



7.1.1 ECN detailed site database

Detailed data for the sites included in the ECN is included in Appendix C. The Appendix includes a range of data outputs for each site including population serviced, estimated e-waste generation, program / scheme participation, infrastructure upgrade options and costings, and compliance for specified e-waste types with the key requirements of AS5377.

The final ECN is presented in detailed maps below as follows:

- Figure 19 Drive time analysis of all Victorian ECN sites at 10, 20 and 30-minute drive time
- Figure 20 Drive time analysis of all Victorian ECN sites at 10, 20 and 30-minute drive time mapped against population density
- Figure 21 Drive time analysis of all metropolitan ECN sites at 10, 20 and 30-minute drive time
- Figure 22 Drive time analysis of all metropolitan ECN sites at 10, 20 and 30-minute drive time mapped against population density

Key findings of final ECN analysis

- The final ECN includes 141 sites, including 82 primary sites and 59 secondary sites.
- There are an additional 109 tertiary sites servicing smaller populations around Victoria.
- 113 ECN sites are located in regional Victoria with the remaining 28 being located in metropolitan Melbourne.
- GIS mapping and associated drive-time analysis suggests that the final ECN provides extensive population coverage across Victoria, with 98% of Victorians being able to access an ECN site within a 30-minute drive.
- The drive-time analysis also shows that coverage across metropolitan Melbourne and regional areas is broadly the same within a 30-minute drive time window. Coverage within a 20-minute drive time is also excellent, with 98% of metropolitan residents and 91% of regional residents able to access an ECN site within a 20-minute drive.

Figure 19 Drive time analysis of all Victorian ECN sites at 10, 20 and 30-minute drive time

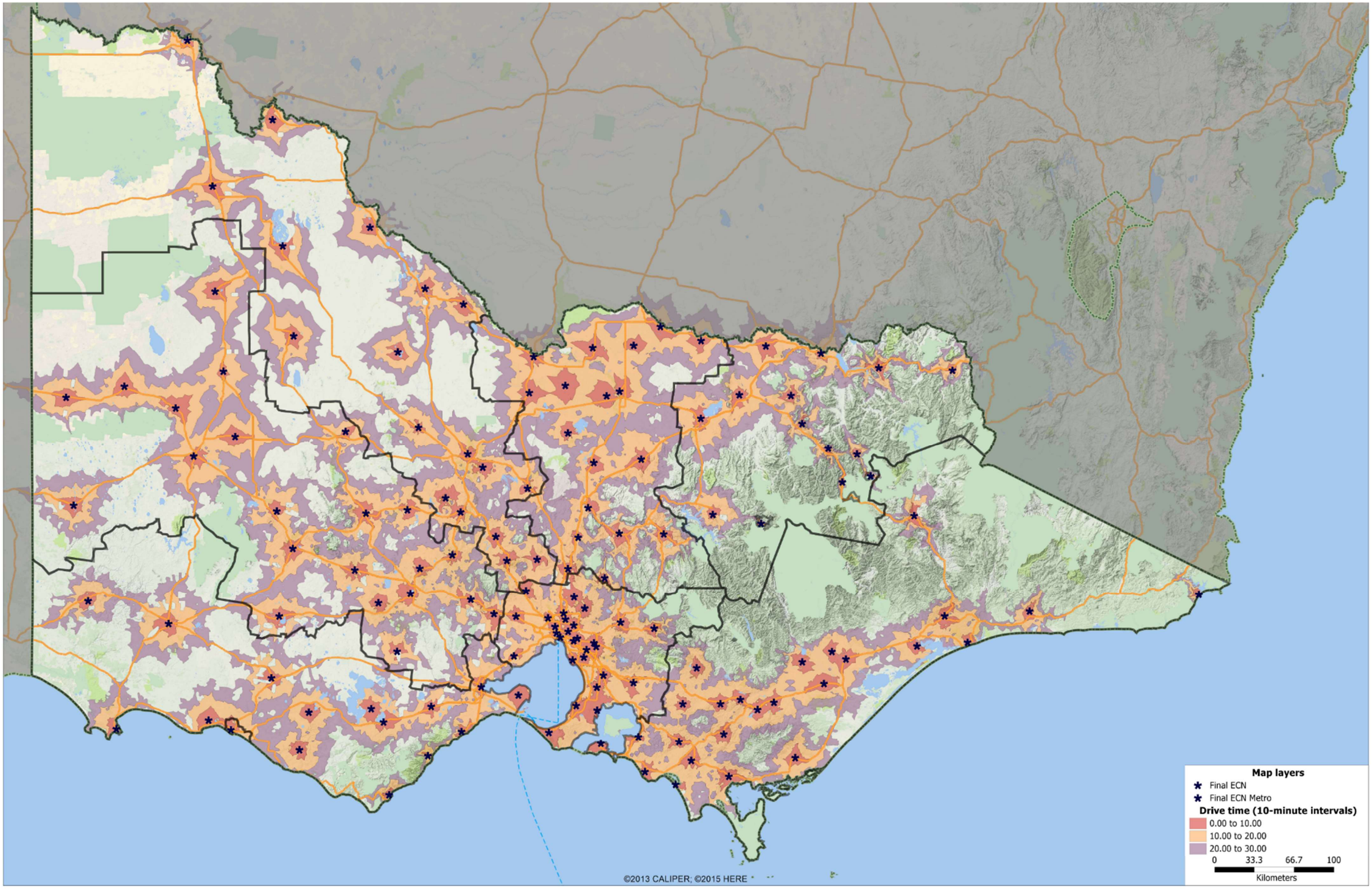


Figure 20 Drive time analysis of all Victorian ECN sites at 10, 20 and 30-minute drive time mapped against population density

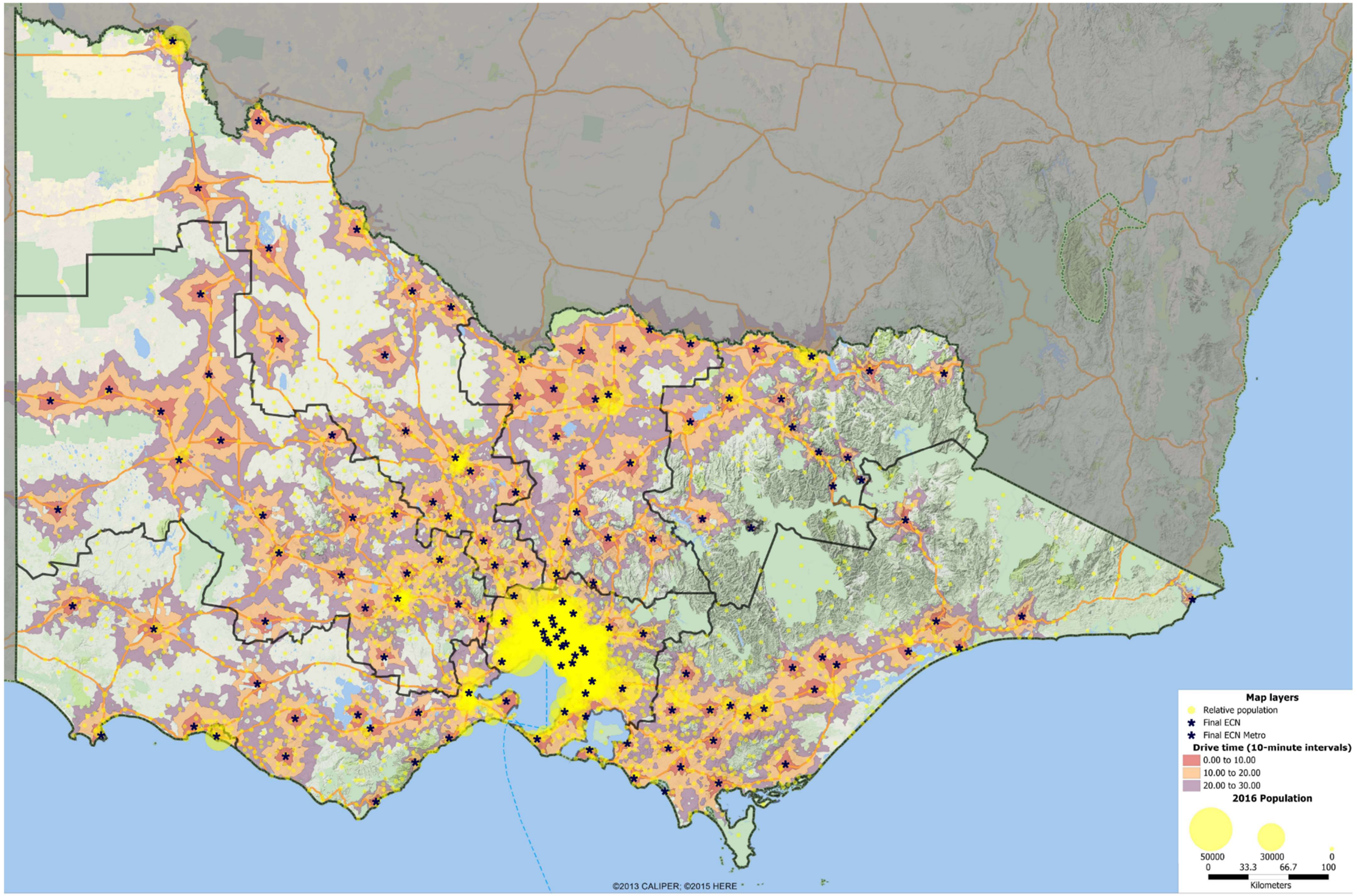


Figure 21 Drive time analysis of all metropolitan ECN sites at 10, 20 and 30-minute drive time

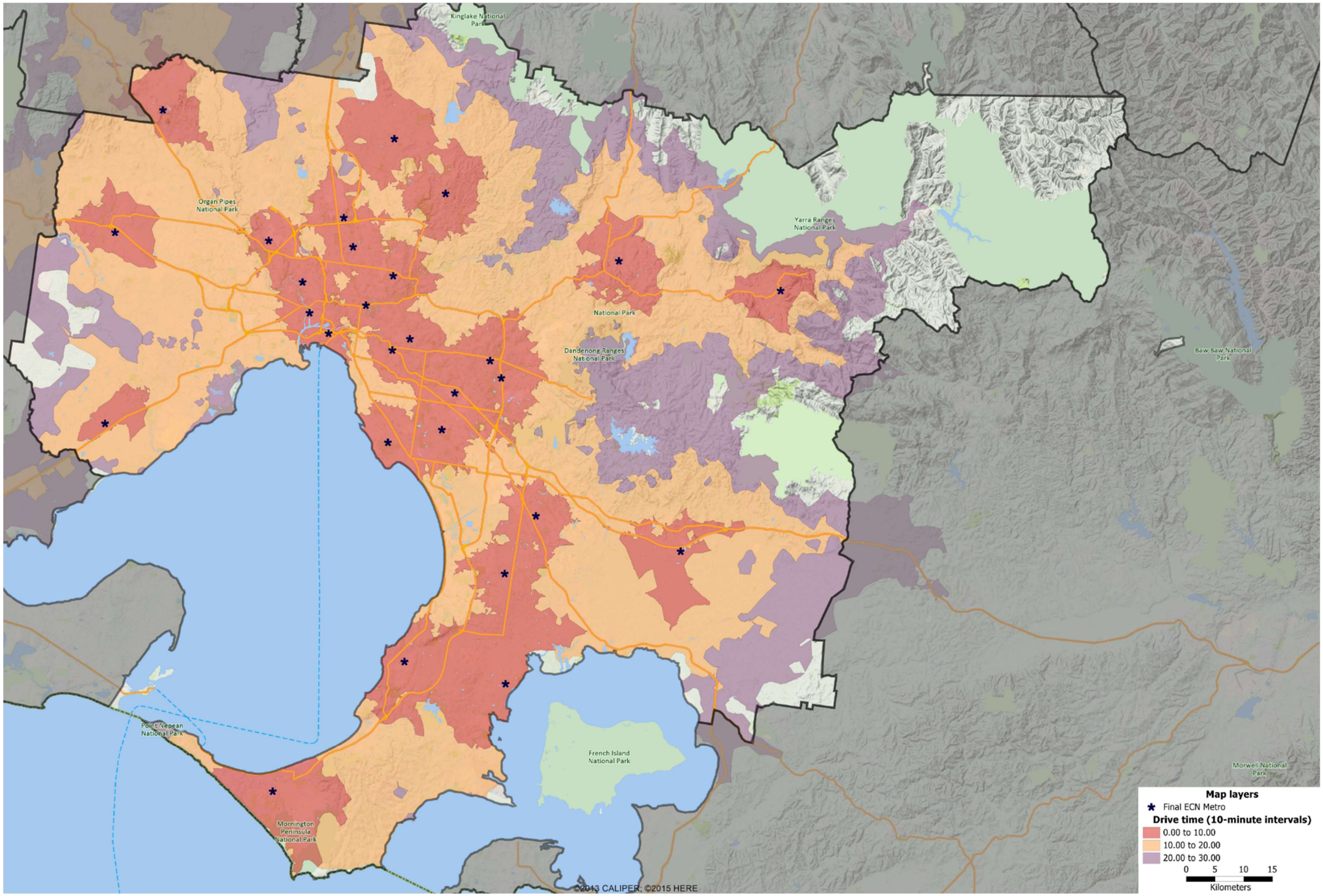
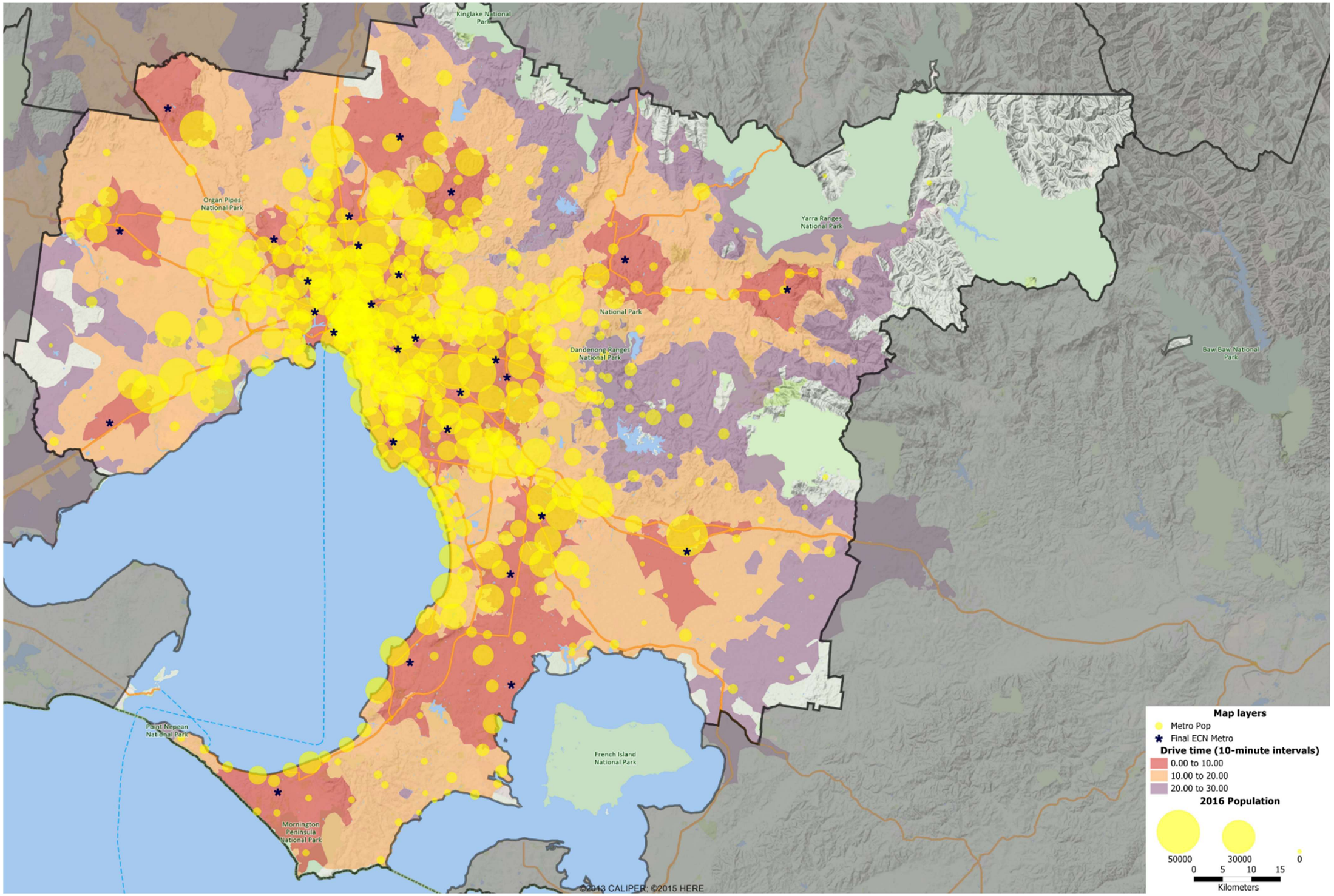


Figure 22 Drive time analysis of all metropolitan ECN sites at 10, 20 and 30-minute drive time mapped against population density



8. Final ECN infrastructure upgrade cost estimates

The estimates below are provided for the Final ECN. Cost estimates were also completed for the Draft ECN. The draft cost estimates were presented during consultation and engagement with WRRGs, Councils and industry and amended to provide the following final estimates.

The site assessments indicate that of the 141 sites identified in the Final ECN, 131 require an upgrade with just 10 already having suitable infrastructure in place (see Figure 23). This has been further broken down by WRRG in Table 26 and Figure 24.

Figure 23 Total number of ECN sites requiring infrastructure upgrades (Victoria)

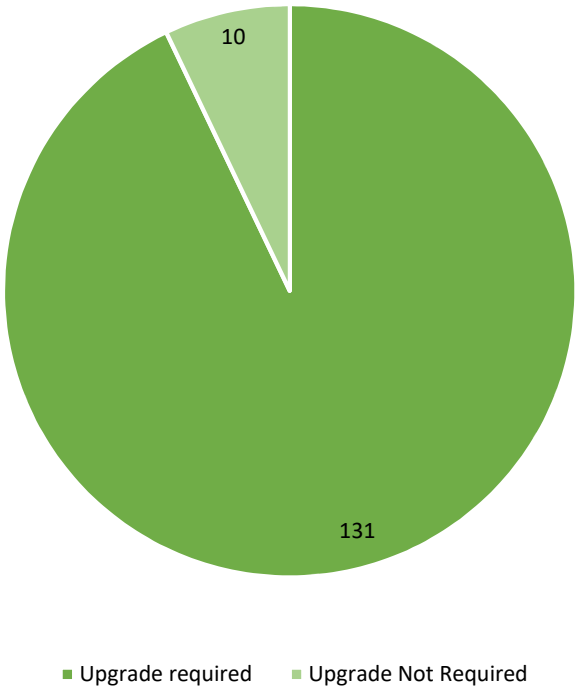
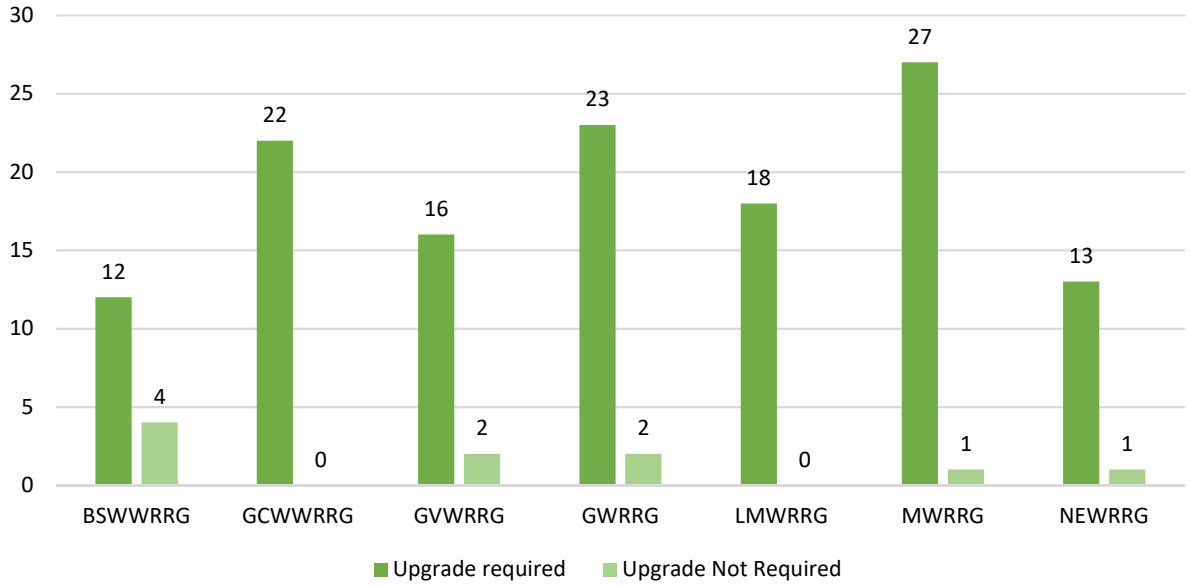


Table 27 Overview of site upgrades required across the ECN

WRRG	Upgrade required	Upgrade Not Required	Total
BSWWRRG	12	4	16
GCWWRRG	22	0	22
GVWRRG	16	2	18
GWRRG	23	2	25
LMWRRG	18	0	18
MWRRG	27	1	28
NEWRRG	13	1	14
Victoria	131	10	141

Figure 24 Number of ECN sites requiring infrastructure upgrades by WRRG



Costings are provided for the 141 ECN sites that require an upgrade in order to develop **indicative only** high-cost and low-cost estimates. These costings estimates are based on the following:

1. The default upgrade costing for all ECN sites is the construction of fully enclosed shedding with concrete hardstand and power connected[37] as this offers the most effective assistance from central government to local government in enabling compliance with the key requirements of AS5377.
2. A small number of sites that have constraints on the development of permanent infrastructure, such as sites on closed landfills that have not been rehabilitated, costings are for semi-permanent covered areas, such as marquee covered areas or shipping container domes.[38]
3. For completeness, REC has also provided a costing for tertiary sites (not included in the ECN), which includes costing using small, residential grade shedding on a hardstand that is suited to collection of very low tonnages of e-waste (likely to be collected with Council utility).

Using the above costings and the site assessment data, the indicative cost estimates presented in Table 28 have been derived.

Table 28 Indicative cost estimates scenarios

Sites	High Cost Scenario	Low Cost Scenario
ECN sites (primary and secondary sites)	$11,004,483	$6,699,598
Tertiary sites	$2,698,798	$1,355,728
All sites (ECN plus tertiary)	$13,703,281	$8,055,326

[37] Note: all upgrade costings include provisions for hardstands, site preparation works, assembly and site services (mostly electricity) and allows 10% for contingency costs.

[38] If the 'semi-permanent' infrastructure options presented are not suitable for a particular reason, SV will need to access alternate infrastructure and/or access options with Council.

The indicative costings suggest that upgrading all ECN sites under the high cost scenario (which assumes a four-bay skillion shed with 4.9m clearance) is in the order of $11 million, and the low-cost option (which assumes a three-bay strip shed) is in the order of $6.7 million.

It is important to note that both the high and low ECN total cost estimates include costings for semi-permanent shedding for sites that were identified as constrained. Also, semi-permanent shedding is only recommended and included in costings for sites where it is not practical (i.e. the site is due to close) or appropriate (the site is on a landfill that requires rehabilitation) to install permanent infrastructure. This explains why the total high and low cost estimates for the ECN are not simply the default high and low costs per site multiplied by the 131 sites that require an upgrade.

As noted previously, REC has also provided indicative costs for potential upgrades at tertiary sites which are also presented in Table 28. The high number of these sites results in relatively high overall cost of around $3 million and $1.5 million for the high and low-cost scenarios respectively.

If all sites were to be upgraded based on the infrastructure solutions presented, the total cost would be almost $13.7 million for the high cost option and $8.1 million for the low-cost option. The low-cost option would appear to be within SVs total funding envelope for the implementation of the ban.

Table 29 shows the cost to upgrade ECN sites in metropolitan Melbourne is around $1.6 million for the low-cost scenario and $2.5 million for the high cost scenario, compared with upgrades in regional Victoria coming in at $8.5 million and $5 million respectively.

Table 29 Indicative cost estimates for metropolitan and regional site upgrades by site type

	ECN Sites - High Cost	ECN Sites - Low Cost	Tertiary Sites - High Cost	Tertiary Sites - Low Cost	All sites - High cost	All sites - Low cost
Metropolitan	$2,539,350	$1,560,708	$25,095	$12,590	$2,564,445	$1,573,298
Regional	$8,465,133	$5,138,890	$2,673,703	$1,343,138	$11,138,836	$6,482,028

The upgrade costs are further broken down to WRRG regions in Table 30, which show costs ranging from as low as $620,000 (low cost option for NEWRRG) to $2.5 million (high cost option for MWRRG). As would be expected based on site numbers, the costs are mostly allocated toward regional Victoria.

Table 30 Indicative cost estimates for site upgrades by site type and WRRG

	ECN Sites - High Cost	ECN Sites - Low Cost	Tertiary Sites - High Cost	Tertiary Sites - Low Cost	All sites - High cost	All sites - Low cost
BSWWRRG	$1,084,740	$661,024	$552,090	$276,980	$1,636,830	$938,004
GCWWRRG	$1,724,325	$1,045,618	$777,945	$390,290	$2,502,270	$1,435,908
GVWRRG	$1,214,557	$733,186	$376,425	$188,850	$1,590,982	$922,036
GWRRG	$1,939,691	$1,178,422	$390,058	$197,448	$2,329,749	$1,375,870
LMWRRG	$1,486,035	$904,830	$501,900	$251,800	$1,987,935	$1,156,630
MWRRG	$2,539,350	$1,560,708	$25,095	$12,590	$2,564,445	$1,573,298
NEWRRG	$1,015,785	$615,810	$75,285	$37,770	$1,091,070	$653,580
TOTAL	**$11,004,483**	**$6,699,598**	**$2,698,798**	**$1,355,728**	**$13,703,281**	**$8,055,326**

8.1 Considerations for implementation

The indicative site costings developed by REC include some provision for contingency (10% of total cost) . Planning permits would typically not be required for the construction of sheds at RRC sites, unless this takes place as part of larger redevelopment works or transition of a site from a landfill to an RRC facility.

Despite the contingency that has been applied, SV should consider ensuring it has a suitable allocation of funding to deliver the program.

8.2 Spread of ECN funding across regional areas

An initial look at the data could suggest that some regional areas are benefiting significantly more than others based on the gross amount of funding attached to site upgrades. However, analysis of the high cost ECN upgrades against population, presented in Table 31 shows that the allocation of funding on a per capita basis is relatively even.

Table 31 Comparison of regional per capita ECN infrasrtucture costs (based on high-cost scenario)

	ECN Sites - High Cost	Population	Funding per capita
BSWWRRG	$1,084,740	378,000	$2.87
GCWWRRG	$1,724,325	252,000	$6.84
GVWRRG	$1,214,557	195,000	$6.23
GWRRG	$1,939,691	271,000	$7.16
LMWRRG	$1,486,035	270,000	$5.50
NEWRRG	$1,015,785	117,000	$8.68

Per capita funding figures for BSW are skewed as a result of the significant population in Greater Geelong (circa 233,000 people), which is serviced by just two facilities. When Greater Geelong is removed from the data, the funding per capita across the BSWWRRG increases to $6.18/capita as can be seen in Table 32.

Table 32 Comparison of regional per capita ECN infrasrtucture costs (based on high-cost scenario)

	ECN Sites - High Cost	Population	Funding per capita
BSWWRRG (excl Geelong)	$1,084,740	145,000	$6.18
GCWWRRG	$1,724,325	252,000	$6.84
GVWRRG	$1,214,557	195,000	$6.23
GWRRG	$1,939,691	271,000	$7.16
LMWRRG	$1,486,035	270,000	$5.50
NEWRRG	$1,015,785	117,000	$8.68

8.3 Draft versus Final ECN cost estimates

When compared to the Draft ECN (122 sites), the impact of the additional 19 sites and the changes to infrastructure costings resulting from consultation and engagement findings is an extra

$1,632,645 for the high cost option and $994,486 for the low cost option. The comparison of Draft ECN costs against the Final ECN costs is presented by WRRG in Table 33.

Table 33 Comparision of Draft ECN costs against Final ECN costs by WRRG

	Draft ECN Sites - High Cost	Final ECN Sites - High Cost	Difference	Draft ECN Sites - Low Cost	Final ECN Sites - Low Cost	Difference
BSWWRRG	$658,350	$1,084,740	**$426,390**	$404,628	$661,024	**$256,396**
GCWWRRG	$1,598,850	$1,724,325	**$125,475**	$982,668	$1,045,618	**$62,950**
GVWRRG	$1,134,140	$1,214,557	**$80,417**	$683,980	$733,186	**$49,206**
GWRRG	$1,847,812	$1,939,691	**$91,879**	$1,125,224	$1,178,422	**$53,198**
LMWRRG	$1,078,818	$1,486,035	**$407,217**	$647,364	$904,830	**$257,466**
MWRRG	$2,334,656	$2,539,350	**$204,694**	$1,429,672	$1,560,708	**$131,036**
NEWRRG	$719,212	$1,015,785	**$296,573**	$431,576	$615,810	**$184,234**
TOTAL	**$9,371,838**	**$11,004,483**	**$1,632,645**	**$5,705,112**	**$6,699,598**	**$994,486**

Key findings of final ECN infrastructure upgrades cost estimates

- The final ECN includes 141 sites and 131 of these sites need a significant upgrade to e-waste collection and storage infrastructure to be compliant with the key requirements of AS5377. This represents a net increase of 19 sites compared to the initial ECN.
- Based on REC's estimates, the indicative cost to provide fully enclosed fixed shedding for the final ECN of the preferred (higher cost) standard would be around $11 million. This assumes a four-bay skillion shed with 4.9m clearance. The represents a circa $1.6 million increase compared to the Draft ECN costings.
- Based on REC's estimates, the indicative cost to provide fully enclosed fixed shedding for the final ECN of the lower cost option would be around $6.7 million. This assumes a three-bay strip shed. This represents around a $1 million increase compared to the Draft ECN costings.
- For completeness, REC has also provided indicative costing for tertiary sites, which includes costing using small, residential grade shedding on a hardstand. To upgrade all tertiary sites would require an additional $2.7 million (high cost scenario).
- Whilst there is potentially enough funding to provide an upgrade to all sites across the RRC network, it is recommended that the ECN sites be the focus in the first instance to ensure that a network of well-funded compliant sites is in place. Should funding remain, then the upgrading of tertiary sites should also be considered.

Appendix A: Current e-waste collection sites detailed analysis and mapping

Resource recovery centres and related infrastructure

The largest and most comprehensive part of the e-waste collection infrastructure is comprised of RRC infrastructure and similar[39], which includes but is not limited to[40]:

> *Resource recovery centres/transfer stations (RRC/TS) – Receives, sorts and/or consolidates a range of material streams (depending on the facility) including hard, organic and residual waste and commingled recyclables for transport for materials recovery, processing or disposal to landfill. Accepts materials from all sectors and can be publicly or privately owned and operated. May include a resale centre.*
>
> *Drop-off (DO) centres and transfer trailers (TT) – Recovers selected materials and goods mainly dropped off by householders for recycling and reuse; may include aggregation for transport to a resource recovery centre or transfer station.*

REC has consolidated data provided by SV and additional data sourced directly from local government and Regional Waste and Resource Recovery Group projects[41] into a comprehensive list of 280 RRC sites currently servicing Victoria. The majority of these facilities are council owned and are open to the public for the purpose of receiving and aggregating recyclable items and residual waste.

Coverage and analysis

The full RRC network in Victoria comprises some 280 sites which provide coverage to 99% of Victorians within a 30-minute drive time of their homes. When split at metropolitan and regional level the coverage remains high with 99% and 97% respectively covered within a 30-minute drive time. Drive time mapping for RRC sites is presented as follows:

- Figure 25 Drive time analysis of all Victorian RRC sites at 10, 20 and 30-minute drive time intervals
- Figure 26 Drive time analysis of all Victorian RRC sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 27 Drive time analysis of all metropolitan RRC sites at 10, 20 and 30-minute drive time intervals
- Figure 28 Drive time analysis of all metropolitan RRC sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 29 Drive time analysis of all regional RRC sites at 10, 20 and 30-minute drive time intervals
- Figure 30 Drive time analysis of all regional RRC sites at 10, 20 and 30-minute drive time intervals mapped against population density

[39] Referred to herein as "RRC sites"
[40] Definitions taken from the Statewide Waste and Resource Recovery Infrastructure Plan (State Infrastructure Plan), *Sustainability Victoria 2016*, pp 64.
[41] Including work currently underway by Reincarnate and REC to assess RRC/TS infrastructure in Gippsland and Goulburn Valley regions

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented in Table 34.

Table 34 Drive time coverage analysis of RRC sites across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
All RRC sites	62%	97%	99%
Metro RRC sites	61%	96%	99%
Regional RRC sites	64%	90%	97%

Figure 25 Drive time analysis of all Victorian RRC sites at 10, 20 and 30-minute drive time intervals

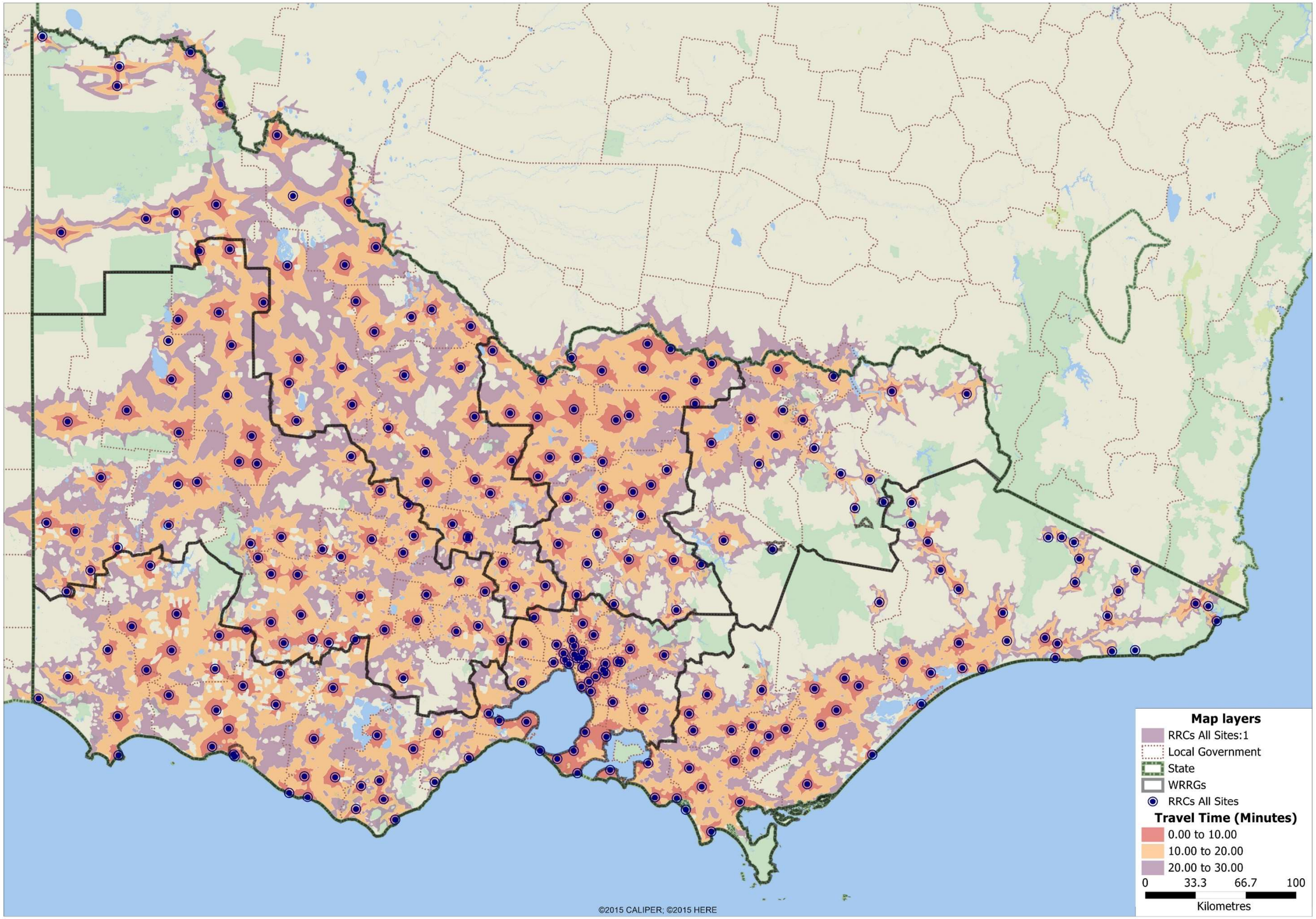


Figure 26 Drive time analysis of all Victorian RRC sites at 10, 20 and 30-minute drive time intervals mapped against population density

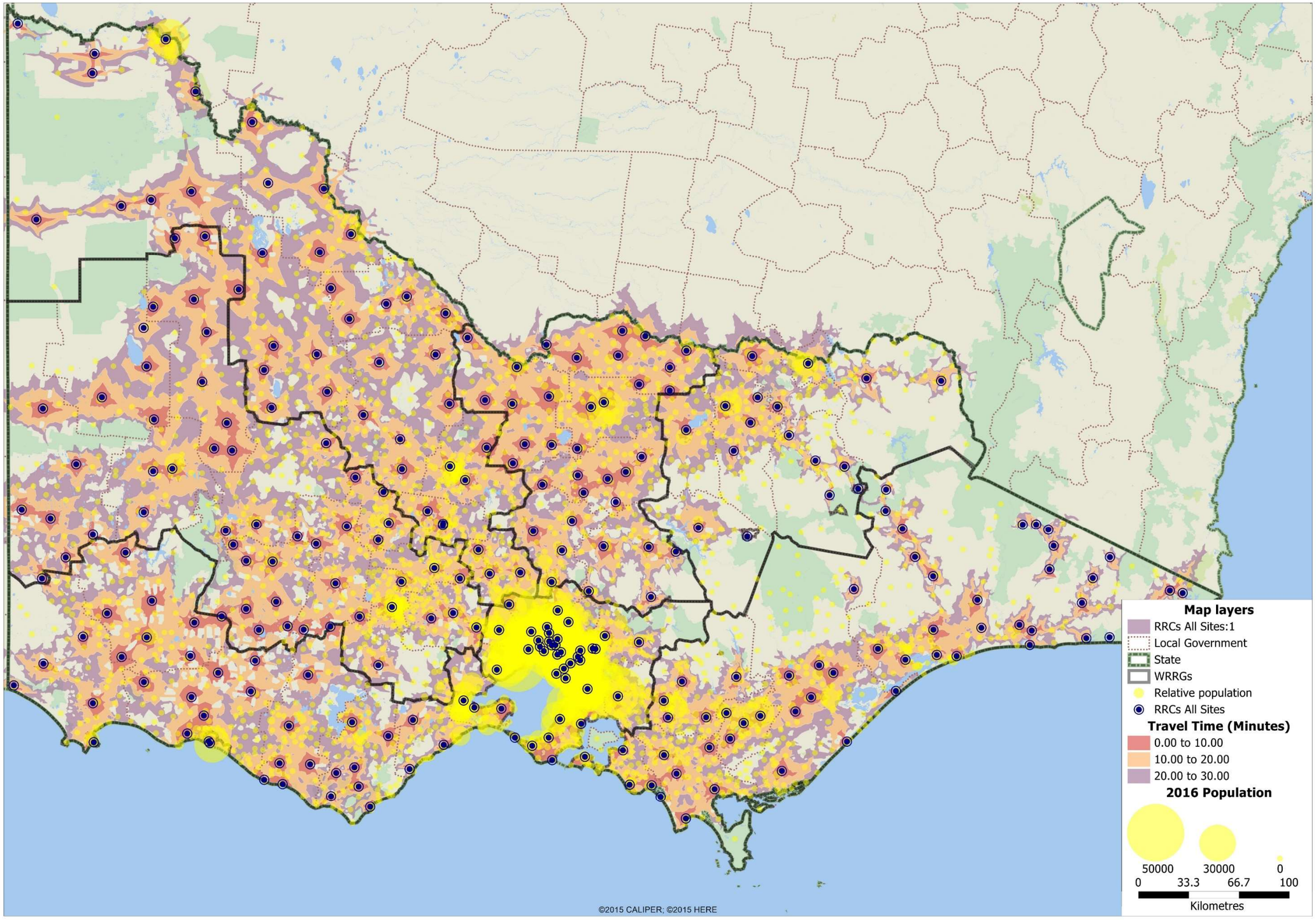


Figure 27 Drive time analysis of all metropolitan RRC sites at 10, 20 and 30-minute drive time intervals

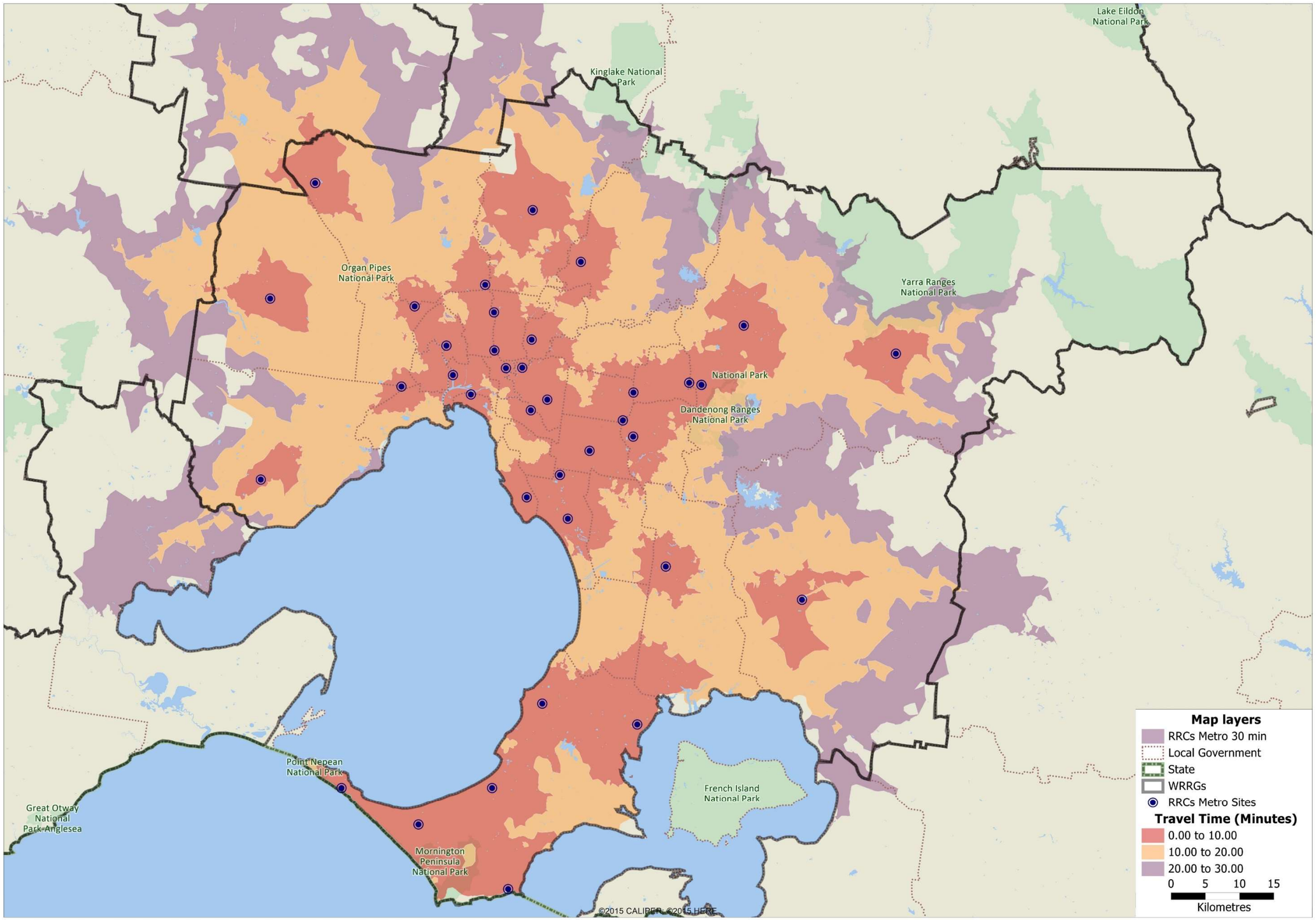


Figure 28 Drive time analysis of all metropolitan RRC sites at 10, 20 and 30-minute drive time intervals mapped against population density

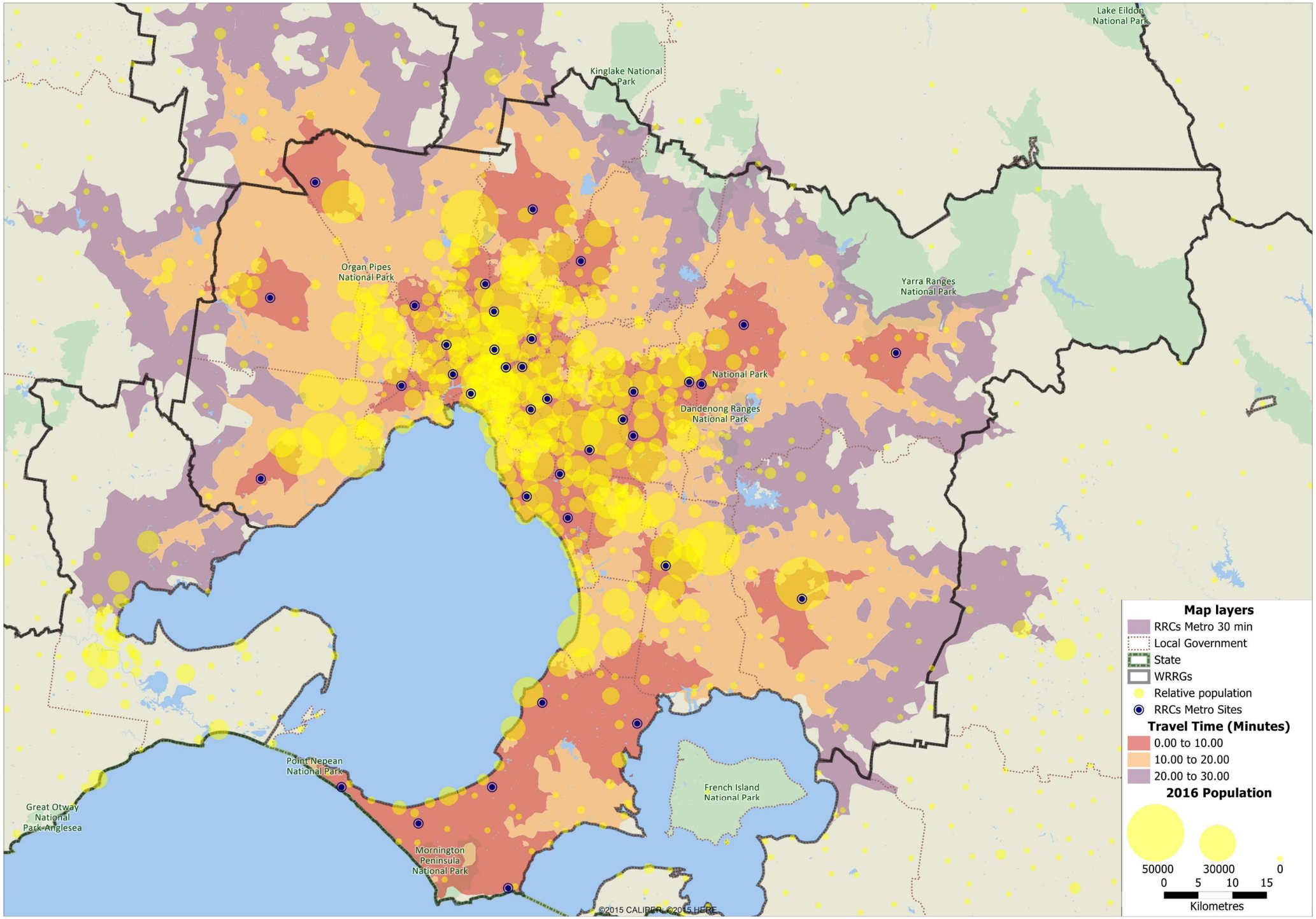


Figure 29 Drive time analysis of all regional RRC sites at 10, 20 and 30-minute drive time intervals

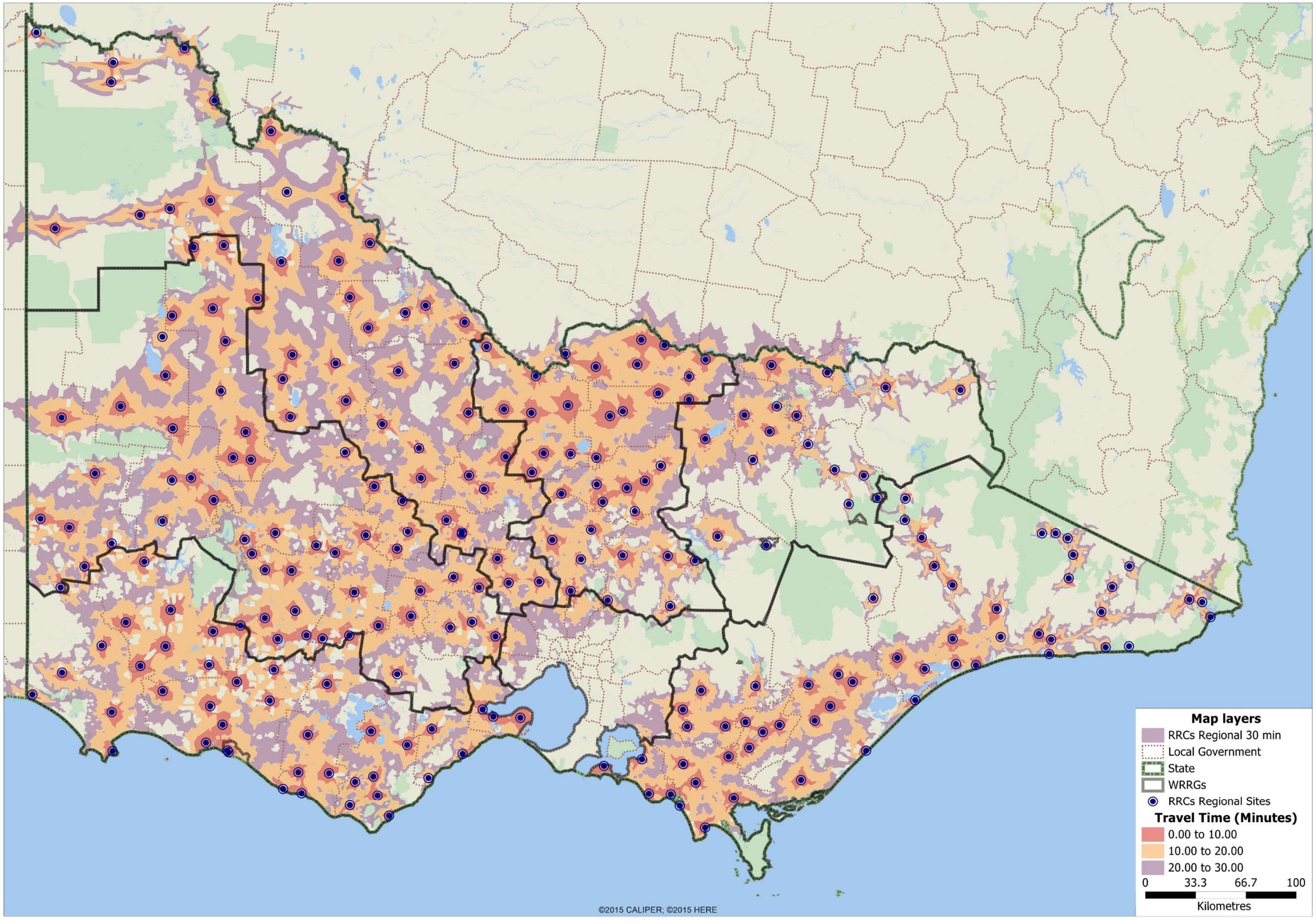
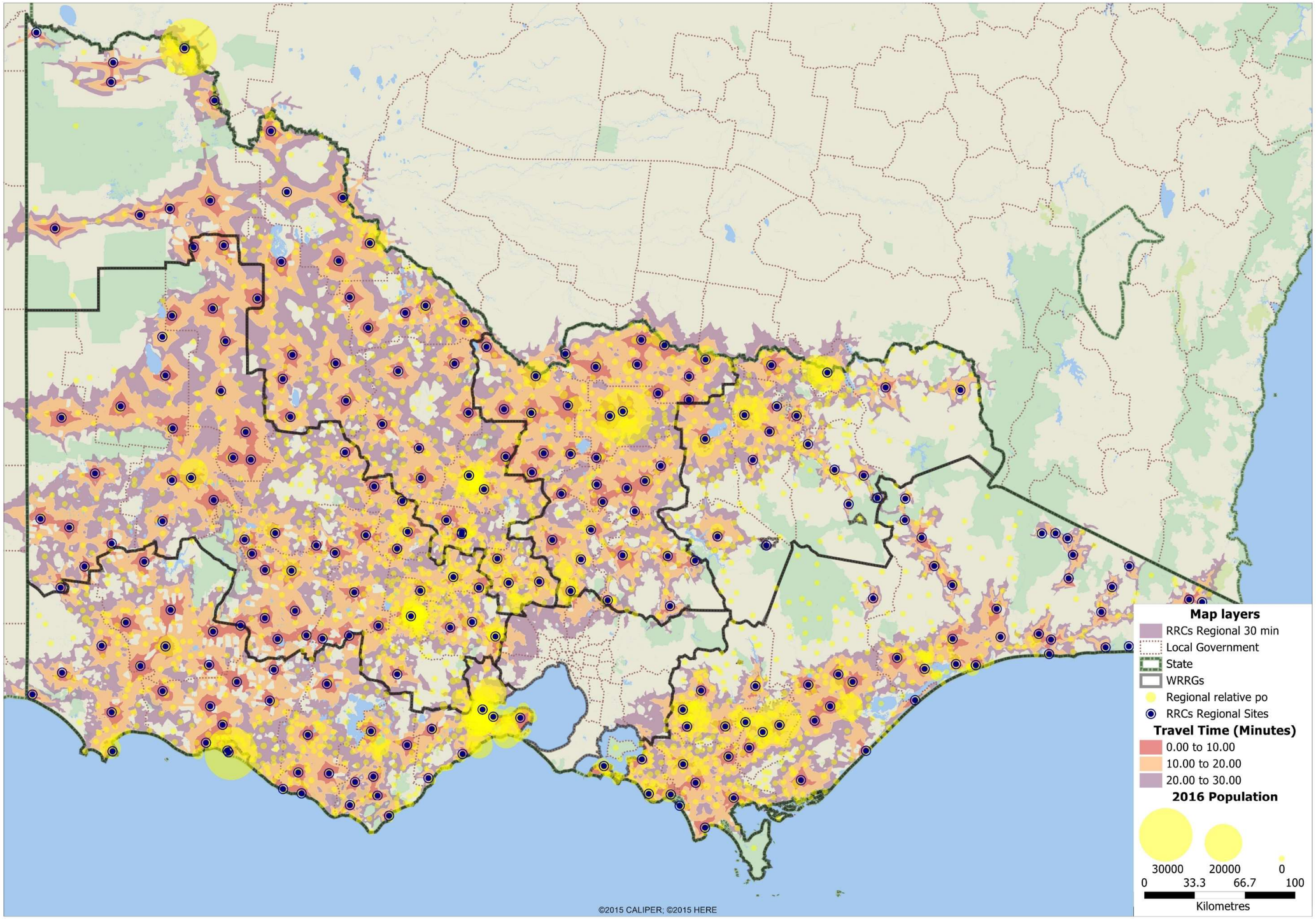


Figure 30 Drive time analysis of all regional RRC sites at 10, 20 and 30-minute drive time intervals mapped against population density



RRC sites collecting scrap metal

RRC sites accepting scrap metals are and will remain an important part of the network for collection of Category A e-waste, as these products tend to have high metals content, such as fridges, washers, dryers and microwaves.

At present, 240 of the 280 RRC sites mapped accept scrap metal, including most sites located in populated regional areas. Drive time analysis and mapping suggests that the current network of RRC sites accepting metals provides a coverage of some 98% across both metropolitan Melbourne and regional Victoria within a 30-minute drive time. Drive time analysis of RRC sites accepting metals is presented as follows:

- Figure 31 Drive time analysis of metro RRC sites currently accepting metals at 10, 20 and 30-minute drive time intervals
- Figure 32 Drive time analysis of metro RRC sites currently accepting metals at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 33 Drive time analysis of regional RRC sites currently accepting metals at 10, 20 and 30-minute drive time intervals
- Figure 34 Drive time analysis of regional sites currently accepting metals at 10, 20 and 30-minute drive time intervals mapped against population density.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented in Table 35.

Table 35 Drive time coverage analysis of RRC sites accepting scrap metals across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
Metro RRC sites accepting metals	59%	95%	98%
Regional RRC sites accepting metals	62%	89%	98%

Figure 31 Drive time analysis of metro RRC sites <u>currently accepting metals</u> at 10, 20 and 30-minute drive time intervals

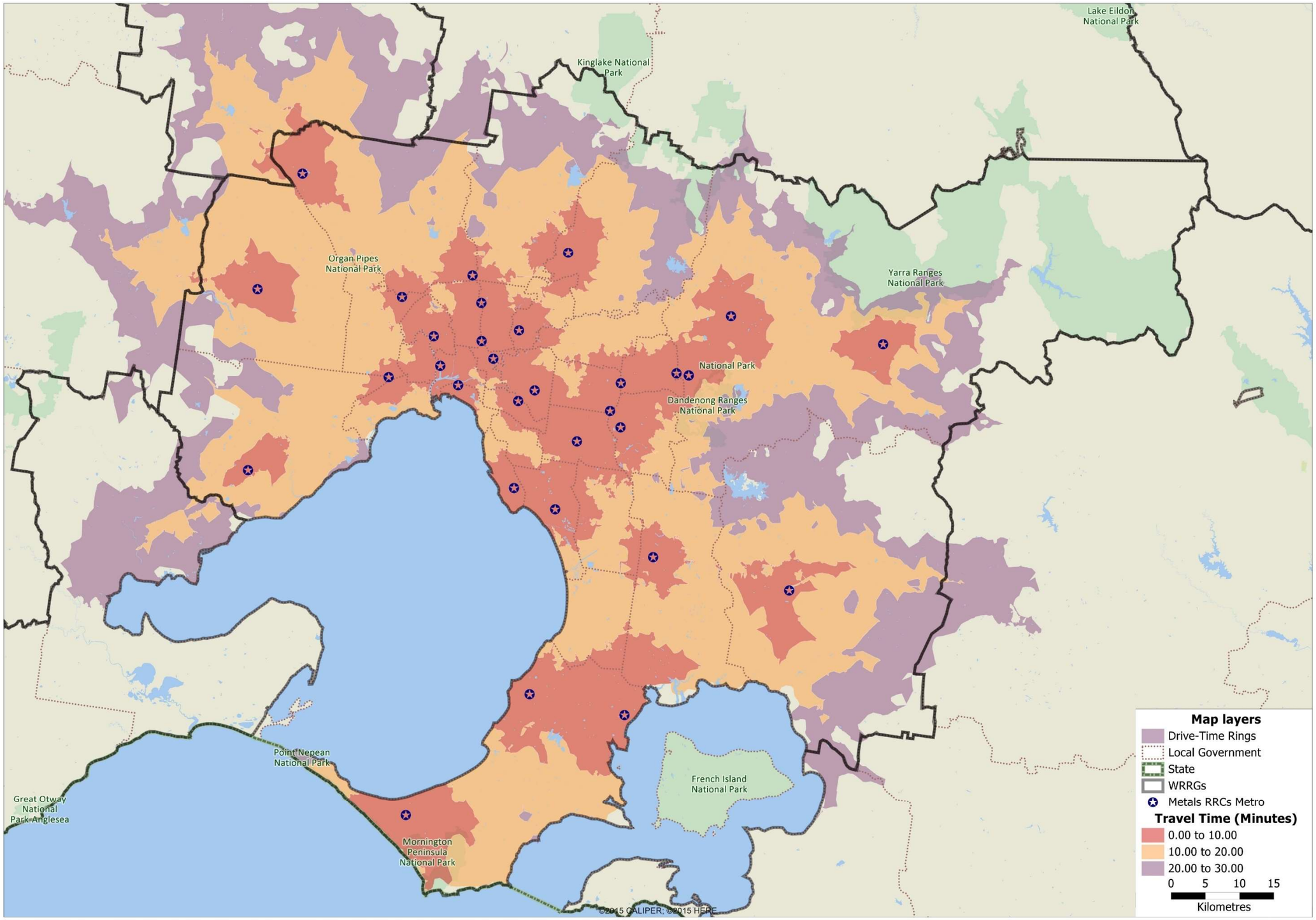


Figure 32 Drive time analysis of metro RRC sites <u>currently accepting metals</u> at 10, 20 and 30-minute drive time intervals mapped against population density

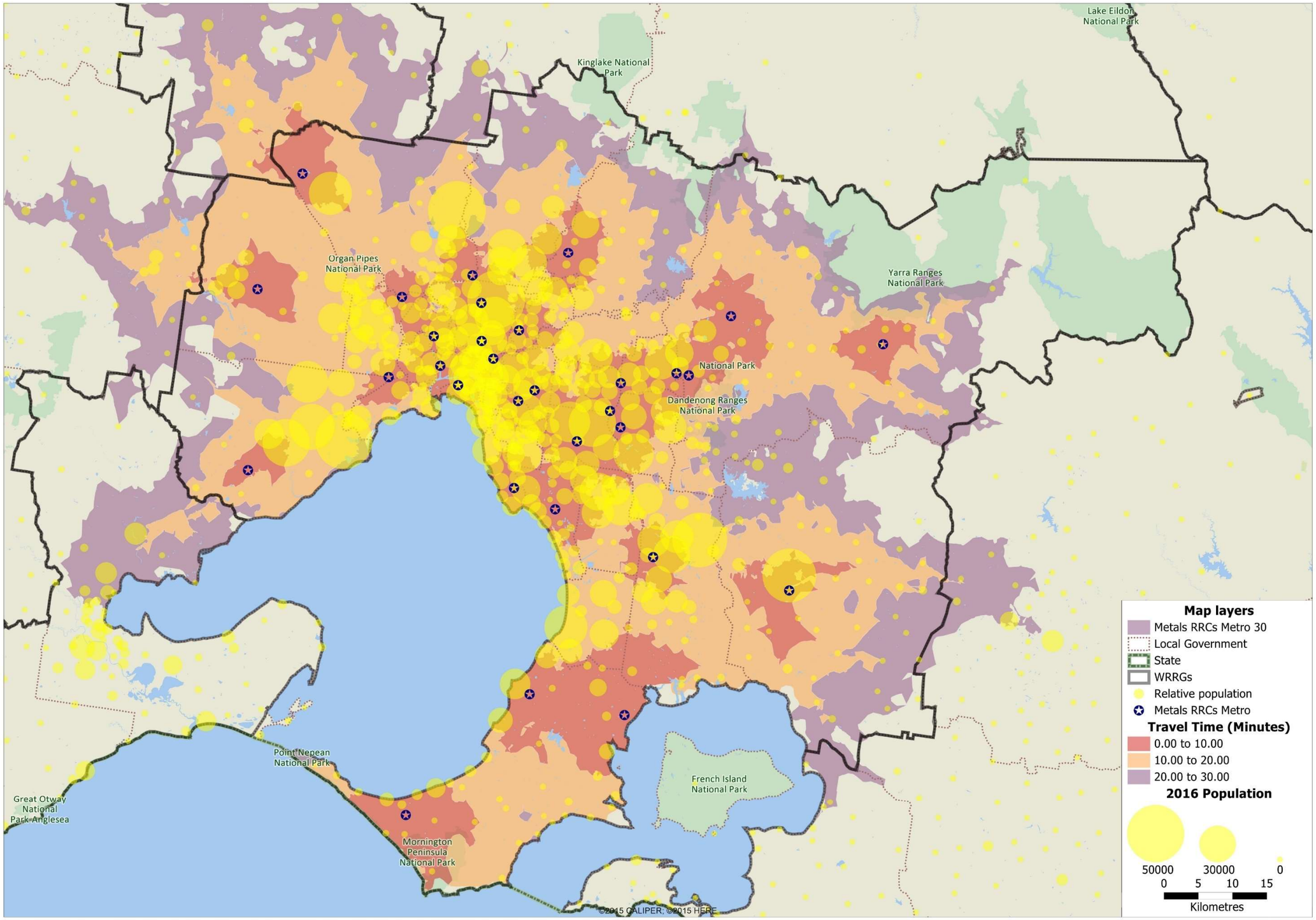


Figure 33 Drive time analysis of regional RRC sites currently accepting metals at 10, 20 and 30-minute drive time intervals

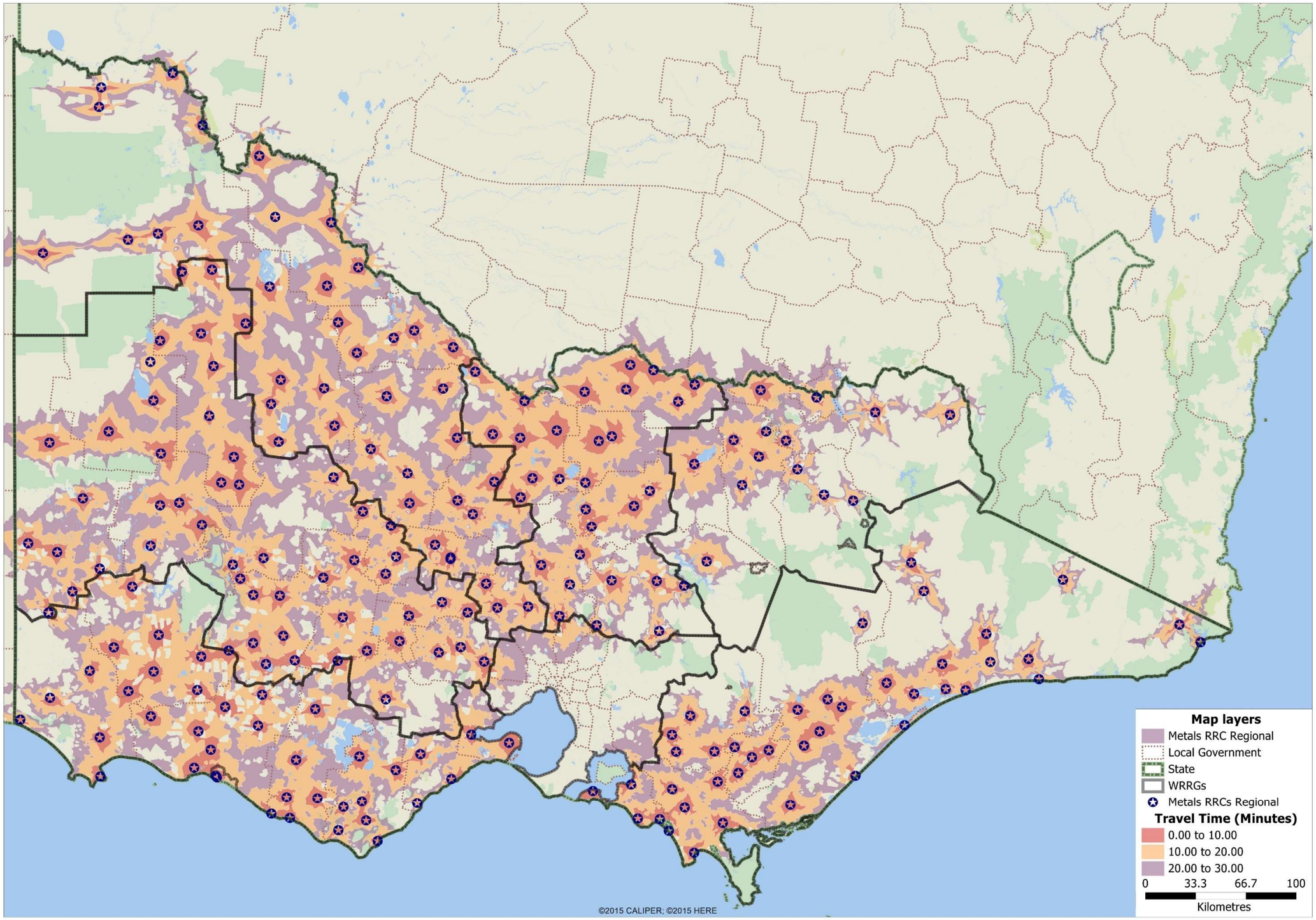
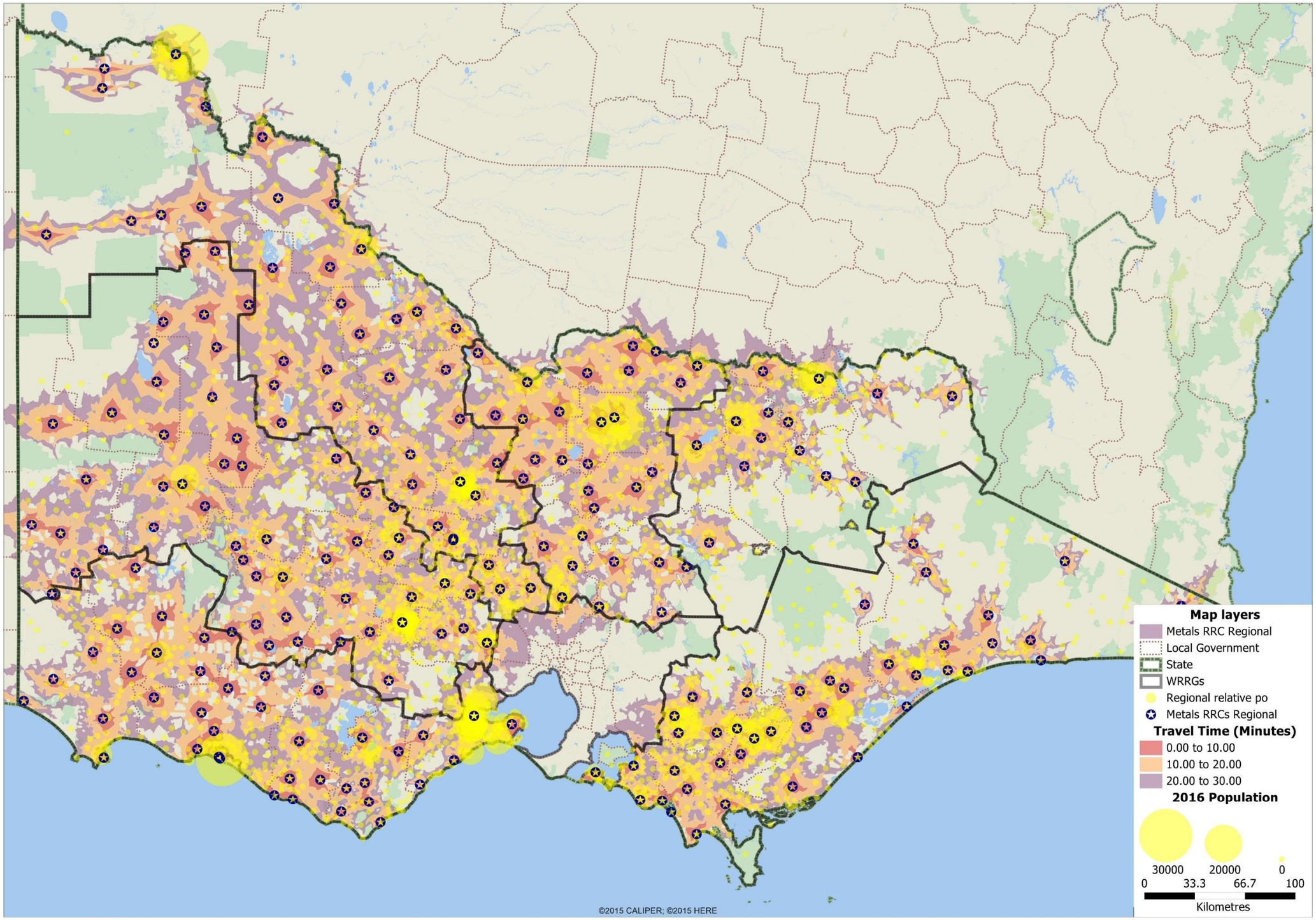


Figure 34 Drive time analysis of regional sites currently accepting metals at 10, 20 and 30-minute drive time intervals mapped against population density



RRC sites collecting e-waste

Along with significant opportunities for metals collection, the RRC network also provides a baseline of sites already collecting e-waste. However, it should be noted that in the clear majority of cases, the definition of 'e-waste' is restricted largely to TVs and computers as most sites are either part of the NTCRS or have contracted with recyclers seeking volumes to meet their NTCRS targets. Most other e-waste types, such as toys and smaller household appliances, are sent to landfill or potentially recovered via resale shops if they are in good working order.

At present, some 228 of the 280 RRC sites mapped accept e-waste (TVs and computers), including most metropolitan facilities and regional facilities located in areas of high population density. Drive time analysis and mapping suggests that the current network of RRC sites accepting e-waste provides a coverage of some 98% in metropolitan Melbourne and 96% in regional Victoria within a 30-minute drive time. Drive time analysis of RRC sites accepting e-waste is presented as follows:

- Figure 35 Drive time analysis of regional sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals
- Figure 36 Drive time analysis of regional sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 37 Drive time analysis of metro sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals
- Figure 38 Drive time analysis of metro sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals mapped against population density.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented in Table 36.

Table 36 Drive time coverage analysis of RRC sites accepting e-waste (TVs and computers) across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
Metro RRC sites accepting e-waste	59%	96%	98%
Regional RRC sites accepting e-waste	59%	88%	96%

Figure 35 Drive time analysis of regional sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals

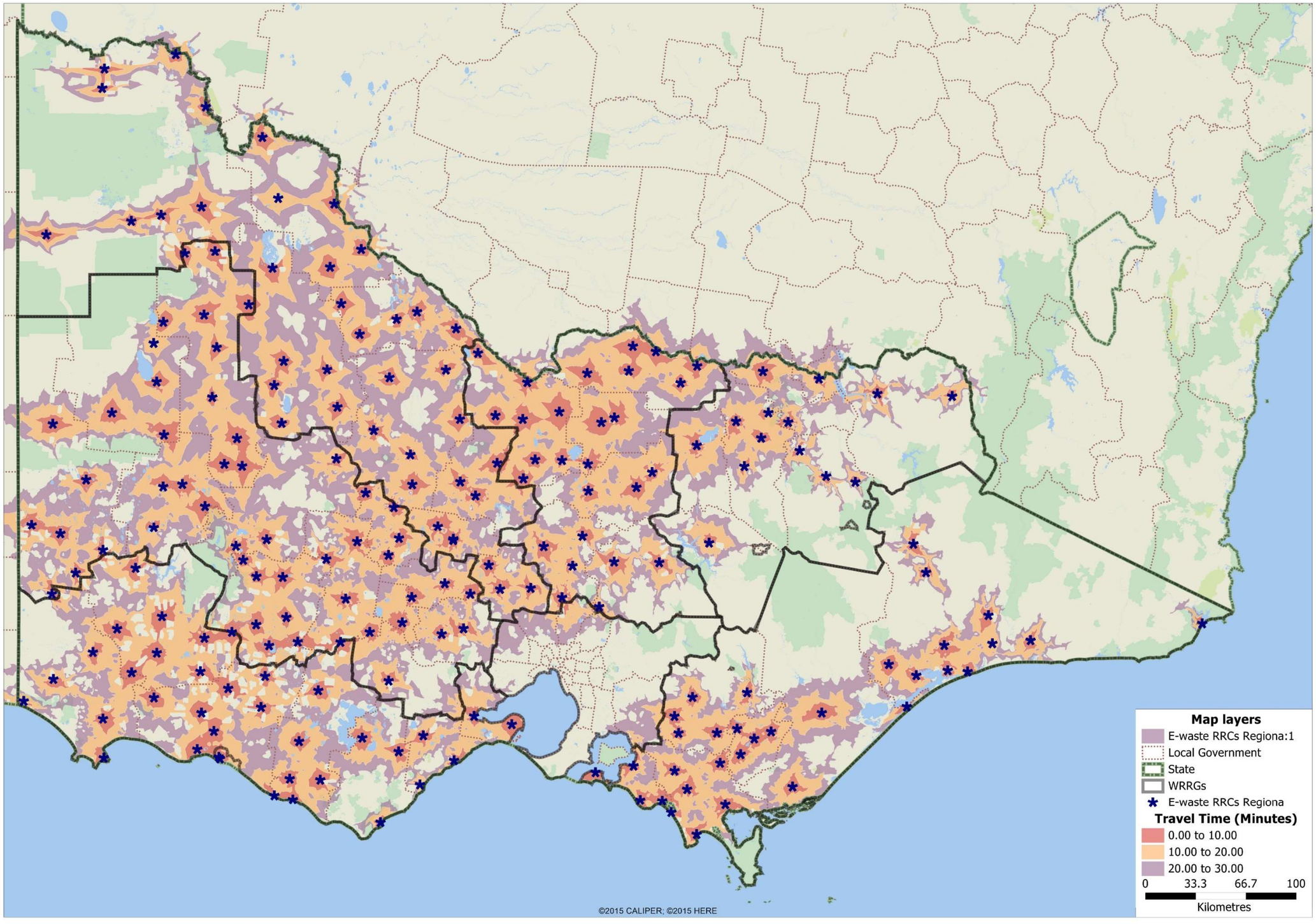


Figure 36 Drive time analysis of regional sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals mapped against population density

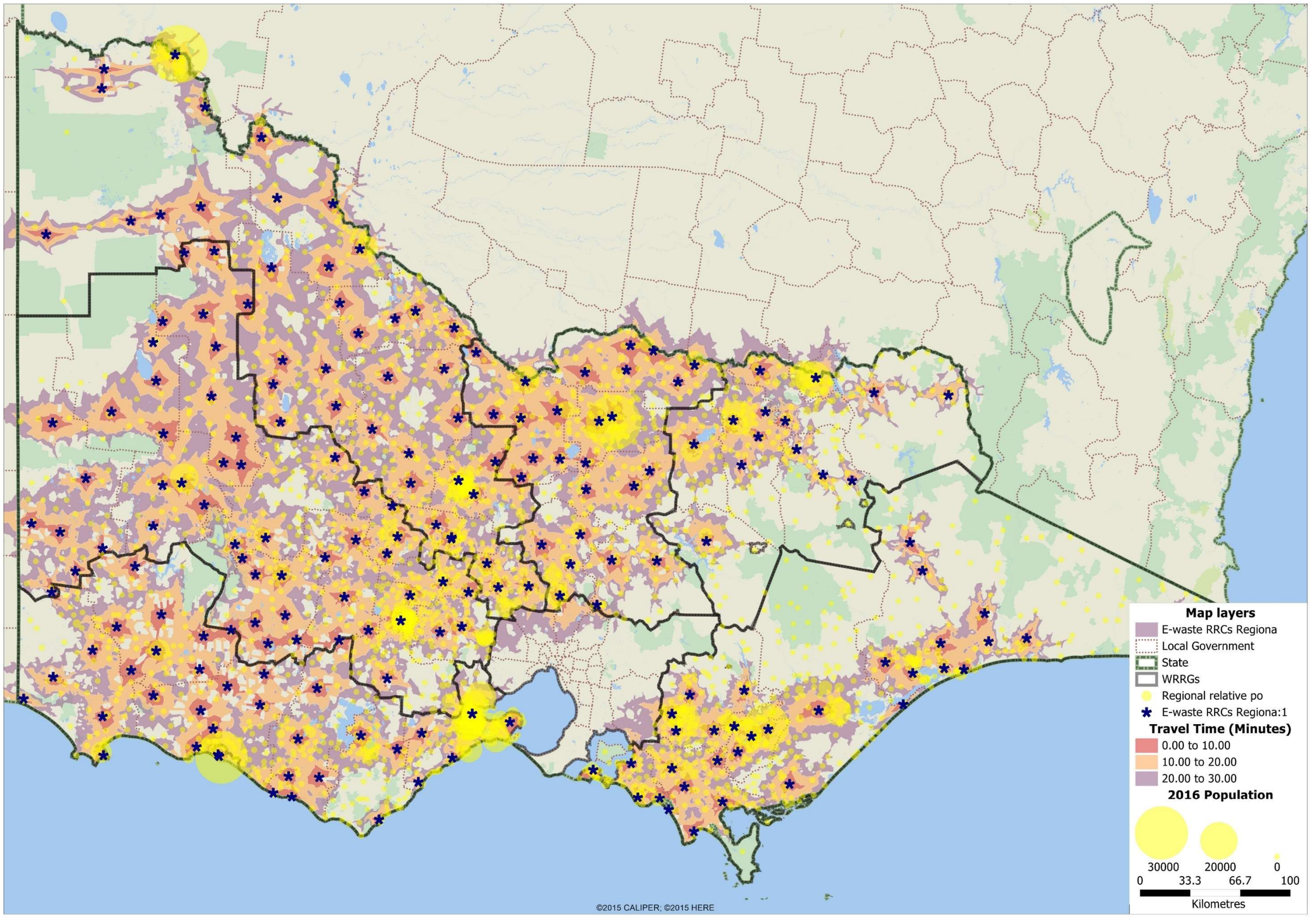


Figure 37 Drive time analysis of metro sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals

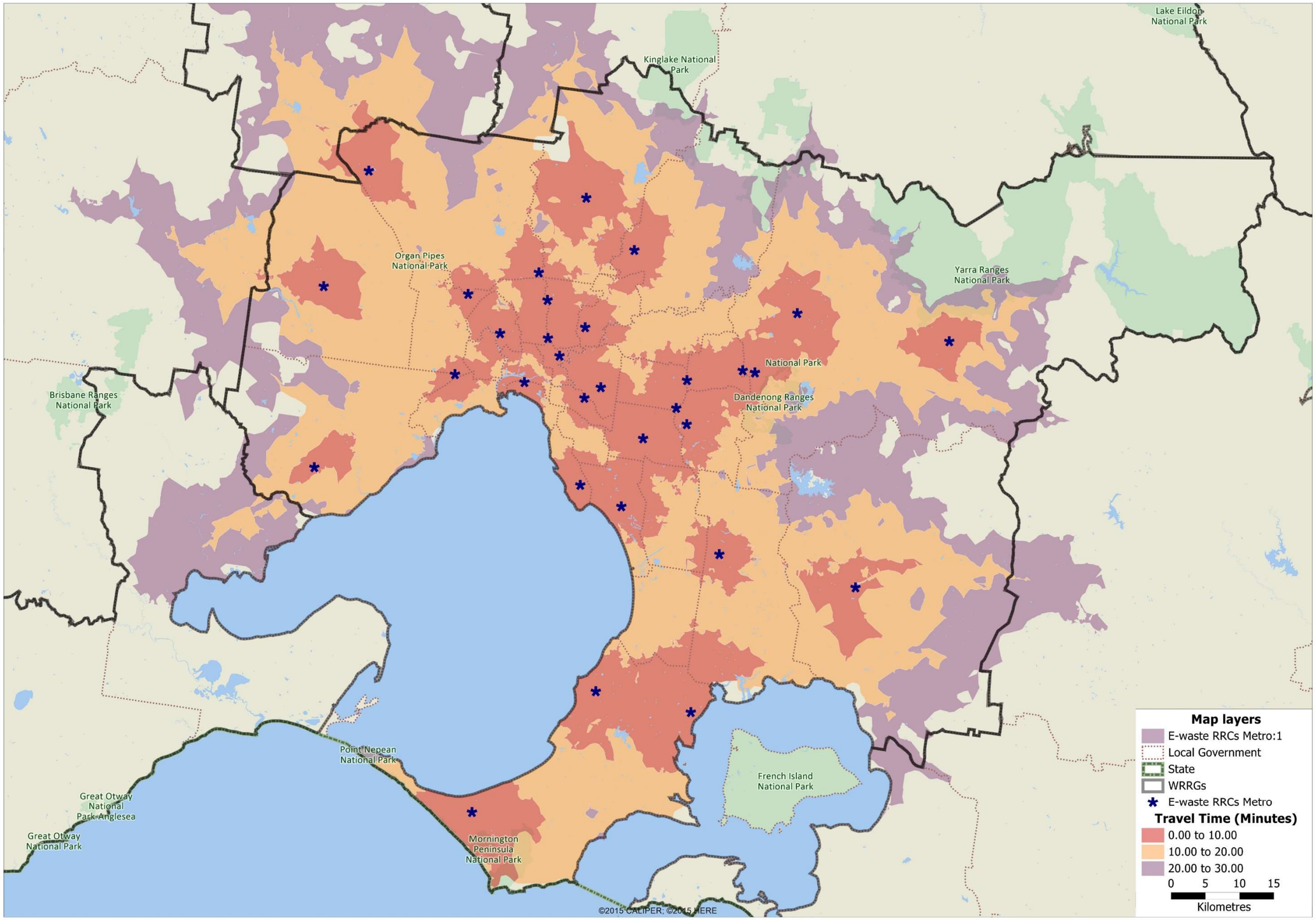
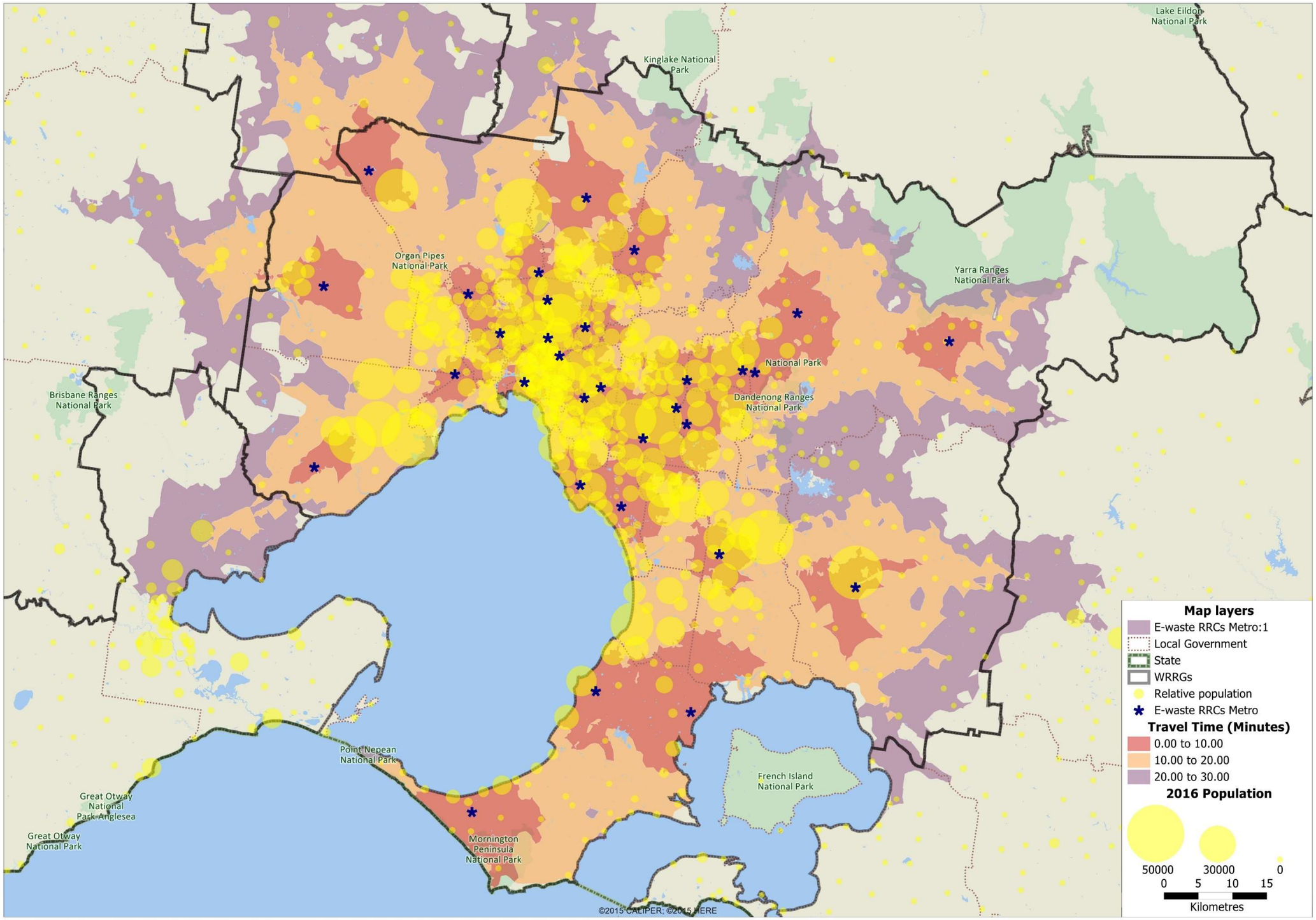


Figure 38 Drive time analysis of metro sites currently accepting e-waste at 10, 20 and 30-minute drive time intervals mapped against population density



'Permanent drop-off sites' for the free disposal of household paint, batteries and fluorescent lights

As part of the RRC network, SV funds the ongoing collection, transport and treatment of household batteries, lamps and fluorescent lights through the state-wide Household Chemical Collection program across 30 Permanent drop-off sites in metropolitan and regional Victoria.

The permanent drop-off sites facilities are typically located at council run RRC sites and as such there is overlap with the RRC site analysis provided above.

When looking at permanent drop-off sites in isolation (i.e. separately to the broader RRC network), the 30 sites provide coverage of around 90% within a 30-minute drive time. There is a bias toward metropolitan coverage, with 11 of the 30 sites located within Greater Melbourne. This translates in the coverage analysis, with the current network of Permanent drop-off sites providing coverage of 98% in metropolitan areas compared to 63% in regional areas.

Drive time analysis of HCC is presented as follows:

- Figure 39 Drive time analysis of all Victorian permanent drop-off sites at 10, 20 and 30-minute drive time intervals
- Figure 40 Drive time analysis of all Victorian Permanent drop-off sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 41 Drive time analysis of metro Permanent drop-off sites at 10, 20 and 30-minute drive time intervals
- Figure 42 Drive time analysis of metro Permanent drop-off sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 43 Drive time analysis of regional Permanent drop-off sites at 10, 20 and 30-minute drive time intervals
- Figure 44 Drive time analysis of regional Permanent drop-off sites at 10, 20 and 30-minute drive time intervals mapped against population density.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented in Table 37.

Table 37 Drive time coverage analysis of permanent drop-off sites across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Victorian Permanent drop-off sites	33%	82%	90%
Metro Permanent drop-off sites	33%	90%	98%
Regional Permanent drop-off sites	28%	52%	63%

Figure 39 Drive time analysis of all Victorian permanent drop-off sites at 10, 20 and 30-minute drive time intervals

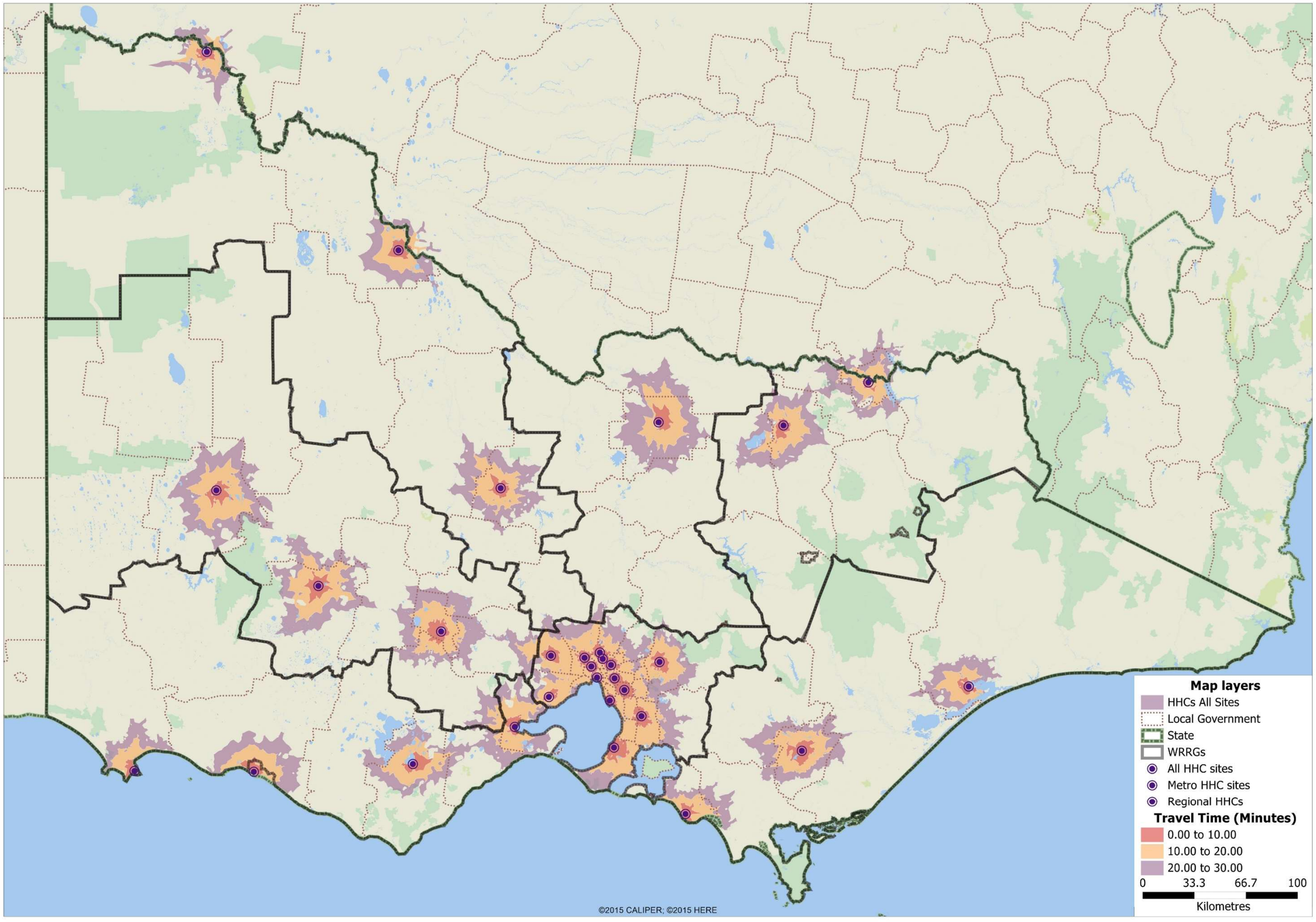


Figure 40 Drive time analysis of all Victorian Permanent drop-off sites at 10, 20 and 30-minute drive time intervals mapped against population density

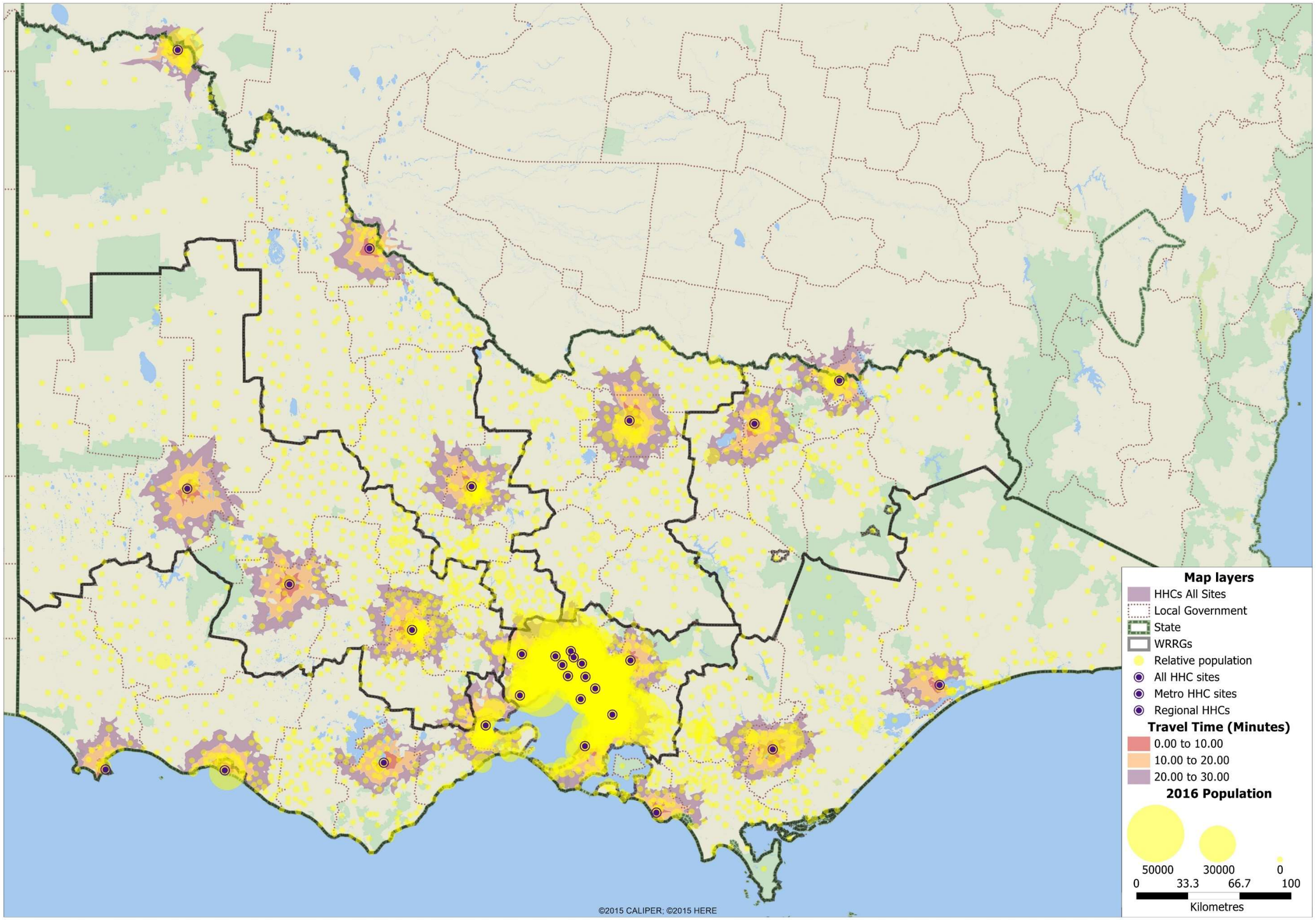


Figure 41 Drive time analysis of metro Permanent drop-off sites at 10, 20 and 30-minute drive time intervals

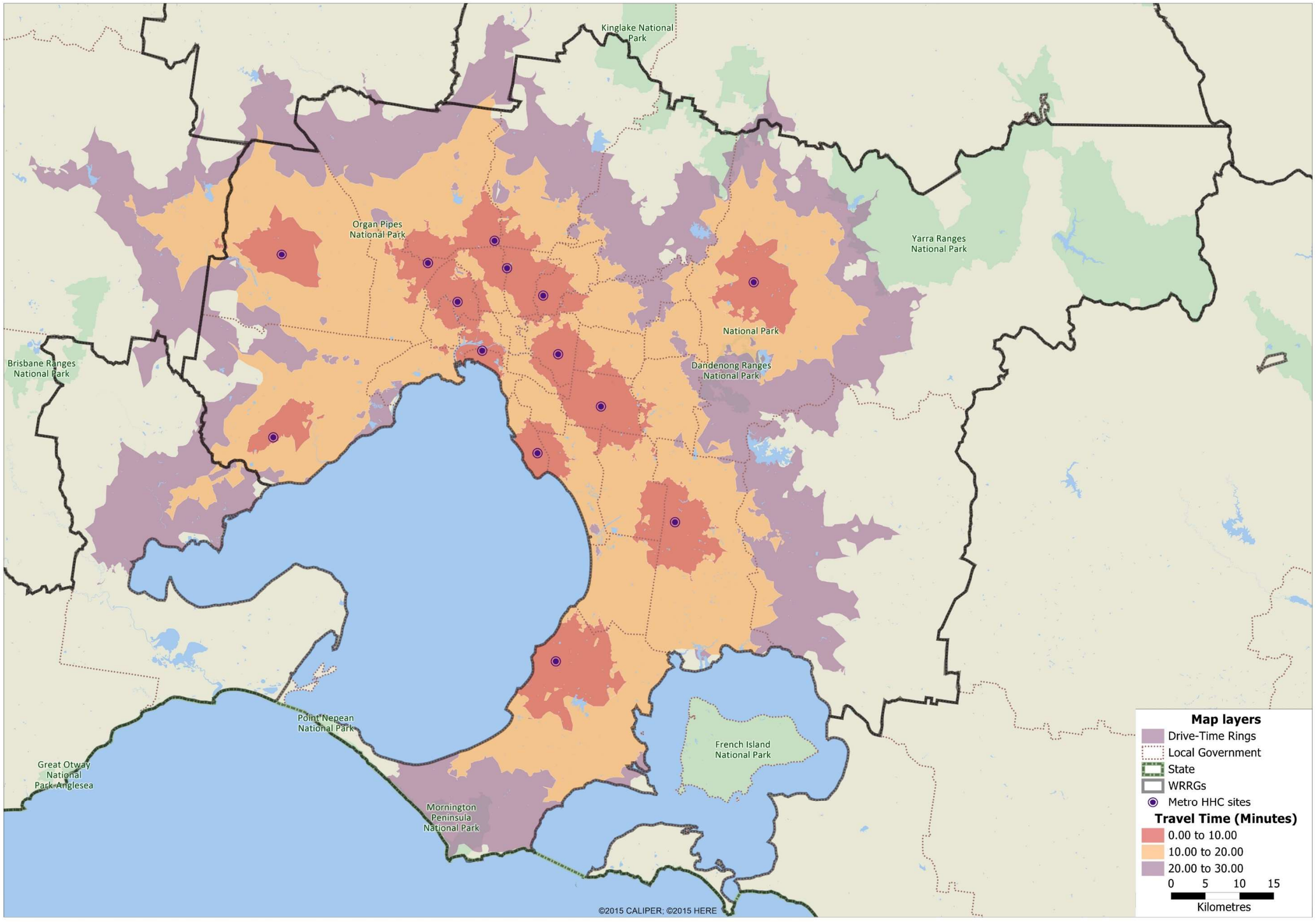


Figure 42 Drive time analysis of metro Permanent drop-off sites at 10, 20 and 30-minute drive time intervals mapped against population density

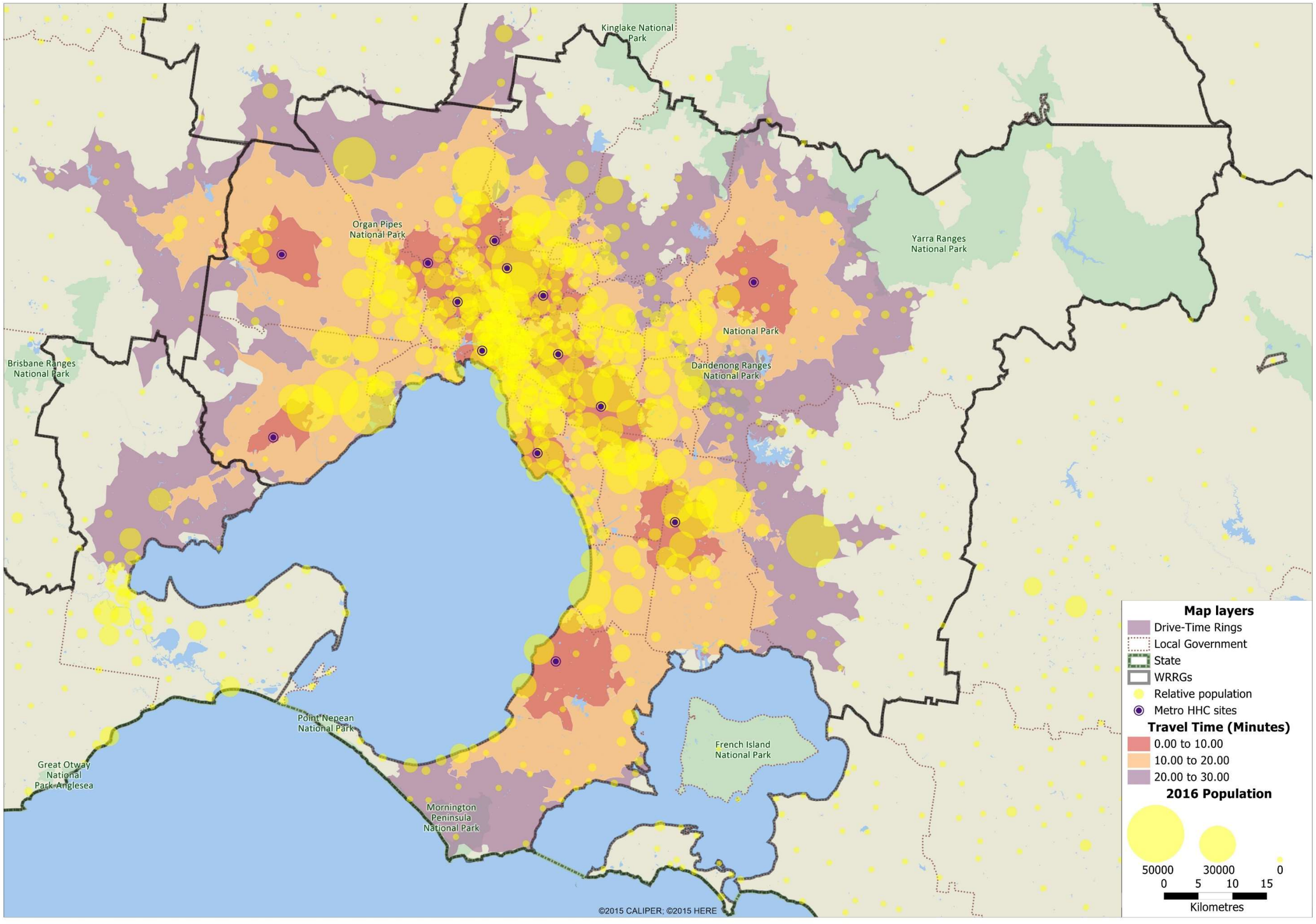


Figure 43 Drive time analysis of regional Permanent drop-off sites at 10, 20 and 30-minute drive time intervals

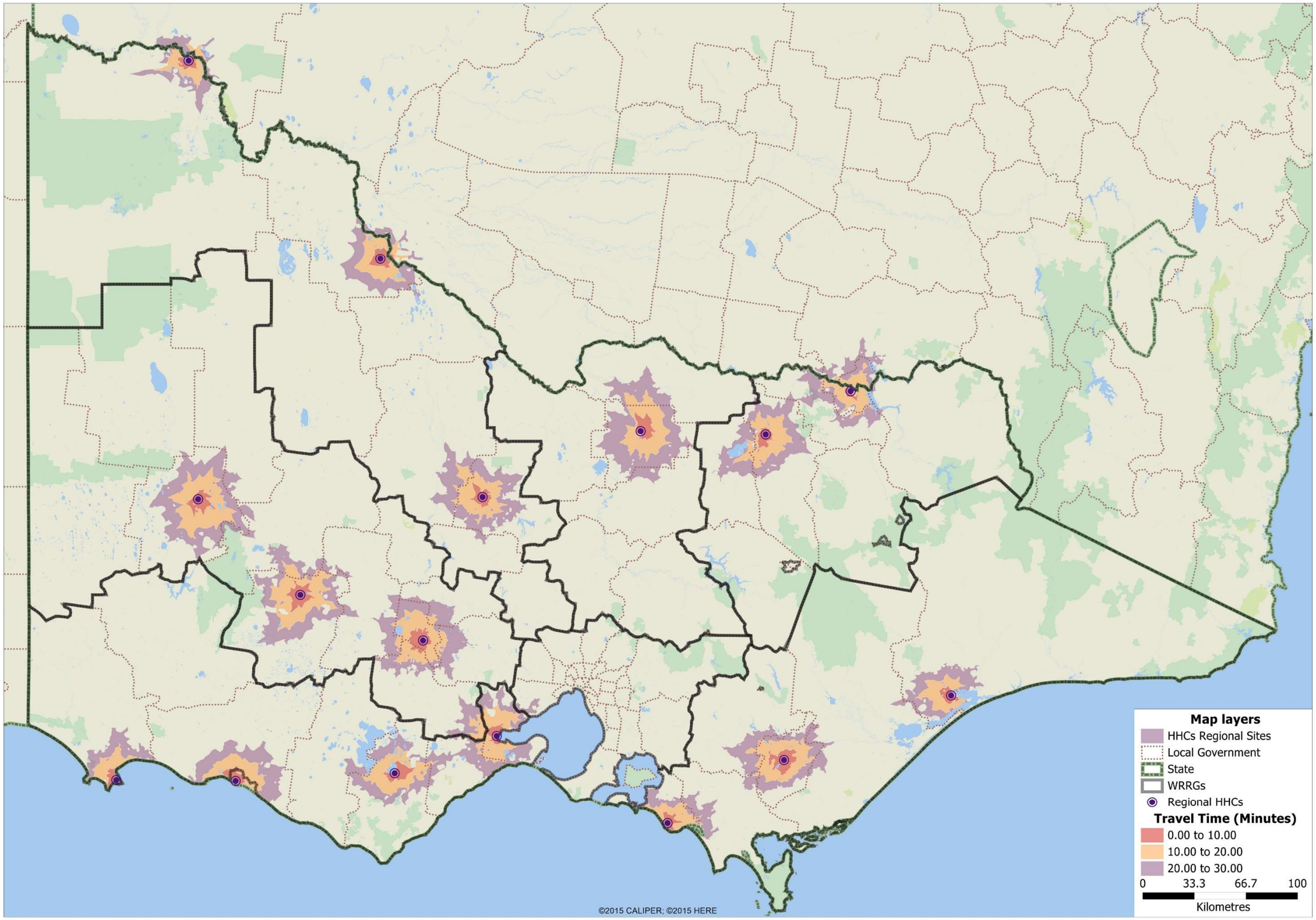
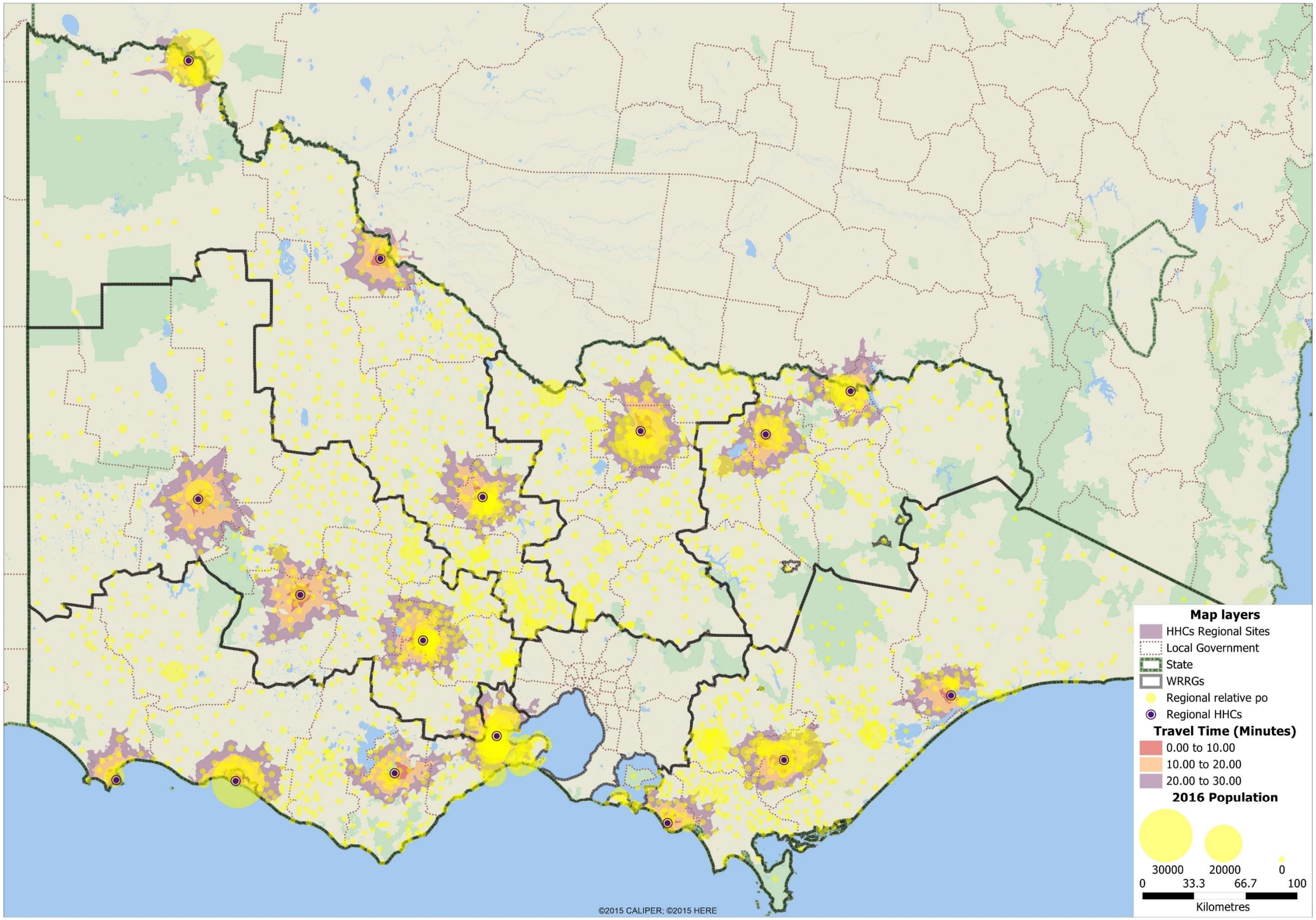


Figure 44 Drive time analysis of regional Permanent drop-off sites at 10, 20 and 30-minute drive time intervals mapped against population density



Product stewardship schemes and sites

The management of a number of e-waste and e-waste related waste streams is subject to product stewardship arrangements under the *Product Stewardship Act 2011* (the PS Act). Product stewardship is an approach to product management that recognises that each stakeholder along the value chain, from production to ultimate use and disposal, has a responsibility in ensuring the safe end-of-life management of those products.

The PS Act allows for regulatory, co-regulatory and voluntary schemes. Product stewardship schemes related to the management of e-waste include:

- National TV and Computer Recycling Scheme (NTCRS) – A national, co-regulatory scheme which covers televisions and computers, providing free drop-off locations across Australia.
- MobileMuster – An industry-led, voluntary stewardship scheme that provides bins for free recycling of all makes, styles and models of mobile phones. The scheme is managed by the Australian Mobile Telecommunications Association (AMTA).

Other schemes which are relevant to e-waste but have not been mapped as part of this early phase of analysis include:

- FluoroCycle – A national, voluntary scheme which businesses, government agencies and other organisations can join that aims to increase the recycling of lights that contain mercury and reduce the amount of mercury entering the environment.
- BatteryBack / Australian Battery Recycling Initiative (ABRI) – ABRI is a not-for-profit association established to promote responsible environmental management of batteries at end of life. ABRI is working toward national stewardship for end-of-life batteries and is supporting trials such as the BatteryBack program in Victoria.

National TV and Computer Recycling Scheme Sites

The NTCRS is the most comprehensive product stewardship scheme relevant to e-waste recycling in Australia. The scheme functions through approved co-regulatory arrangements which contract directly with importers of computers, TVs, printers and computer products. Essentially, the co-regulatory arrangements must collect and recycle e-waste on an importers behalf, meeting a set weight based target which is underpinned by the regulations.

The NTCRS provides collection services at both permanent sites as well as through one-off event style collections.

Data provided by the Department of Environment and Energy indicates there are 245 NTCRS locations operating in Victoria, spread across retail outlets and the RRC/TS network. This network of sites provides coverage of around 94% across Victoria within a 30-minute drive time, which can be broken down into metropolitan coverage of around 98% and regional coverage of around 78%. Drive time analysis of RRC sites accepting metals is presented as follows:

- Figure 45 Drive time analysis of all Victorian NTCRS sites at 10, 20 and 30-minute drive time
- Figure 46 Drive time analysis of all Victorian NTCRS sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 47 Drive time analysis of metro NTCRS sites at 10, 20 and 30-minute drive time

- Figure 48 Drive time analysis of metro NTCRS sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 49 Drive time analysis of regional NTCRS sites at 10, 20 and 30-minute drive time
- Figure 50 Drive time analysis of regional NTCRS sites at 10, 20 and 30-minute drive time intervals mapped against population density.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented in Table 38.

Table 38 Drive time coverage analysis of NTCRS sites across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Victorian NTCRS sites	80%	90%	94%
Metro NTCRS sites	89%	98%	98%
Regional NTCRS sites	51%	66%	78%

Figure 45 Drive time analysis of all Victorian NTCRS sites at 10, 20 and 30-minute drive time

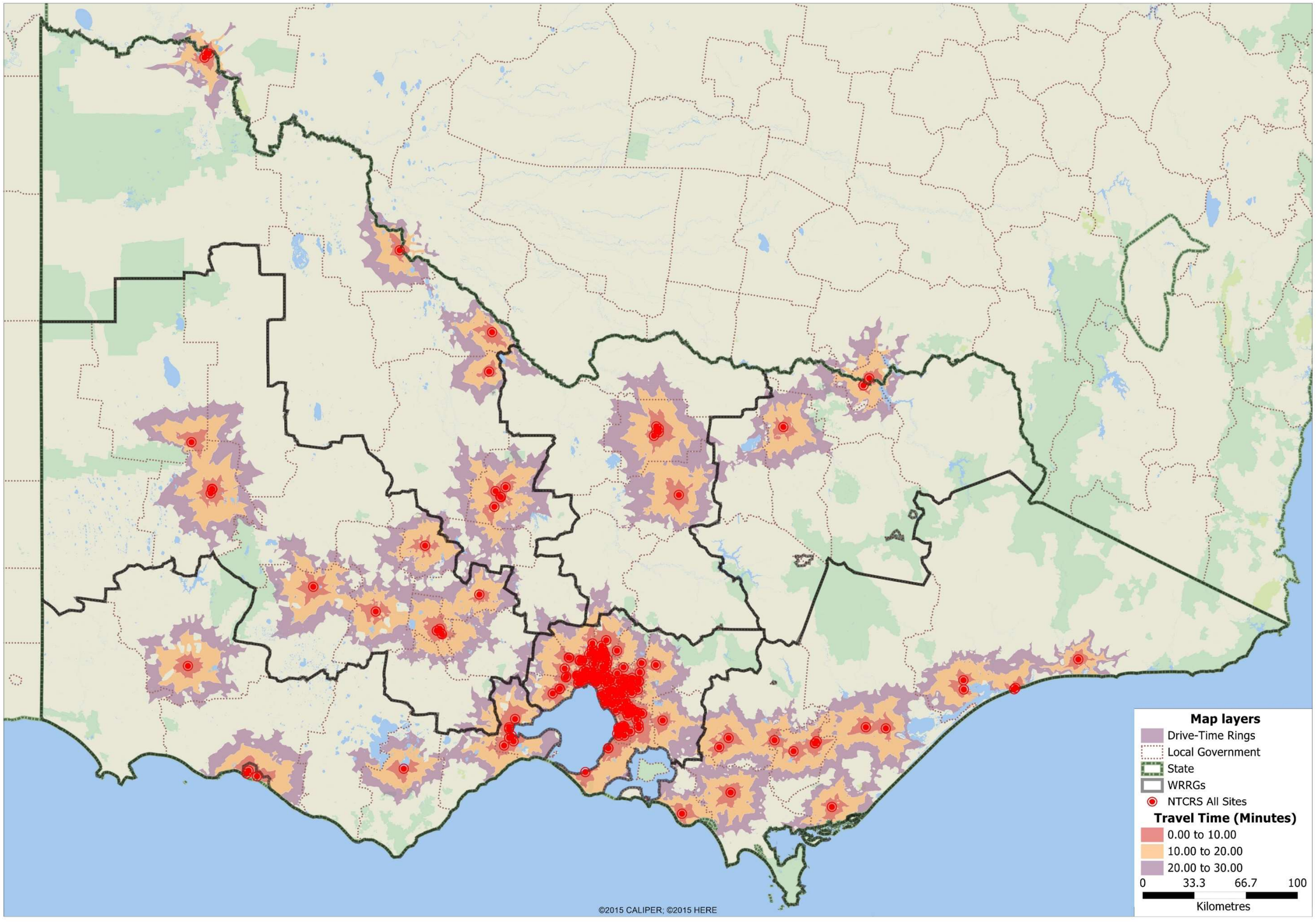


Figure 46 Drive time analysis of all Victorian NTCRS sites at 10, 20 and 30-minute drive time intervals mapped against population density

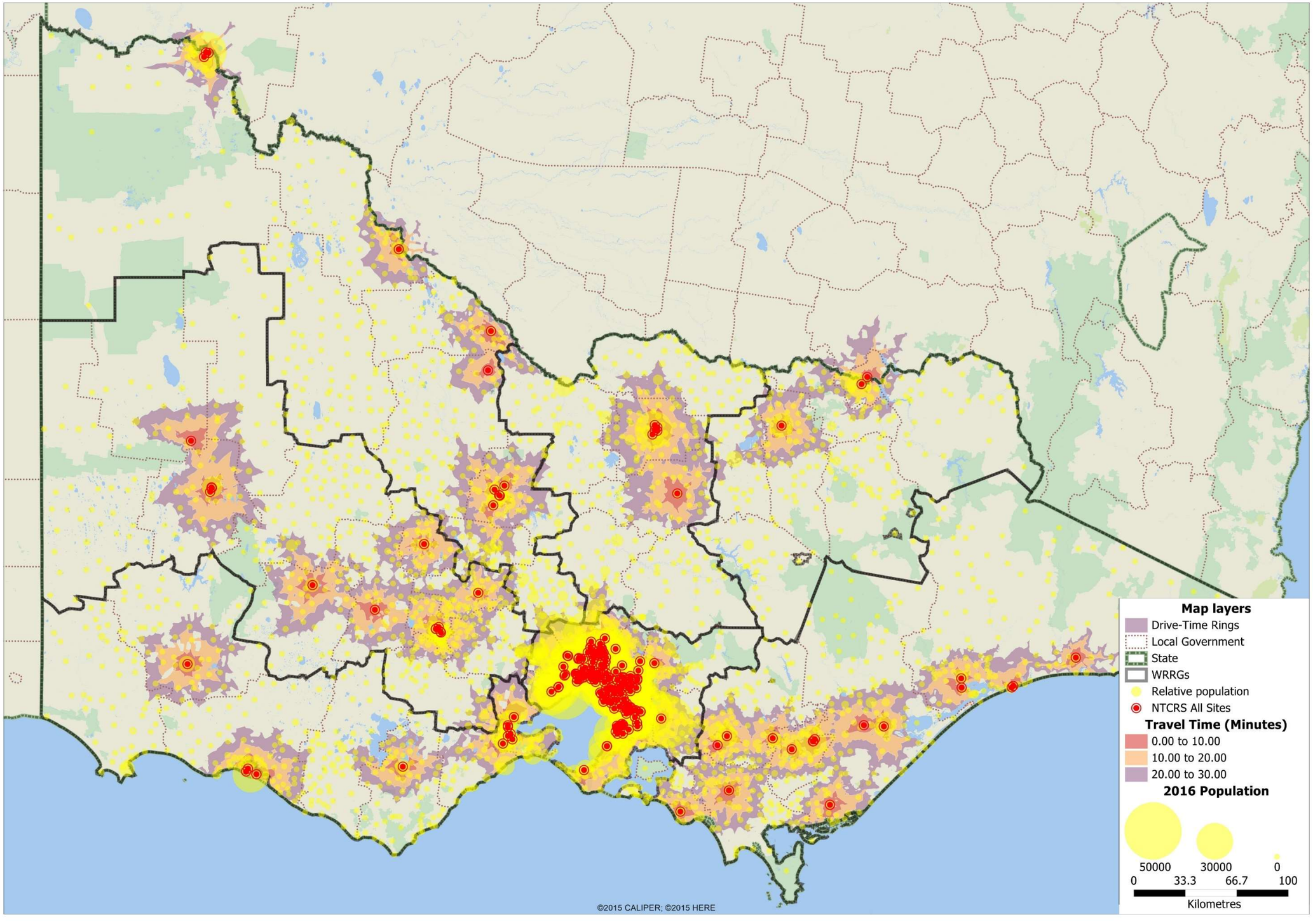


Figure 47 Drive time analysis of metro NTCRS sites at 10, 20 and 30-minute drive time

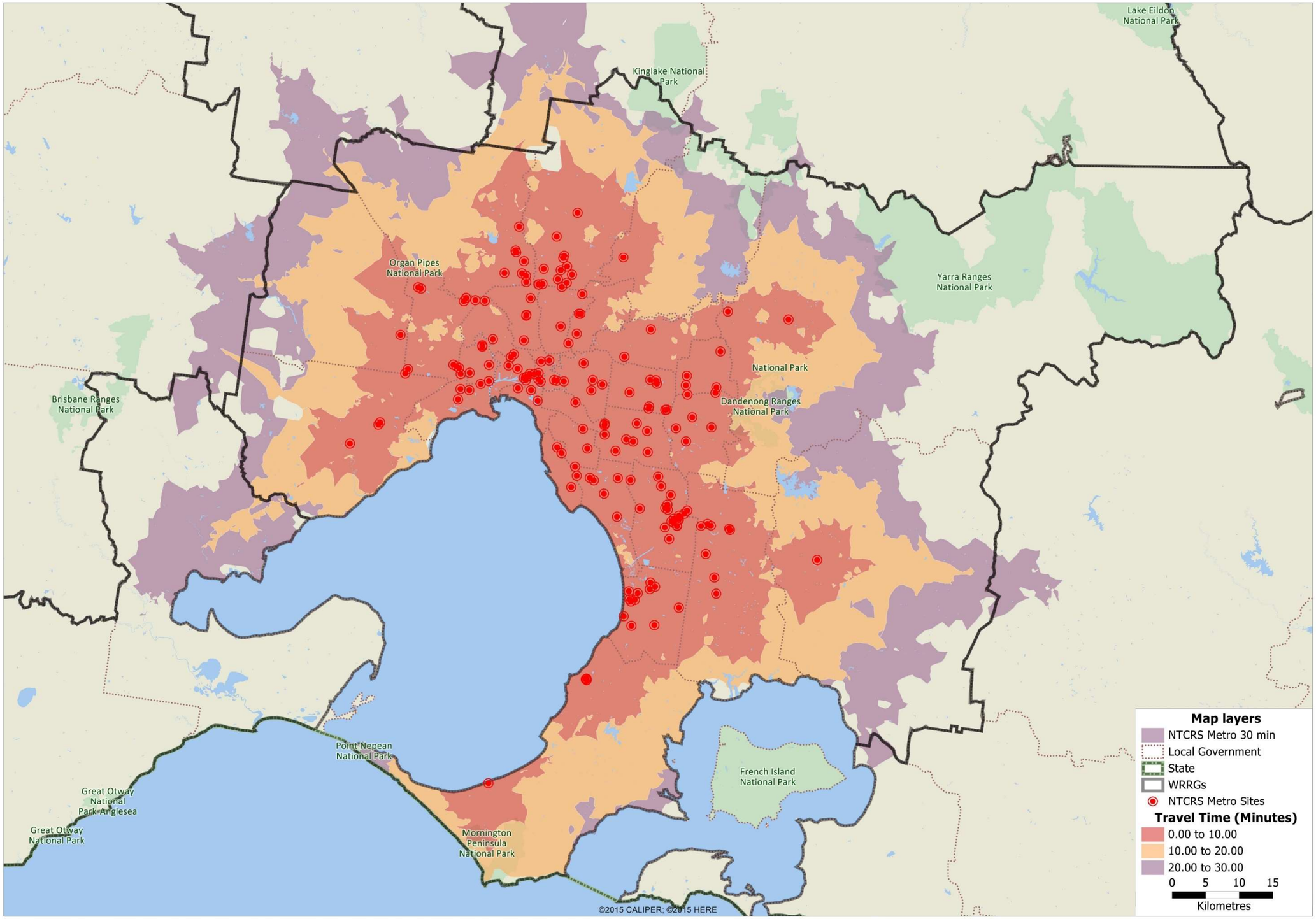


Figure 48 Drive time analysis of metro NTCRS sites at 10, 20 and 30-minute drive time intervals mapped against population density

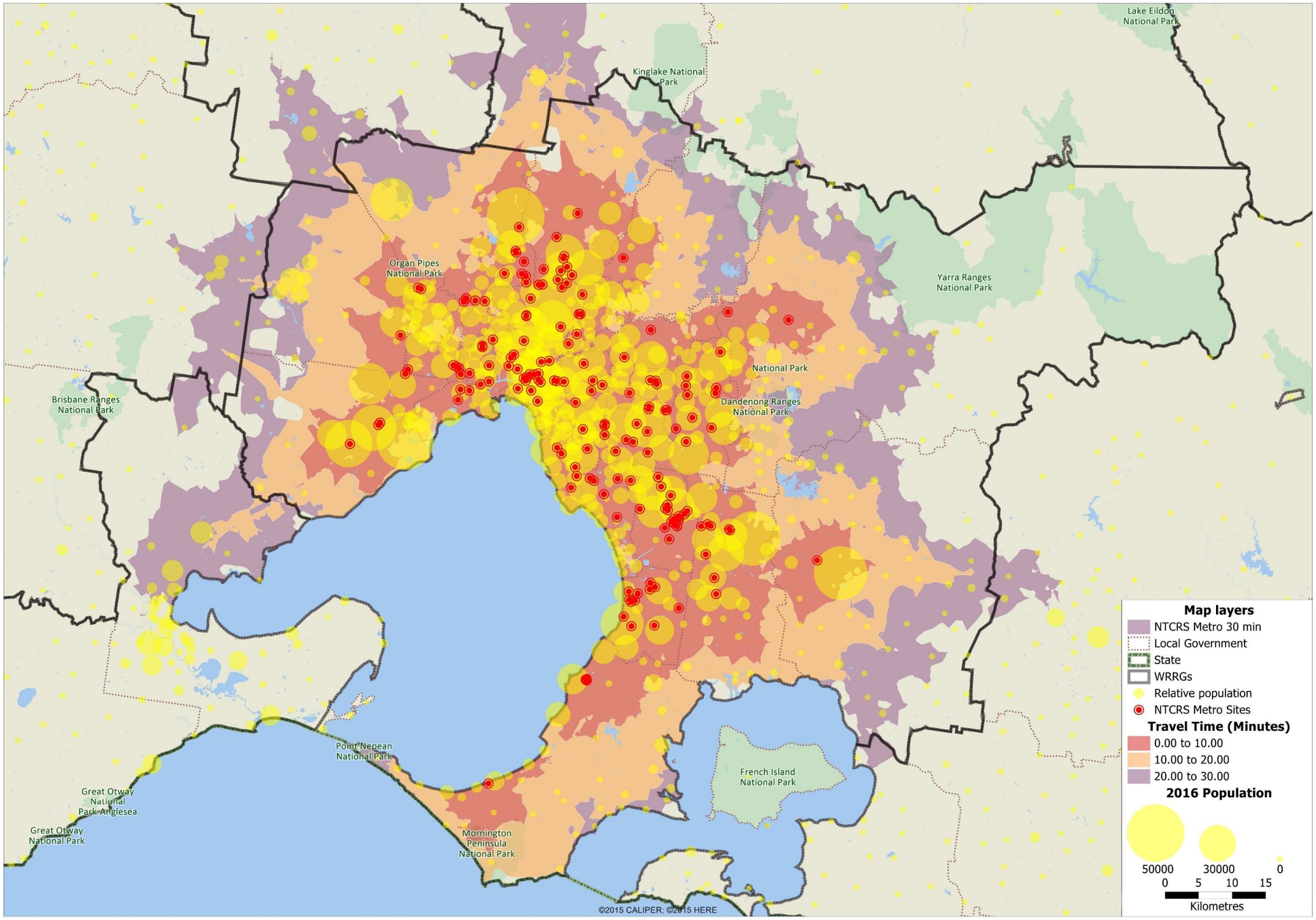


Figure 49 Drive time analysis of regional NTCRS sites at 10, 20 and 30-minute drive time

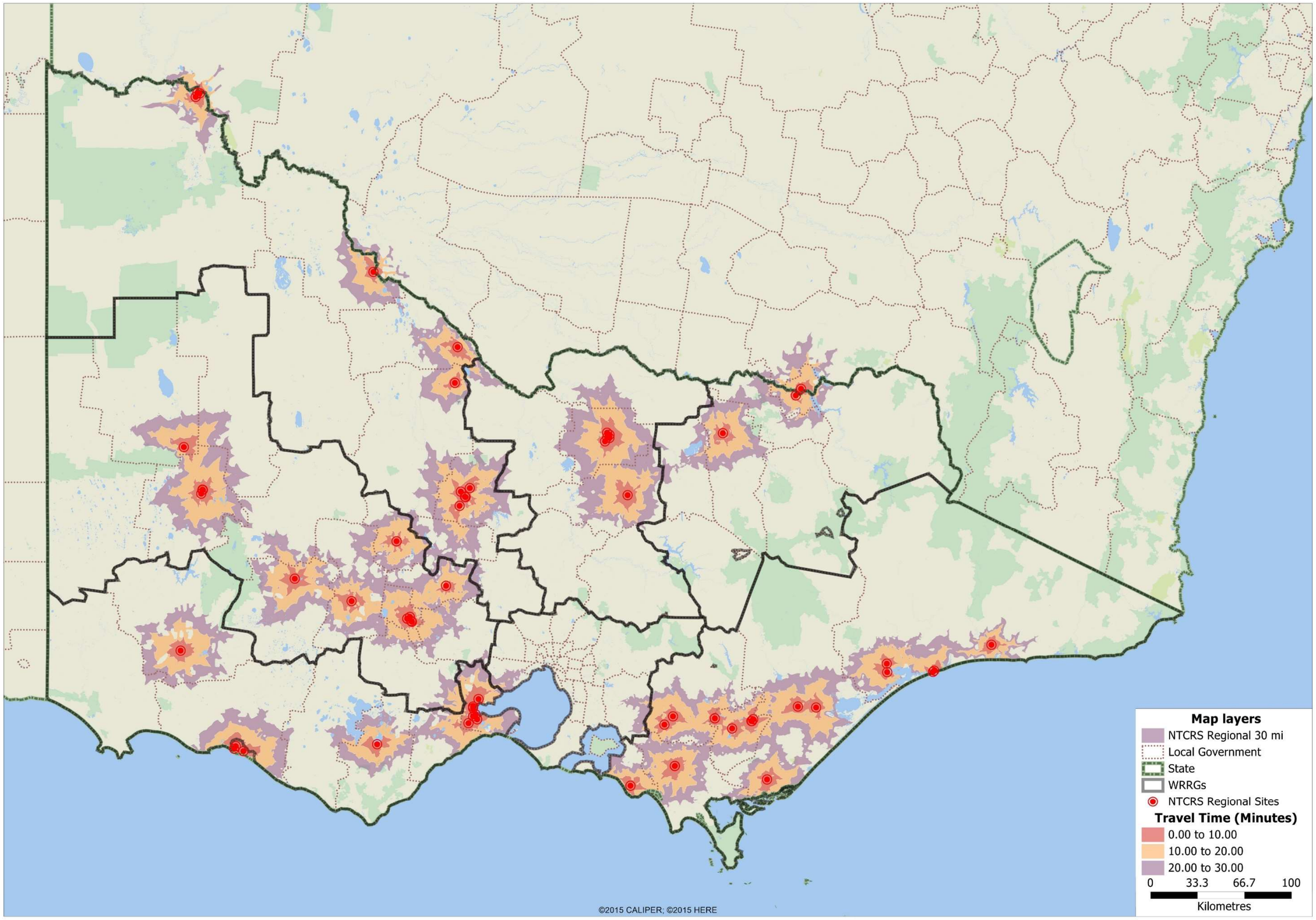
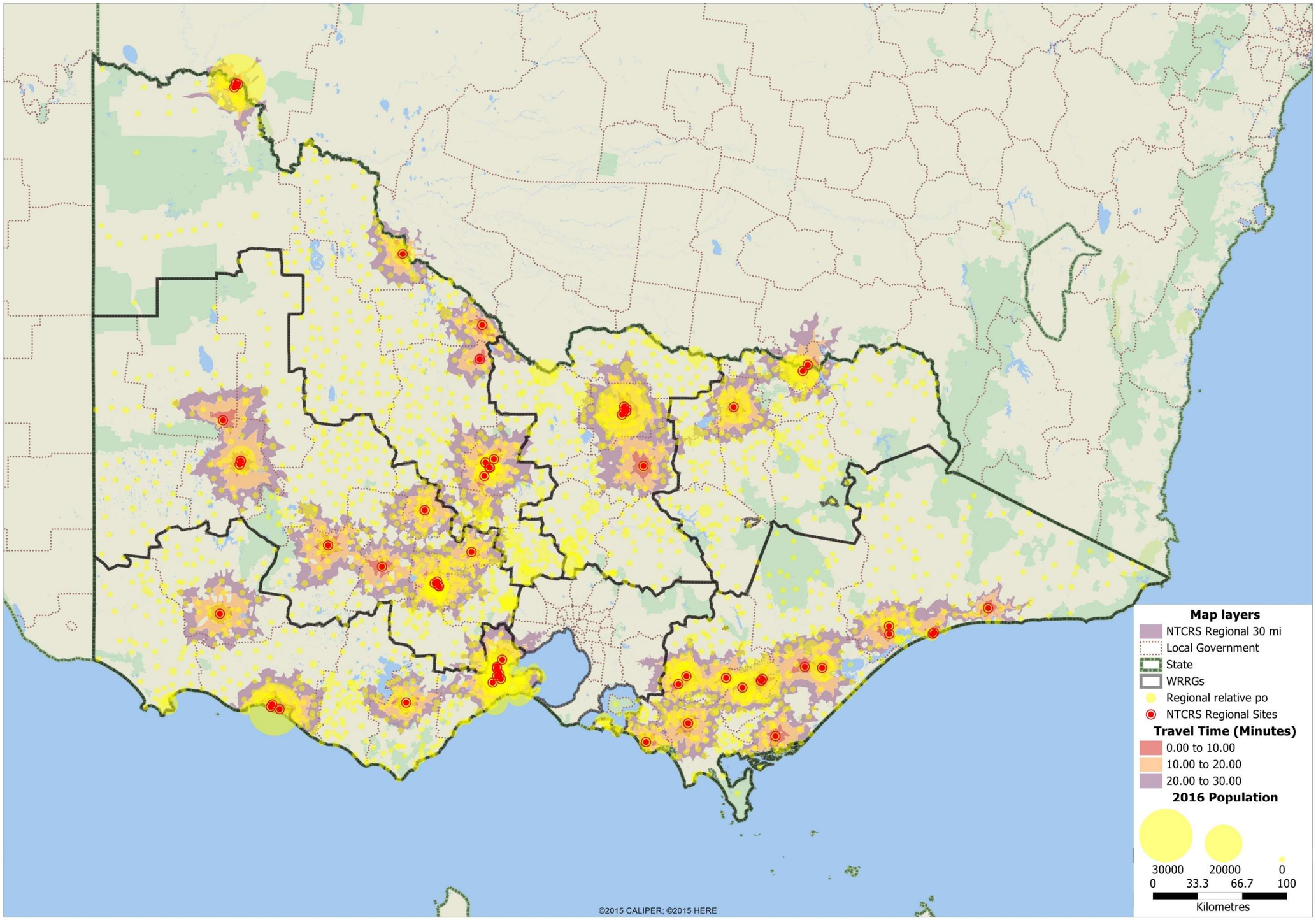


Figure 50 Drive time analysis of regional NTCRS sites at 10, 20 and 30-minute drive time intervals mapped against population density



MobileMuster Sites

MobileMuster is an industry led, voluntary stewardship program focusing on the recovery and recycling of mobile phones, plus their batteries, chargers and accessories. Free drop-off points are provided around the country, predominantly at retail sites such as new phone retailers, and council facilities.

Data provided by MobileMuster indicates there are 776 collection points across Victoria, the largest number of sites of all the site types analysed in this interim report. As would be expected with such a large number of locations, population coverage is high, at around 98% across Victoria within a 30-minute drive time. Melbourne has a large number of sites resulting in coverage of 99%, with regional coverage of 94% within a 30-minute drive time.

Drive time analysis of MobileMuster sites is presented as follows:

- Figure 51 Drive time analysis of all Victorian MobileMuster sites at 10, 20 and 30-minute drive time
- Figure 52 Drive time analysis of all Victorian MobileMuster sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 53 Drive time analysis of metro MobileMuster sites at 10, 20 and 30-minute drive time
- Figure 54 Drive time analysis of metro MobileMuster sites at 10, 20 and 30-minute drive time intervals mapped against population density
- Figure 55 Drive time analysis of regional MobileMuster sites at 10, 20 and 30-minute drive time
- Figure 56 Drive time analysis of regional MobileMuster sites at 10, 20 and 30-minute drive time intervals mapped against population density.

Coverage analysis based on 2016 population across 10, 20 and 30-minute drive times is presented in Table 39.

Table 39 Drive time coverage analysis of MobileMuster sites across Victoria (10, 20, 30-minute aggregate drive times)

	Within 10 minutes	Within 20 minutes	Within 30 minutes
All Victorian MobileMuster sites	91%	96%	98%
Metro MobileMuster sites	96%	98%	99%
Regional MobileMuster sites	76%	84%	94%

Figure 51 Drive time analysis of all Victorian MobileMuster sites at 10, 20 and 30-minute drive time

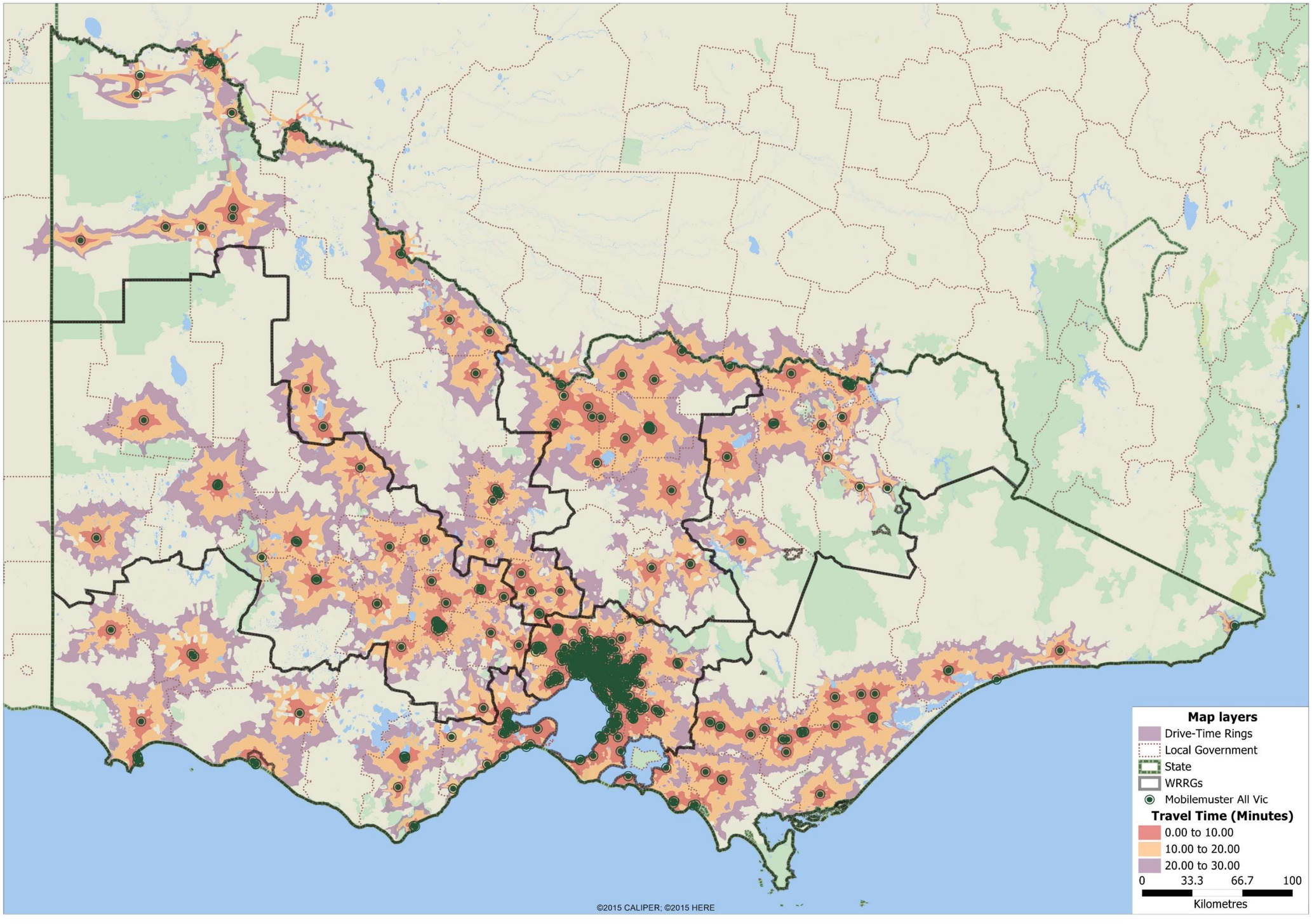


Figure 52 Drive time analysis of all Victorian MobileMuster sites at 10, 20 and 30-minute drive time intervals mapped against population density

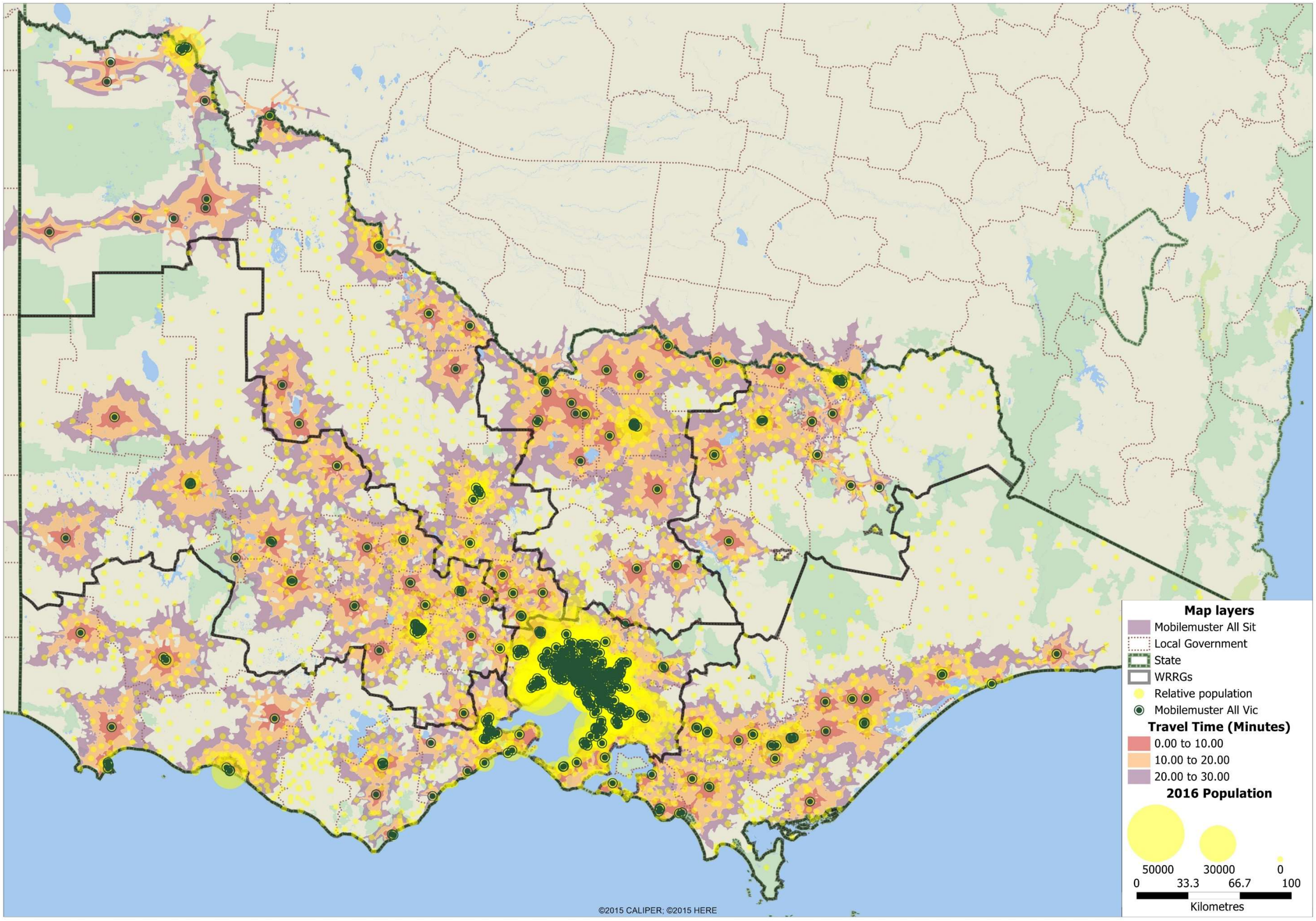


Figure 53 Drive time analysis of metro MobileMuster sites at 10, 20 and 30-minute drive time

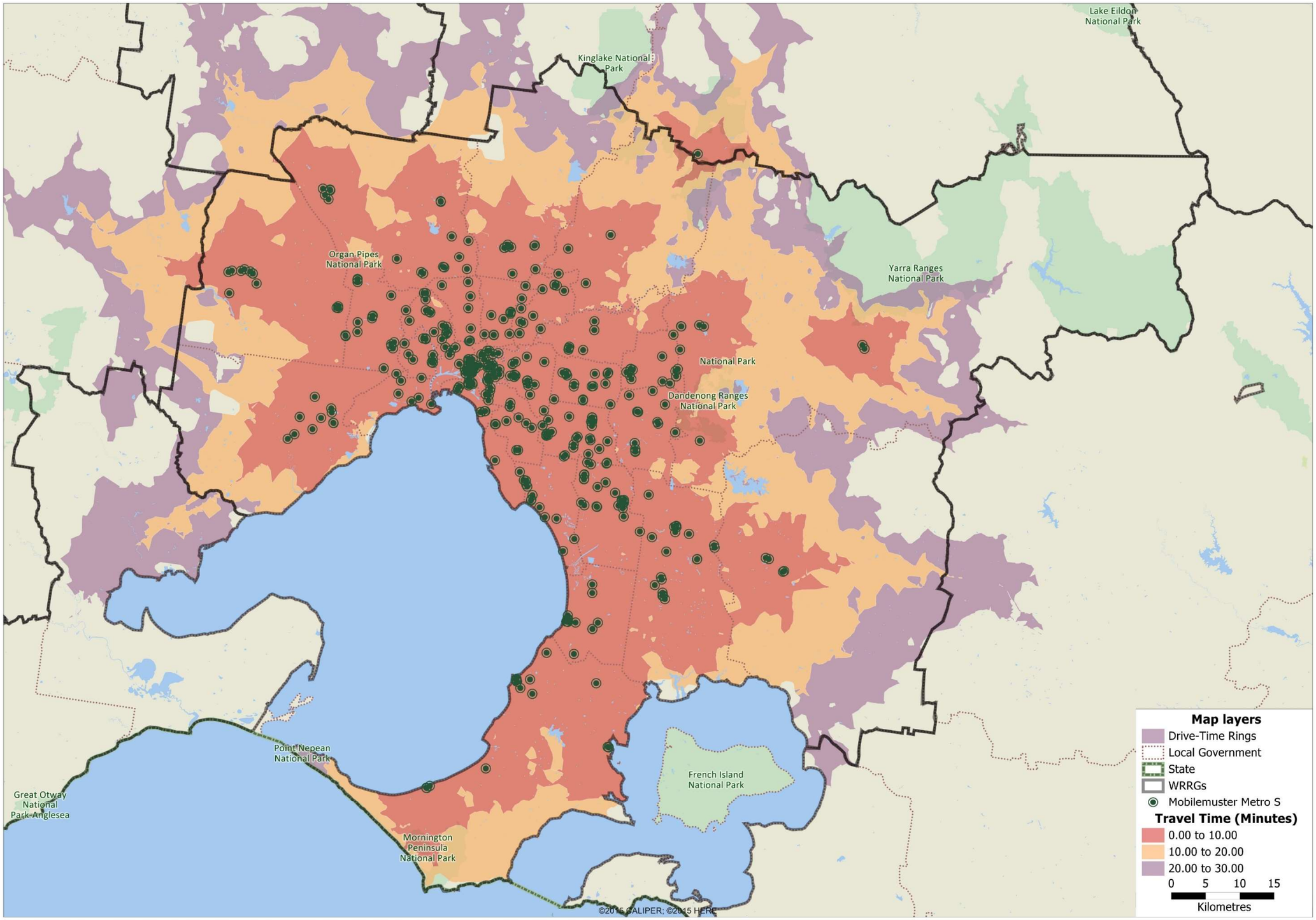


Figure 54 Drive time analysis of metro MobileMuster sites at 10, 20 and 30-minute drive time intervals mapped against population density

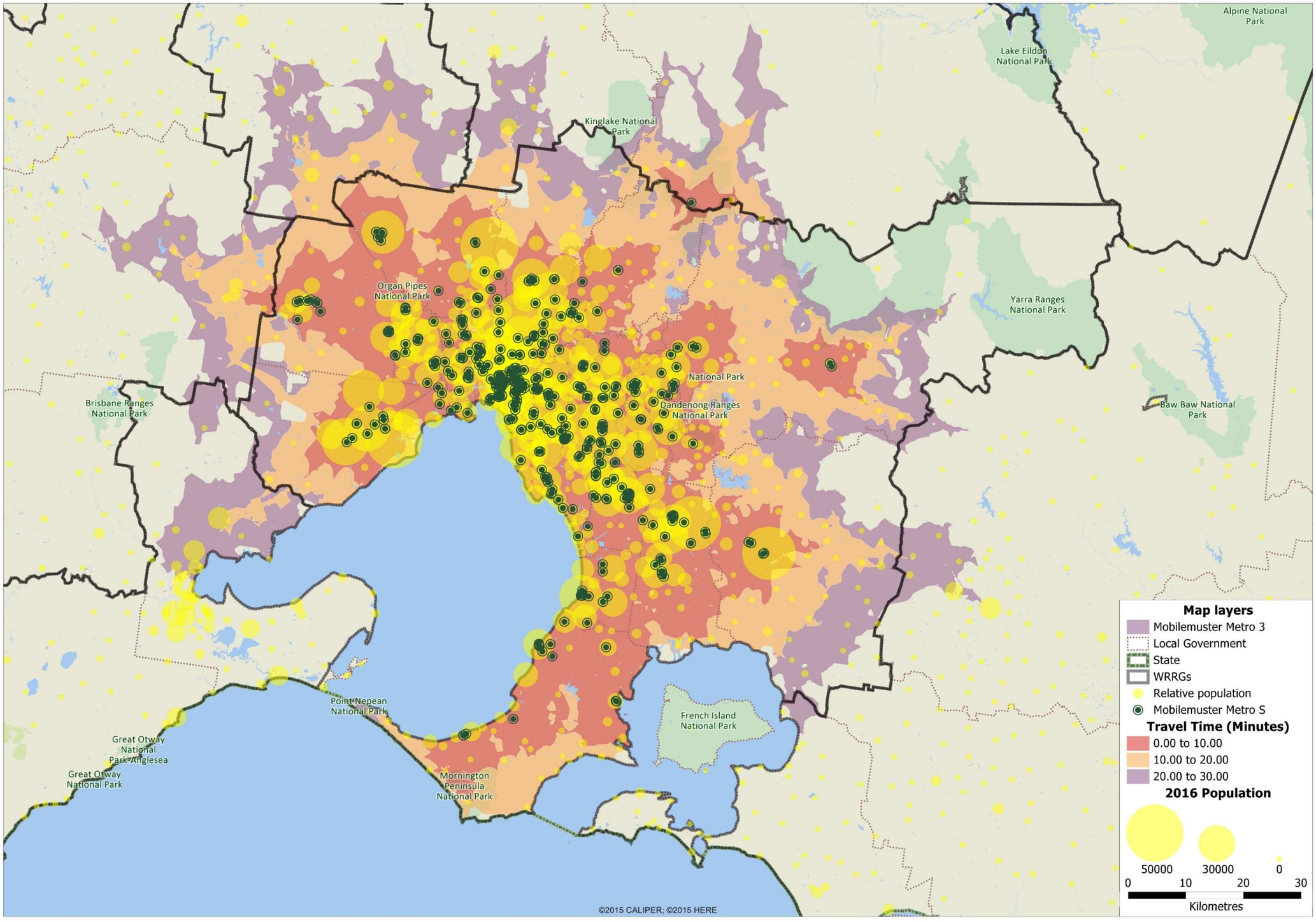


Figure 55 Drive time analysis of regional MobileMuster sites at 10, 20 and 30-minute drive time

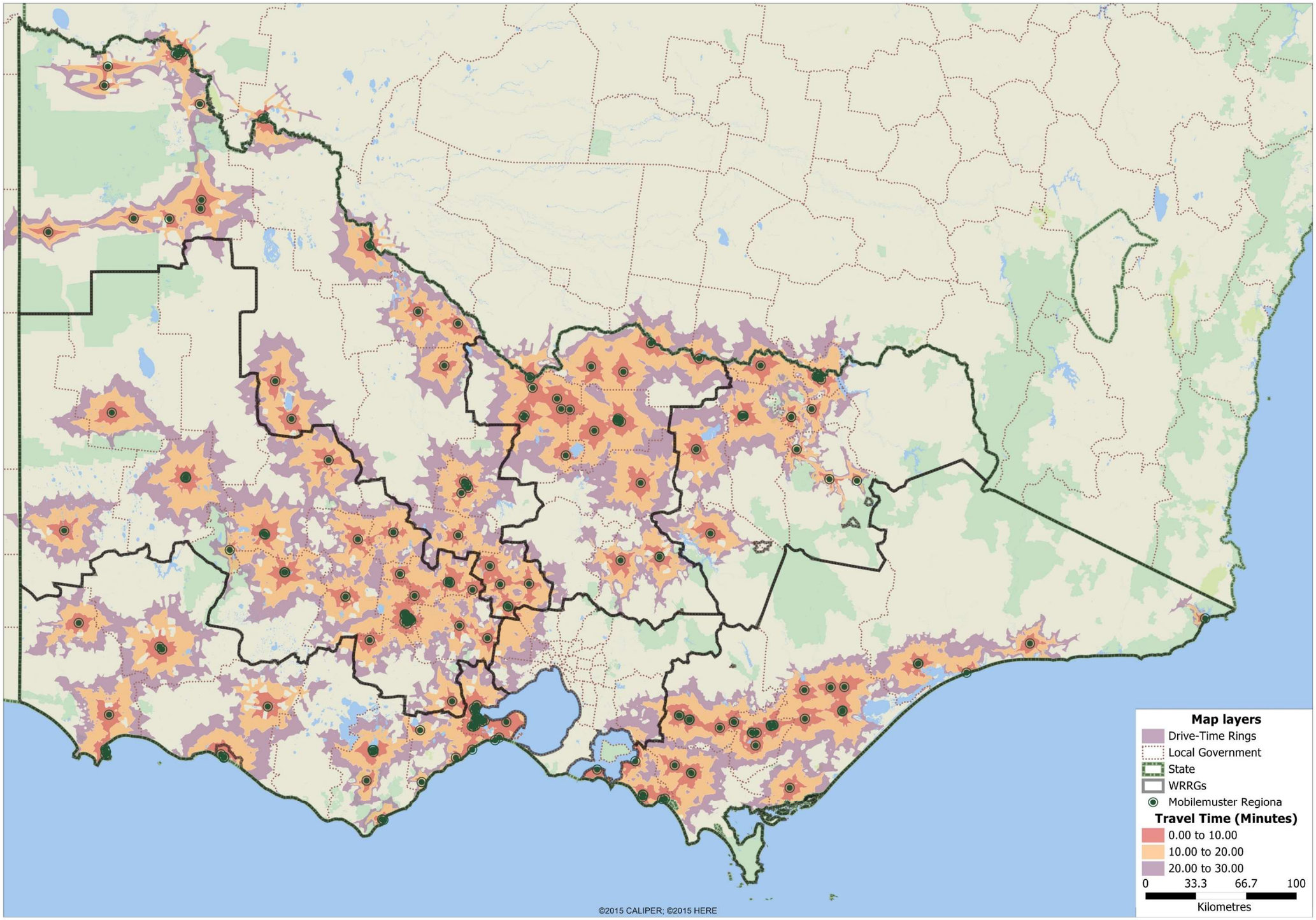
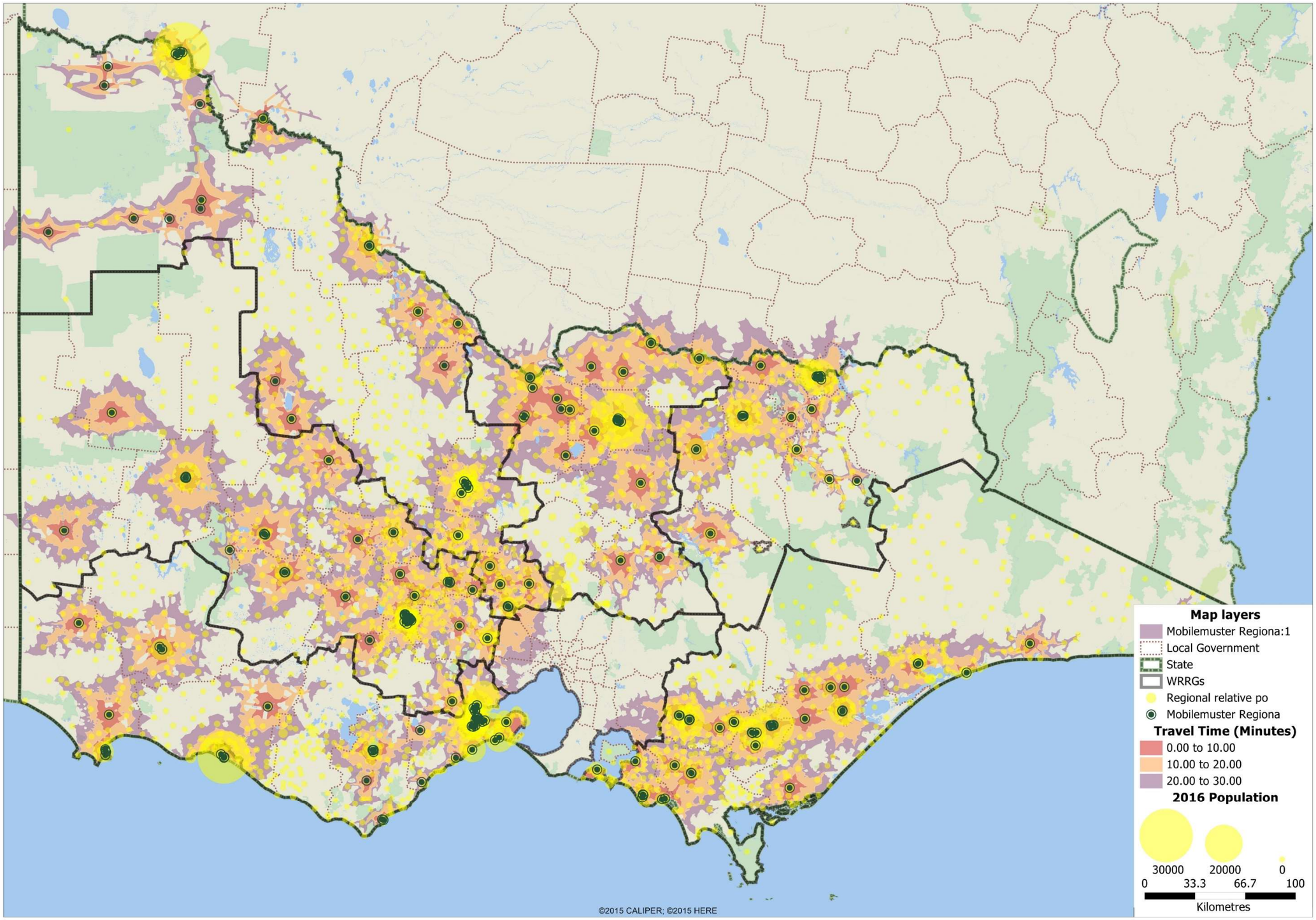


Figure 56 Drive time analysis of regional MobileMuster sites at 10, 20 and 30-minute drive time intervals mapped against population density



Appendix B: Reincarnate, REC 2017 *e-waste self-assessment checklist*

#	Criteria	Guidance note / reasoning	Status
1	**AS 5377 certifications of the recycler** Is the e-waste recycler that services the site certified to the AS 5377 *Collection, storage, transport and treatment of end-of-life electrical and electronic equipment*?	Since July 2016, co-regulatory arrangements under NTCRS are required to only contract recycling service providers certified to AS 5377.	☐ Yes ☐ No ☐ Unknown
2	**Site collection network significance** Is the site operating as the main regional site that also consolidates materials from other sites (hub site) or as a smaller (spoke) site that sends e-waste to a hub site for aggregation before processing?	Hubs and spokes refer to the GVRWRRG region only, not to be confused with statewide hubs discussed in the *Statewide Waste and Resource Recovery Infrastructure Plan*	☐ Hub ☐ Spoke ☐ Not applicable
	Site security Is the RRC secure enough to prevent theft or vandalism of collected e-wastes?	Required by the AS 5377. 'Yes' would be a site with secure fencing or higher level of security for e-waste collection area.	☐ Yes ☐ No ☐ In part (please detail)
4	**Signage** Does the RRC provide signage to communicate: (a) safety warnings (b) instructions to the public (c) site access times for the public (d) details of any e-waste not accepted at the facility.	Required by the AS 5377. 'Yes' would be a site with clear signage and instructions to site visitors that detail safety risks and requirements (for example, lifting issues, falls from heights etc), access times and lists of materials that are accepted / not-accepted.	☐ Yes ☐ No ☐ In part (please detail
5	**Health and Safety** Does the RRC infrastructure prevent exposure of workers and customers to unsafe handling and/or storage conditions or hazardous substances within some e-wastes?	Required by the AS 5377. 'Yes' would be no direct contact with stockpiled e-wastes, or exposure to broken e-wastes. Lifting requirements would be minimal and suitable infrastructure to manage falls from heights and manual handling risks would be in place.	☐ Yes ☐ No ☐ In part (please detail)
6	**Breakage prevention (at drop off)** Does the RRC infrastructure ensure e-waste breakage prevention with appropriate receptacles and fixings?	Required by the AS 5377. 'Yes' would be minimal 'drop height' to prevent e-waste breakage and hazard exposure.	☐ Yes ☐ No ☐ In part (please detail)

#	Criteria	Guidance note / reasoning	Status		
7	**Weather protection** Does the RRC infrastructure protect the e-waste from exposure to the elements (rain, UV damage, etc.)?	Required by the AS 5377. Weathering can cause hazardous substances to be released. 'Yes' would include weatherproof coverings on any skip bins or higher level of protection such as three sided shedding or fully enclosed shedding.	☐ Yes	☐ No	☐ In part (please detail)
8	**Breakage prevention (packing and transport)** Does e-waste packaging and transport infrastructure prevent e-waste breakage during loading and transportation?	Required by the AS 5377. 'Yes' would allow for packing and loading of e-waste such as CRT TVs, flat panel screens, mercury containing lamps without breakage. Loading and transport of e-waste would involve no compaction/crushing.	☐ Yes	☐ No	☐ In part (please detail)
9	**Stormwater protection** Does the RRC infrastructure include measures to prevent potentially hazardous material entering storm water drainage?	Required by the AS 5377. 'Yes' would include at a minimum weatherproof coverings of skips on concrete hardstand areas, or three sided shedding with bunding, or fully enclosed shedding as the ideal mean to prevent stormwater contamination.	☐ Yes	☐ No	☐ In part (please detail)
10	**Separate collection** Does the RRC collection infrastructure prevent mixing of e-waste with other types of waste within the same container or receptacle?	Required by the AS 5377. 'Yes' would ensure that e-wastes are not collected in skips with other types of waste, such as comingled recyclables (for example).	☐ Yes	☐ No	☐ In part (please detail)
11	**Labelling** Are the receptacles clearly labelled to identify the contents?	Required by the AS 5377. Ensure better segregation (as needed) to assist meeting AS 5377 requirements.	☐ Yes	☐ No	☐ In part (please detail)

Appendix C: Detailed site information for the e-waste collection network

Table 40 E-waste collection network (ECN) - Population serviced, estimated e-waste generation, program / scheme participation and infrastructure upgrade options and costings

Site info					Population Serviced by facility		Estimated e-waste generated per service area (Tonnes)		Programs / Scheme participation				Infrastructure Options and costings				
ID	Private / Public	Facility Name	Local Government	WRRG	Population	Population Projection	2018	2035	National Television and Computer Recycling Scheme	Mobile Muster	Fluoro Cycle	Household Chemical Collection	Upgrade Required	Footprint available for upgraded e-waste collection and storage (shedding)?	Infrastructure Solutions Option	Infrastructure Capital Cost estimate ($) High	Infrastructure Capital Cost estimate ($) Low
RRN001	Public	Alvie Transfer Station	Colac Otway	BSWWRRG	729	Decline	11	17	-	-		-	Yes	Large footprint	3. Tertiary site	$ 25,095	$ 12,590
RRN002	Public	Apollo Bay Resource Recovery Centre	Colac Otway	BSWWRRG	2,083	Decline	32	49	-	Yes		-	No		4. None required	$ -	$ -
RRN008	Public	Corangamite (Naroghid) Regional Resource Recovery	Corangamite	BSWWRRG	8,301	Decline	129	195	-	-	-	-	Yes		1. Default shedding	$ 94,050	$ 57,804
RRN013	Public	Timboon Transfer Station & Resource Recovery	Corangamite	BSWWRRG	1,631	Decline	25	38	-	-		-	Yes	Small footprint	3. Tertiary site	$ 25,095	$ 12,590
RRN014	Public	Casterton Resource Recovery Centre	Glenelg	BSWWRRG	1,935	Decline	30	45	-	-	-	-	No		4. None required	$ -	$ -
RRN019	Public	Portland Landfill and Transfer Station	Glenelg	BSWWRRG	11,751	Decline	182	275	-	Yes	-	Yes	No		4. None required	$ -	$ -
RRN020	Public	Drysdale Resource Recovery Centre & Transfer Station	Greater Geelong	BSWWRRG	48,315	Growth - Large	750	1,132	-	-	-	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN021	Public	North Geelong Resource Recovery Centre & Transfer Station	Greater Geelong	BSWWRRG	174,164	Growth - Large	2,704	4,082	-	-		Yes	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN024	Public	Killarney Resource Recovery Centre	Moyne	BSWWRRG	4,697	Growth - Small	73	110	-	-		-	No		1. Default shedding	$ 94,050	$ 57,804
RRN026	Public	Mortlake Transfer Station & Resource Recovery Facility	Moyne	BSWWRRG	1,902	Growth - Small	30	45	-	-	-	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN036	Public	Hamilton Resource Recovery Centre	Southern Grampians	BSWWRRG	9,974	Decline	155	234	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN039	Public	Anglesea Transfer Station (at landfill site)	Surf Coast	BSWWRRG	22,129	Growth - Large	344	519	-	Yes	-	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN041	Public	Lorne Transfer Station & Resource Recovery Facility	Surf Coast	BSWWRRG	1,150	Growth - Large	18	27	-	Yes		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN043	Public	Winchelsea Transfer Station	Surf Coast	BSWWRRG	5,745	Growth - Large	89	135	-	Yes		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN277	Private	Statewide Recycling Services Pty Ltd	Warrnambool	BSWWRRG	33,655	Growth - Small	523	789	-	-	No	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN279	Private	Western Waste Management	Colac Otway	BSWWRRG	12,979	Growth - Small	202	304	-	-	-	Yes	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN135	Public	Ararat Resource Recovery Centre	Ararat	GCWWRRG	8,297	Decline	129	194	-	-	-	Yes	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN137	Public	Lake Bolac landfill & Resource Recovery Centre	Ararat	GCWWRRG	330	Decline	5	8	-	-		-	Yes		3. Tertiary site	$ 25,095	$ 12,590
RRN143	Public	Ballarat Transfer Station	Ballarat	GCWWRRG	101,689	Growth - Large	1,579	2,384	Yes	-		Yes	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN145	Public	Carisbrook Transfer Station	Central Goldfields	GCWWRRG	9,564	Growth - Small	149	224	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN148	Public	Rokewood Transfer Station	Golden Plains	GCWWRRG	11,338	Growth - Large	176	266	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN149	Public	Creswick Transfer Station and Resale Centre	Hepburn	GCWWRRG	3,170	Growth - Small	49	74	-	-	No	-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN150	Public	Daylesford Transfer Station and Resale Centre	Hepburn	GCWWRRG	8,956	Growth - Small	139	210	Yes	-		-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN152	Public	Dimboola Transfer Station	Hindmarsh	GCWWRRG	1,730	Decline	27	41	Yes	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN154	Public	Nhill Transfer Station	Hindmarsh	GCWWRRG	2,184	Decline	34	51	-	-	-	-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN156	Public	Horsham Transfer Station & Resource Recovery Centre	Horsham	GCWWRRG	16,250	Growth - Small	252	381	Yes	Yes	No	Yes	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN160	Public	Bacchus Marsh Transfer Station	Moorabool	GCWWRRG	20,345	Growth - Large	316	477	-	-	-	-	Yes	Limited Scope	1. Default shedding	$ 94,050	$ 57,804

RRN161	Public	Ballan Transfer Station	Moorabool	GCWWRRG	4,806	Growth - Large	75	113	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN164	Public	St Arnaud Transfer Station and Landfill	Northern Grampians	GCWWRRG	3,352	Decline	52	79	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN165	Public	Stawell Transfer Station	Northern Grampians	GCWWRRG	8,093	Decline	126	190	-	-		-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN166	Public	Avoca Transfer Station	Pyrenees	GCWWRRG	3,302	Growth - Small	51	77	-	-	No	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN167	Public	Beaufort Transfer Station	Pyrenees	GCWWRRG	4,395	Growth - Small	68	103	-	-	-	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN170	Public	Snake Valley Transfer Station	Pyrenees	GCWWRRG	743	Growth - Small	12	17	-	-	-	-	Yes		3. Tertiary site	$ 25,095	$ 12,590
RRN174	Public	Edenhope Transfer Station	West Wimmera	GCWWRRG	1,178	Decline	18	28	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN177	Public	Kaniva Transfer Station	West Wimmera	GCWWRRG	1,133	Decline	18	27	-	-		-	Yes		3. Tertiary site	$ 25,095	$ 12,590
RRN179	Public	Hopetoun Transfer Station & Resource Recovery Centre	Yarriambiack	GCWWRRG	739	Decline	11	17	-	-		-	Yes		3. Tertiary site	$ 25,095	$ 12,590
RRN181	Public	Murtoa Transfer Station & Resource Recovery Centre	Yarriambiack	GCWWRRG	865	Decline	13	20	-	-		-	Yes		3. Tertiary site	$ 25,095	$ 12,590
RRN185	Public	Warracknabeal Landfill and Resource Recovery Centre	Yarriambiack	GCWWRRG	2,438	Decline	38	57	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN100	Public	Echuca Environment Centre	Campaspe	GVWRRG	14,574	Growth - Small	226	342	-	-	-	-	No		4. None required	$ -	$ -
RRN103	Public	Mt Scobie Transfer Station (also known as Kyabram)	Campaspe	GVWRRG	10,912	Growth - Small	169	256	-	-	-	-	No		4. None required	$ -	$ -
RRN104	Public	Rochester Transfer Station & Resource Recovery	Campaspe	GVWRRG	3,880	Growth - Small	60	91	-	Yes	-	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN105	Public	Rushworth Transfer Station	Campaspe	GVWRRG	4,041	Growth - Small	63	95	-	-		-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN107	Public	Ardmona Transfer Station	Greater Shepparton	GVWRRG	6,074	Growth - Small	94	142	-	-		-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN109	Public	Shepparton Transfer Station	Greater Shepparton	GVWRRG	49,674	Growth - Small	771	1,164	-	-	-	Yes	Yes	Limited Scope	1. Default shedding	$ 94,050	$ 57,804
RRN110	Public	Broadford Transfer Station	Mitchell	GVWRRG	13,871	Growth - Large	215	325	-	-	-	-	Yes	Limited Scope	1. Default shedding	$ 94,050	$ 57,804
RRN112	Public	Seymour Resource Recovery Facility (at landfill site)	Mitchell	GVWRRG	7,324	Growth - Large	114	172	-	-		-	Yes	Limited Scope	1. Default shedding	$ 94,050	$ 57,804
RRN113	Public	Wallan Transfer Station	Mitchell	GVWRRG	16,219	Growth - Large	252	380	-	-	-	-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN115	Public	Cobram Resource Recovery Centre	Moira	GVWRRG	6,348	Growth - Small	99	149	-	-	-	-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN116	Public	Nathalia Transfer Station	Moira	GVWRRG	1,880	Growth - Small	29	44	-	-	-	-	Yes	Small footprint	3. Tertiary site	$ 25,095	$ 12,590
RRN117	Public	Numurkah Transfer Station	Moira	GVWRRG	12,265	Growth - Small	190	287	-	-		-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN122	Public	Yarrawonga Transfer Station	Moira	GVWRRG	7,930	Growth - Small	123	186	-	-	-	-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN123	Public	Alexandra Resource Recovery Centre	Murrindindi	GVWRRG	6,337	Growth - Small	98	149	-	-	-	-	Yes	Small footprint	2. Constrained site	$ 38,728	$ 21,188
RRN125	Public	Kinglake Transfer Station	Murrindindi	GVWRRG	3,844	Growth - Small	60	90	-	-	-	-	Yes	Small footprint	2. Constrained site	$ 38,728	$ 21,188
RRN127	Public	Yea Transfer Station	Murrindindi	GVWRRG	3,560	Growth - Small	55	83	-	-		-	Yes	Small footprint	2. Constrained site	$ 38,728	$ 21,188
RRN129	Public	Euroa Transfer Station	Strathbogie	GVWRRG	6,278	Growth - Small	97	147	-	-	-	-	Yes	Small footprint	2. Constrained site	$ 38,728	$ 21,188
RRN132	Public	Nagambie Transfer Station	Strathbogie	GVWRRG	4,004	Growth - Small	62	94	-	-		-	Yes	Small footprint	1. Default shedding	$ 94,050	$ 57,804
RRN044	Public	Cowes Recycling Facility	Bass Coast	GWRRG	11,669	Growth - Large	181	274	-	Yes		-	Yes	Limited Scope	1. Default shedding	$ 94,050	$ 57,804
RRN045	Public	Grantville Resource Recovery Centre (at landfill site)	Bass Coast	GWRRG	3,799	Growth - Large	59	89	-	Yes	-	-	Yes	Large footprint	1. Default shedding	$ 94,050	$ 57,804
RRN047	Public	Wonthaggi Transfer Station	Bass Coast	GWRRG	13,458	Growth - Large	209	315	-	Yes	-	Yes	Yes	Limited Scope	2. Constrained site	$ 38,728	$ 21,188
RRN049	Public	Lardner Transfer Station	Baw Baw	GWRRG	29,997	Growth - Large	466	703	Yes	-	-	-	Yes		1. Default shedding	$ 94,050	$ 57,804
RRN050	Public	Neerim South Transfer Station	Baw Baw	GWRRG	3,260	Growth - Large	51	76	-	-	-	-	Yes	Limited Scope	1. Default shedding	$ 94,050	$ 57,804

RRN051	Public	Trafalgar Transfer Station	Baw Baw	GWRRG	6,424	Growth - Large	100	151	-	-	-	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN053	Public	Bairnsdale RRC	East Gippsland	GWRRG	15,977	Growth - Small	248	374	Yes	-	-	Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN057	Public	Bruthen Transfer Station	East Gippsland	GWRRG	2,252	Growth - Small	35	53	-	-	-	-	Yes		1. Default shedding	$	94,050	$ 57,804
RRN069	Public	Lakes Entrance Transfer Station	East Gippsland	GWRRG	8,187	Growth - Small	127	192	-	-		-	Yes	Limited Scope	2. Constrained site	$	38,728	$ 21,188
RRN071	Public	Mallacoota Transfer Station	East Gippsland	GWRRG	1,063	Growth - Small	17	25	-	-		-	Yes		3. Tertiary site	$	25,095	$ 12,590
RRN074	Public	Omeo Recycling & Recovery Transfer Centre	East Gippsland	GWRRG	737	Growth - Small	11	17	-	-		-	Yes		3. Tertiary site	$	25,095	$ 12,590
RRN075	Public	Orbost Transfer Station	East Gippsland	GWRRG	2,993	Growth - Small	46	70	-	-	-	-	No		4. None required	$	-	$ -
RRN080	Public	Moe Transfer Station	Latrobe	GWRRG	16,832	Growth - Small	261	395	-	-		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN081	Public	Morwell Transfer Station	Latrobe	GWRRG	23,126	Growth - Small	359	542	-	-	-	Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN082	Public	Traralgon Transfer Station	Latrobe	GWRRG	29,442	Growth - Small	457	690	-	-		-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN084	Public	Foster Transfer Station	South Gippsland	GWRRG	4,491	Growth - Small	70	105	-	-		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN085	Public	Koonwarra Transfer Station Koonwarra	South Gippsland	GWRRG	2,792	Growth - Small	43	65	-	-		-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN086	Public	Korumburra Transfer Station	South Gippsland	GWRRG	11,477	Growth - Small	178	269	-	-	-	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN087	Public	Mirboo North Transfer Station	South Gippsland	GWRRG	4,480	Growth - Small	70	105	-	-	-	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN088	Public	Venus Bay Transfer Station	South Gippsland	GWRRG	1,397	Growth - Small	22	33	-	-	-	-	Yes		3. Tertiary site	$	25,095	$ 12,590
RRN091	Public	Heyfield Transfer Station	Wellington	GWRRG	3,350	Growth - Small	52	79	-	-	-	-	Yes		1. Default shedding	$	94,050	$ 57,804
RRN092	Public	Kilmany Transfer Station	Wellington	GWRRG	17,838	Growth - Small	277	418	Yes	-	-	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN094	Public	Maffra Resource Recopvery Centre	Wellington	GWRRG	6,646	Growth - Small	103	156	-	-		-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN097	Public	Stratford Transfer Station & Resource Recovery Facility	Wellington	GWRRG	2,877	Growth - Small	45	67	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN098	Public	Yarram Transfer Station & Resource Recovery Facility	Wellington	GWRRG	4,266	Growth - Small	66	100	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN188	Public	Birchip Landfill	Buloke	LMWRRG	702	Decline	11	16	-	-		-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN191	Public	Sea Lake Resource Recovery Facility	Buloke	LMWRRG	1,027	Decline	16	24	-	-	No	-	Yes	Small footprint	3. Tertiary site	$	25,095	$ 12,590
RRN194	Public	Cohuna Transfer Station	Gannawarra	LMWRRG	2,428	Decline	38	57	-	-	No	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN195	Public	Kerang Transfer Station	Gannawarra	LMWRRG	5,815	Decline	90	136	-	-	No	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN198	Public	Eaglehawk Recovery & Sales Yard	Greater Bendigo	LMWRRG	94,378	Growth - Large	1,465	2,212	Yes	-		Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN200	Public	Heathcote	Greater Bendigo	LMWRRG	4,513	Growth - Large	70	106	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN201	Public	Strathfieldsaye Transfer Station	Greater Bendigo	LMWRRG	8,630	Growth - Large	134	202	-	-	No	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN202	Public	Boort landfill and recycle	Loddon	LMWRRG	996	Decline	15	23	-	-		-	Yes		3. Tertiary site	$	25,095	$ 12,590
RRN204	Public	Inglewood Transfer Station	Loddon	LMWRRG	1,772	Decline	28	42	-	-	No	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN208	Public	Kyneton Transfer Station	Macedon Ranges	LMWRRG	9,648	Growth - Large	150	226	-	-		-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN209	Public	Romsey Resource Recovery & Transfer Station	Macedon Ranges	LMWRRG	9,360	Growth - Large	145	219	-	-		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN210	Public	Woodend Transfer Station	Macedon Ranges	LMWRRG	23,111	Growth - Large	359	542	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN213	Public	Mildura Transfer Station & Recovery Facility	Mildura	LMWRRG	50,622	Growth - Small	786	1,187	-	Yes	-	Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN216	Public	Ouyen Landfill	Mildura	LMWRRG	1,191	Growth - Small	18	28	-	Yes	No	-	Yes	Large footprint	3. Tertiary site	$	25,095	$ 12,590

RRN220	Public	Castlemaine Resource Recovery Centre	Mount Alexander	LMWRRG	14,888	Growth - Small	231	349	-	-		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN221	Public	Maldon Transfer Station	Mount Alexander	LMWRRG	2,368	Growth - Small	37	56	-	-		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN224	Public	Robinvale Landfill and transfer station	Swan Hill	LMWRRG	3,584	Growth - Small	56	84	-	-		-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN225	Public	Swan Hill Big Green Shed	Swan Hill	LMWRRG	13,179	Growth - Small	205	309	-	-		Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN227	Public	Banyule Waste Recovery Centre	Banyule	MWRRG	121,869	Growth - Small	1,892	2,857	-	-	No	Yes	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN228	Public	Bayside Waste & Recycling Centre	Bayside	MWRRG	97,092	Growth - Small	1,508	2,276	Yes	-		Yes	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN229	Public	Boroondara Transfer Station	Boroondara	MWRRG	167,232	Growth - Small	2,597	3,920	Yes	Yes		Yes	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN231	Public	Brimbank City Council Detox Centre	Brimbank	MWRRG	194,315	Growth - Small	3,017	4,555	Yes	-	No	Yes	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN232	Public	Darebin Resource Recovery Centre	Darebin	MWRRG	146,722	Growth - Large	2,278	3,439	-	-		Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN233	Public	Frankston Regional Recycling and Recovery Centre	Frankston	MWRRG	134,144	Growth - Small	2,083	3,144	Yes	-	Yes	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN234	Public	Campbellfield Recycling & Waste Transfer Station	Hume	MWRRG	160,353	Growth - Large	2,490	3,759	-	-	No	Yes	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN235	Public	Sunbury Recycling & Waste Transfer Station	Hume	MWRRG	39,369	Growth - Large	611	923	-	-	No	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN236	Public	Knox Transfer Station & Recycling Facility	Knox	MWRRG	154,109	Growth - Small	2,393	3,612	Yes	-		-	Yes		1. Default shedding	$	94,050	$ 57,804
RRN237	Public	Melton Recycling Centre	Melton	MWRRG	135,443	Growth - Large	2,103	3,175	-	Yes	Yes	Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN238	Public	Monash Waste Transfer & Recycling Station	Monash	MWRRG	182,617	Growth - Small	2,836	4,281	Yes	Yes	Yes	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN239	Public	Moonee Valley Transfer Station	Moonee Valley	MWRRG	116,674	Growth - Large	1,812	2,735	Yes	Yes	Yes	Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN242	Public	Mornington Transfer Station	Mornington Peninsula	MWRRG	71,449	Growth - Small	1,109	1,675	-	-	-	Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN243	Public	Rye Resourece Recovery Centre	Mornington Peninsula	MWRRG	43,435	Growth - Small	674	1,018	-	-	Yes	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN245	Public	Tyabb Transfer Station	Mornington Peninsula	MWRRG	40,105	Growth - Small	623	940	-	-	Yes	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN246	Public	Nillumbik Recycling & Recovery Centre	Nillumbik	MWRRG	61,274	Growth - Small	951	1,436	Yes	Yes		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN247	Public	Port Phillip Transfer Station (the Depot)	Port Phillip	MWRRG	100,863	Growth - Large	1,566	2,364	Yes	-		Yes	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN248	Public	Stonnington Waste Transfer Station	Stonnington	MWRRG	103,831	Growth - Large	1,612	2,434	-	-	Yes	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN249	Public	Whitehorse Recycling & Waste Centre	Whitehorse	MWRRG	162,080	Growth - Small	2,517	3,799	Yes	-	Yes	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN250	Public	Wyndham Transfer Station	Wyndham	MWRRG	217,118	Growth - Large	3,371	5,089	-	-		Yes	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN251	Public	Clifton Hill Recycling Drop-off Centre	Yarra	MWRRG	86,652	Growth - Large	1,346	2,031	Yes	Yes	Yes	-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN269	Public	Coldstream Recovery & Waste Transfer Station	Yarra Ranges	MWRRG	81,662	Growth - Small	1,268	1,914	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN270	Private	Cardinia Waste and Recyclers	Cardinia	MWRRG	94,130	Growth - Small	1,462	2,206	-	-		-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN271	Private	Hampton Park Transfer Station	Casey	MWRRG	299,296	Growth - Small	4,647	7,015	-	-		-	Yes	Limited Scope	1. Default shedding	$	94,050	$ 57,804
RRN272	Private	CityWide Waste & Recycling Centre	Melbourne	MWRRG	135,964	Growth - Small	2,111	3,187	-	-		-	No		4. None required	$	-	$ -
RRN273	Private	Wollert Transfer Station (at Wollert landfill)	Whittlesea	MWRRG	197,490	Growth - Small	3,067	4,629	-	-	Yes	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN274	Private	Clayton Transfer Station (Cleanaway)	Kingston	MWRRG	151,389	Growth - Small	2,351	3,549	-	-	Yes	-	Yes	Small footprint	1. Default shedding	$	94,050	$ 57,804
RRN281	Private	Wesburn Recovery & Waste Transfer Station	Yarra Ranges	MWRRG	81,662	Growth - Small	1,268	1,914	-	-	-	-	Yes		1. Default shedding	$	94,050	$ 57,804
RRN252	Public	Mt Beauty Transfer Station	Alpine	NEWRRG	2,420	Decline	38	57	-	-	Yes	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804
RRN253	Public	Myrtleford Transfer Station	Alpine	NEWRRG	4,634	Decline	72	109	-	-	No	-	Yes	Large footprint	1. Default shedding	$	94,050	$ 57,804

RRN254	Public	Porepunkah Transfer Station & Recycling Centre	Alpine	NEWRRG	3,976	Decline	62	93	-	-	No	-	Yes	Large footprint	1. Default shedding	$	94,050	$	57,804
RRN255	Public	Benalla Resource Recovery Centre	Benalla	NEWRRG	13,863	Decline	215	325	-	-	No	-	Yes	Large footprint	1. Default shedding	$	94,050	$	57,804
RRN256	Public	Falls Creek Village Transfer Station	Falls Creek	NEWRRG	293	Growth - Small	5	7	-	-	Yes	-	Yes		3. Tertiary site	$	25,095	$	12,590
RRN257	Public	Beechworth Transfer Station	Indigo	NEWRRG	4,569	Growth - Small	71	107	-	-	No	-	Yes	Large footprint	1. Default shedding	$	94,050	$	57,804
RRN258	Public	Rutherglen Transfer Station	Indigo	NEWRRG	6,969	Growth - Small	108	163	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$	57,804
RRN259	Public	Mansfield Resource Recovery Centre	Mansfield	NEWRRG	8,848	Growth - Small	137	207	-	-	-	-	Yes	Small footprint	1. Default shedding	$	94,050	$	57,804
RRN260	Public	Mt Buller Transfer Station	Mt Buller	NEWRRG	243	Growth - Small	4	6	-	-	-	-	Yes		3. Tertiary site	$	25,095	$	12,590
RRN261	Public	Mt Hotham Resource Recovery Centre	Mt Hotham	NEWRRG	426	Growth - Small	7	10	-	-	-	-	Yes		3. Tertiary site	$	25,095	$	12,590
RRN262	Public	Corryong Resource Recovery Centre	Towong	NEWRRG	2,267	Decline	35	53	-	-		-	Yes	Large footprint	1. Default shedding	$	94,050	$	57,804
RRN263	Public	Tallangatta Transfer Station	Towong	NEWRRG	2,567	Decline	40	60	-	-	-	-	Yes	Large footprint	1. Default shedding	$	94,050	$	57,804
RRN267	Public	Wangaratta Transfer Station	Wangaratta	NEWRRG	23,371	Growth - Small	363	548	-	-		Yes	Yes	Large footprint	1. Default shedding	$	94,050	$	57,804
RRN268	Public	Wodonga Transfer Station	Wodonga	NEWRRG	39,351	Growth - Large	611	922	Yes	Yes	-	Yes	No		4. None required	$	-	$	-

Table 41: ECN - Materials separated for collection and storage and compliance for collection of Televisions and Computers for AS5377

		Materials separated for collection								Storage (TV and computers)					AS 5733 compliance (TV and computers, as proxy for overall compliance)					
ID	Facility Name	Large Appliances	Small e-waste	Fluoro lights	Mobile phones	Household batteries	Lead-acid batteries	Gas Bottles	Mattresses	Computers and TV's	How is the material stored?	Where is the material stored?	Is the material stored on a hardstand?	Is there appropriate signage for customers?	Prevents exposure to unsafe practices	Prevents breakage during drop-off and storage	Prevents exposure to the elements	Prevents breakage during packaging, loading and transport?	Prevent potentially hazardous material entering storm water drainage?	Are the receptacles for TVs and computers clearly labelled to identify the contents?
RRN001	Alvie Transfer Station						Yes		Yes	Yes	Loose in a pile	Covered area (with sides)	Sealed hardstand	No	Partially	Partially	Partially	Partially	Partially	No
RRN002	Apollo Bay Resource Recovery Centre				Yes	Yes	Yes		Yes	Yes	Loose in a pile	Full shedding	Sealed hardstand	No	Yes	Yes	Yes	Yes	Yes	Yes
RRN008	Corangamite (Naroghid) Regional Resource Recovery	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Loose in a pile	Covered area (with sides)	Sealed hardstand	Partial	Partially	Partially	Yes	Partially	Partially	No
RRN013	Timboon Transfer Station & Resource Recovery	Yes					Yes	Yes	Yes	Yes	Loose in a pile	In the open	No hardstand	Partial	No	No	No	No	No	No
RRN014	Casterton Resource Recovery Centre	Yes					Yes	Yes	Yes	Yes	Loose in a pile	Full shedding	Sealed hardstand	Partial	Yes	Partially	Yes	Partially	Yes	Yes
RRN019	Portland Landfill and Transfer Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Loose in a pile	Full shedding	Sealed hardstand	Partial	Yes	Yes	Yes	Yes	Yes	Yes
RRN020	Drysdale Resource Recovery Centre & Transfer Station	Yes				Yes	Yes	Yes	Yes	Yes	Large skip	In the open	No hardstand	Partial	Yes	No	No	Partially	Partially	Partially
RRN021	North Geelong Resource Recovery Centre & Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Yes	No	No	Yes	Yes	No
RRN024	Killarney Resource Recovery Centre	Yes					Yes	Yes	Yes	Yes	Stillage	Covered area (no side)	Sealed hardstand	Partial	Yes	Yes	Partially	Partially	Yes	No
RRN026	Mortlake Transfer Station & Resource Recovery Facility	Yes					Yes	Yes	Yes	Yes	Loose in a pile	In the open	No hardstand	No	No	No	No	Partially	No	No
RRN036	Hamilton Resource Recovery Centre	Yes					Yes	Yes	Yes	Yes		In the open	No hardstand	Partial	No	No	No	Partially	No	No
RRN039	Anglesea Transfer Station (at landfill site)	Yes					Yes		Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Yes	No	Partially	Yes	No	No
RRN041	Lorne Transfer Station & Resource Recovery Facility	Yes							Yes	Yes	Loose in a pile	Covered area (with sides)	No hardstand	No	No	No	Partially	No	No	No
RRN043	Winchelsea Transfer Station	Yes					Yes		Yes	Yes	Loose in a pile		No hardstand	No	No	No	No	No	No	No

		Materials separated for collection						Storage (TV and computers)					AS 5733 compliance (TV and computers, as proxy for overall compliance)						
RRN277	Statewide Recycling Services Pty Ltd	Yes	Yes	Yes	Yes	Yes		Yes	Small skip	In the open	Sealed hardstand	Partial	No	Partially	No	Partially	No	Partially
RRN279	Western Waste Management	Yes	Yes	Yes	Yes			No										
RRN135	Ararat Resource Recovery Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Stillage	In the open	Stone / rock	No	Partially	Partially	No	Yes	No	No
RRN137	Lake Bolac landfill & Resource Recovery Centre																	
RRN143	Ballarat Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Stillage	In the open	Stone / rock	No	Partially	Partially	No	Yes	No	No
RRN145	Carisbrook Transfer Station	Yes	Yes		Yes	Yes	Yes	Yes	Loose in a pile	In the open	Stone / rock	No	No	Yes	No	Yes	Partially	No
RRN148	Rokewood Transfer Station	Yes			Yes	Yes	Yes	Yes	Loose in a pile	Full shedding	Sealed hardstand	Partial	Partially	Yes	Yes	Yes	Yes	Partially
RRN149	Creswick Transfer Station and Resale Centre	Yes			Yes	Yes	Yes	Yes	Loose in a pile	Covered area (with sides)	Sealed hardstand	No	Partially	Yes	Yes	Yes	Partially	No
RRN150	Daylesford Transfer Station and Resale Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	No hardstand	Partial	Partially	Yes	Yes	Partially	Yes	Partially
RRN152	Dimboola Transfer Station	Yes				Yes		Yes	Stillage	Shipping container	No hardstand	Partial	Partially	Yes	Yes	Yes	Yes	Partially
RRN154	Nhill Transfer Station	Yes						Yes	Large skip	Shipping container	Stone / rock	Partial	Partially	Yes	Yes	Partially	Yes	Partially
RRN156	Horsham Transfer Station & Resource Recovery Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Yes	Yes	No	Yes	No	Partially
RRN160	Bacchus Marsh Transfer Station	Yes	Yes		Yes		Yes	No										
RRN161	Ballan Transfer Station	Yes			Yes	Yes	Yes	No										
RRN164	St Arnaud Transfer Station and Landfill	Yes					Yes	Yes	Loose in a pile	Covered area (with sides)	Sealed hardstand	No	Partially	Yes	Partially	Yes	No	No
RRN165	Stawell Transfer Station	Yes			Yes	Yes	Yes	Yes	Stillage	Covered area (with sides)	Sealed hardstand	Partial	Partially	Partially	Partially	Yes	No	Partially
RRN166	Avoca Transfer Station	Yes			Yes		Yes	No										
RRN167	Beaufort Transfer Station	Yes					Yes	No										
RRN170	Snake Valley Transfer Station																	
RRN174	Edenhope Transfer Station	Yes	Yes			Yes	Yes	Yes	Stillage	Shipping container	Stone / rock	Partial	Partially	Yes	Yes	Partially	Yes	Partially
RRN177	Kaniva Transfer Station																	
RRN179	Hopetoun Transfer Station & Resource Recovery Centre																	
RRN181	Murtoa Transfer Station & Resource Recovery Centre																	
RRN185	Warracknabeal Landfill and Resource Recovery Centre	Yes	Yes		Yes			Yes	Large skip	In the open	Stone / rock	No	Yes	Yes	No	Partially	No	No
RRN100	Echuca Environment Centre	Yes	Yes			Yes	Yes	Yes	Stillage	Full shedding	Sealed hardstand	Partial	Yes	Yes	Yes	Yes	Yes	Yes
RRN103	Mt Scobie Transfer Station (also known as Kyabram)	Yes				Yes	Yes	Yes	Loose in a pile	Full shedding	Sealed hardstand	Partial	Partially	No	Yes	Partially	Partially	No
RRN104	Rochester Transfer Station & Resource Recovery	Yes				Yes	Yes	Yes	Stillage	In the open	No hardstand	Partial	Yes	Yes	No	Yes	No	No
RRN105	Rushworth Transfer Station	Yes					Yes	Yes	Stillage	In the open	No hardstand	Partial	Yes	Yes	No	Yes	No	No
RRN107	Ardmona Transfer Station	Yes	Yes			Yes	Yes	Yes	Small skip	In the open	Sealed hardstand	Partial	Yes	No	No	Partially	No	No
RRN109	Shepparton Transfer Station	Yes	Yes			Yes	Yes	Yes	Pallet	In the open	Sealed hardstand		Partially	No	No	No	No	No
RRN110	Broadford Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Yes					No	No	No	No	No	No
RRN112	Seymour Resource Recovery Facility (at landfill site)	Yes	Yes		Yes	Yes	Yes	Yes					No	No	No	No	No	No
RRN113	Wallan Transfer Station	Yes	Yes			Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Yes	No	Partially	No	Partially	No
RRN115	Cobram Resource Recovery Centre	Yes	Yes			Yes	Yes	Yes	Loose in a pile	In the open	No hardstand		No	No	No	No	No	No
RRN116	Nathalia Transfer Station	Yes	Yes			Yes	Yes	Yes	Loose in a pile	In the open	Stone / rock	Partial	No	No	No	No	No	No
RRN117	Numurkah Transfer Station	Yes	Yes			Yes	Yes	Yes	Large skip	In the open	Stone / rock	Partial	Partially	No	No	No	Partially	No
RRN122	Yarrawonga Transfer Station	Yes	Yes			Yes	Yes	Yes		In the open	No hardstand	Partial	No	No	No	No	No	No
RRN123	Alexandra Resource Recovery Centre	Yes	Yes			Yes	Yes	Yes	Large skip	In the open	Stone / rock	Partial	Yes	No	No	No	Partially	No
RRN125	Kinglake Transfer Station	Yes				Yes	Yes	Yes	Large skip	In the open	Stone / rock	Partial	Yes	No	No	No	Partially	No
RRN127	Yea Transfer Station	Yes	Yes			Yes	Yes	Yes	Small skip	In the open	Sealed hardstand	Partial	Yes	No	No	No	Partially	No
RRN129	Euroa Transfer Station	Yes	Yes			Yes	Yes	Yes	Large skip	In the open	Stone / rock		Partially	No	No	No	Partially	No
RRN132	Nagambie Transfer Station	Yes	Yes			Yes	Yes	Yes	Large skip	In the open	No hardstand	Partial	No	Partially	No	Partially	No	No
RRN044	Cowes Recycling Facility	Yes				Yes		Yes	Loose in a pile	In the open	No hardstand		No	No	No	No	No	No

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RRN045	Grantville Resource Recovery Centre (at landfill site)	Yes	Yes	Yes	Yes	Yes	Yes	Skip bin	In the open	No hardstand	Partially	No	No	No	Partially	No
RRN047	Wonthaggi Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Skip bin	In the open	Sealed hardstand	Partially	No	No	No	Partially	No
RRN049	Lardner Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Skip bin	Full shedding	Sealed hardstand	Partially	Yes	Yes	Partially	Yes	No
RRN050	Neerim South Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Loose in a pile	Full shedding	Sealed hardstand	Yes	Partially	Yes	Partially	Yes	No
RRN051	Trafalgar Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Loose in a pile	Covered area (no side)	Sealed hardstand	Partially	Partially	Partially	Partially	Yes	No
RRN053	Bairnsdale RRC	Yes	Yes	Yes	Yes	Yes	Yes	Other	Skip bin with lid	Sealed hardstand	Yes	Partially	No	Partially	No	Yes
RRN057	Bruthen Transfer Station	Yes		Yes			Yes	Loose in pile	In the open	Sealed hardstand	No	No	No	No	No	No
RRN069	Lakes Entrance Transfer Station	Yes		Yes	Yes		Yes	Loose in a pile	In the open	Stone / rock	No	No	No	No	No	No
RRN071	Mallacoota Transfer Station	Yes		Yes	Yes		Yes	Other	Full shedding	Sealed hardstand	Yes	Yes	Yes	Yes	Yes	Yes
RRN074	Omeo Recycling & Recovery Transfer Centre															
RRN075	Orbost Transfer Station	Yes		Yes	Yes		Yes	Other	Full shedding	Sealed hardstand	Yes	Yes	Yes	Yes	Yes	Yes
RRN080	Moe Transfer Station	Yes		Yes		Yes	Yes	Skip bin	In the open	No hardstand	Partially	Partially	No	No	No	No
RRN081	Morwell Transfer Station	Yes	Yes	Yes	Yes	Yes	Yes	Skip bin	Skip bin with lid	Stone / rock	No	No	No	No	No	No
RRN082	Traralgon Transfer Station	Yes		Yes		Yes	Yes	Skip bin	Skip bin with lid	No hardstand	No	No	No	No	No	No
RRN084	Foster Transfer Station	Yes		Yes	Yes	Yes	Yes	Loose in a pile	In the open	No hardstand	No	No	No	No	No	No
RRN085	Koonwarra Transfer Station Koonwarra	Yes		Yes	Yes	Yes	Yes	Skip bin	In the open	Sealed hardstand	Partially	No	No	No	Partially	No
RRN086	Korumburra Transfer Station	Yes		Yes	Yes	Yes	Yes	Stillage	In the open	No hardstand	Partially	Partially	No	Partially	Partially	No
RRN087	Mirboo North Transfer Station	Yes		Yes	Yes	Yes	Yes	Loose in a pile	In the open	No hardstand	No	No	No	No	No	No
RRN088	Venus Bay Transfer Station															
RRN091	Heyfield Transfer Station	Yes		Yes	Yes	Yes	No									
RRN092	Kilmany Transfer Station	Yes		Yes	Yes	Yes	Yes	Skip bin	In the open	Sealed hardstand	Partially	No	No	No	No	No
RRN094	Maffra Resource Recopvery Centre	Yes		Yes	Yes	Yes	No									
RRN097	Stratford Transfer Station & Resource Recovery Facility	Yes		Yes	Yes		No									
RRN098	Yarram Transfer Station & Resource Recovery Facility	Yes		Yes	Yes	Yes	Yes	Skip bin	In the open	Sealed hardstand	Partially	No	No	No	Partially	No
RRN188	Birchip Landfill	Yes	Yes	Yes		Yes	Yes	Stillage	In the open	No hardstand	No	Partially	Partially	No	No	No	No
RRN191	Sea Lake Resource Recovery Facility	Yes	Yes				Yes	Yes	Stillage	In the open	Stone / rock	No	Partially	Partially	No	No	No	No
RRN194	Cohuna Transfer Station	Yes					Yes	Yes	Stillage	In the open	Stone / rock	No	No	No	No	No	No	No
RRN195	Kerang Transfer Station	Yes	Yes	Yes		Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	No	No	No	No	Partially
RRN198	Eaglehawk Recovery & Sales Yard	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Large skip	Shipping container	Sealed hardstand	No	Yes	Yes	Partially	Yes	Partially	No
RRN200	Heathcote	Yes					Yes	Yes	Yes	Yes	Loose in a pile	In the open	Stone / rock	No	Partially	No	No	Yes	No	No
RRN201	Strathfieldsaye Transfer Station	Yes				Yes	Yes	Yes	Yes	Yes	Pallet	In the open	Stone / rock	No	Yes	Yes	No	Yes	No	No
RRN202	Boort landfill and recycle																			
RRN204	Inglewood Transfer Station	Yes						Yes	Yes	Yes	Loose in a pile	In the open	Sealed hardstand	Partial	Partially	No	No	No	No	No
RRN208	Kyneton Transfer Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	No	Partially	Partially	No	No	No	No
RRN209	Romsey Resource Recovery & Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	No	Partially	Partially	No	Yes	No	No
RRN210	Woodend Transfer Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	Partially	No	Yes	No	Partially
RRN213	Mildura Transfer Station & Recovery Facility	Yes		Yes		Yes	Yes		Yes	Yes	Large skip	Covered area (with sides)	Sealed hardstand	No	Partially	No	Partially	No	No	No
RRN216	Ouyen Landfill	Yes					Yes	Yes		Yes	Loose in a pile	In the open	No hardstand	No	No	Partially	No	Partially	No	No

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RRN220	Castlemaine Resource Recovery Centre	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Loose in a pile	In the open	No hardstand	No	No	No	No	No	No	No
RRN221	Maldon Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Loose in a pile	In the open	Stone / rock	No	Partially	Partially	No	Yes	No	No
RRN224	Robinvale Landfill and transfer station	Yes					Yes	Yes	Yes	Yes	Loose in a pile	In the open	No hardstand	No	Partially	No	No	No	No	No
RRN225	Swan Hill Big Green Shed	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Loose in a pile	In the open	Stone / rock	Partial	No	No	No	No	No	No
RRN227	Banyule Waste Recovery Centre	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	Partially	No	Partially	Partially	No
RRN228	Bayside Waste & Recycling Centre	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	No hardstand	No	Yes	Yes	No	No	No	No
RRN229	Boroondara Transfer Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	Covered area (no side)	Sealed hardstand	Partial	Partially	Partially	Partially	Partially	Partially	Partially
RRN231	Brimbank City Council Detox Centre			Yes		Yes	Yes	Yes		Yes	Stillage	Covered area (no side)	Sealed hardstand	Partial	Yes	Yes	Partially	Yes	No	No
RRN232	Darebin Resource Recovery Centre	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Stillage	Covered area (no side)	Sealed hardstand	Partial	Yes	Yes	Yes	Yes	Yes	Yes
RRN233	Frankston Regional Recycling and Recovery Centre	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Stillage	In the open	Sealed hardstand	Partial	Yes	Yes	No	Yes	Partially	No
RRN234	Campbellfield Recycling & Waste Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Stone / rock	No	Yes	No	No	No	No	No
RRN235	Sunbury Recycling & Waste Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Loose in a pile	In the open	Stone / rock	No	Yes	No	No	No	No	No
RRN236	Knox Transfer Station & Recycling Facility	Yes					Yes	Yes	Yes	Yes	Loose in a pile	Covered area (with sides)	Sealed hardstand	Partial	Partially	Yes	Partially	Partially	Partially	Partially
RRN237	Melton Recycling Centre	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	No	No	No	No	Partially	No
RRN238	Monash Waste Transfer & Recycling Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	Covered area (with sides)	Sealed hardstand	Partial	Partially	Partially	Partially	Yes	Partially	Partially
RRN239	Moonee Valley Transfer Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	Covered area (no side)	Sealed hardstand	Partial	Yes	Partially	Yes	Yes	Yes	Yes
RRN242	Mornington Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	No	No	Partially	Partially	No
RRN243	Rye Resourece Recovery Centre	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	No	No	No	Partially	No
RRN245	Tyabb Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Stone / rock	No	Partially	No	No	No	Partially	No
RRN246	Nillumbik Recycling & Recovery Centre	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	Partially	Partially	Partially	Partially	No
RRN247	Port Phillip Transfer Station (the Depot)	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Yes	Yes	Yes	No	Partially	Partially	Yes
RRN248	Stonnington Waste Transfer Station	Yes		Yes	Yes	Yes	Yes			Yes	Large skip	In the open	Sealed hardstand	Partial	Yes	No	No	Partially	Partially	Yes
RRN249	Whitehorse Recycling & Waste Centre	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	Covered area (no side)	Sealed hardstand	Partial	Partially	Partially	Partially	Partially	Partially	Partially
RRN250	Wyndham Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Stone / rock	Partial	No	No	No	No	Partially	No
RRN251	Clifton Hill Recycling Drop-off Centre	Yes		Yes	Yes	Yes	Yes		Yes	Yes	Stillage	Covered area (with sides)	Sealed hardstand	Partial	Yes	Yes	Partially	Yes	No	Partially
RRN269	Coldstream Recovery & Waste Transfer Station	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	Partial	Partially	No	Partially	No	Partially	No
RRN270	Cardinia Waste and Recyclers	Yes					Yes	Yes	Yes	Yes	Large skip	In the open	Stone / rock	No	Partially	Partially	No	Partially	No	No
RRN271	Hampton Park Transfer Station	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Large skip	In the open	No hardstand	Partial	Partially	Partially	No	Partially	Partially	Yes
RRN272	CityWide Waste & Recycling Centre	Yes					Yes		Yes	Yes	Small skip	Full shedding	Sealed hardstand	No	Partially	Partially	Yes	Partially	Yes	No
RRN273	Wollert Transfer Station (at Wollert landfill)	Yes					Yes	Yes	Yes	Yes	Large skip	In the open	Stone / rock	No	Partially	Partially	No	Partially	No	No
RRN274	Clayton Transfer Station (Cleanaway)	Yes					Yes	Yes	Yes	Yes	Large skip	In the open	Sealed hardstand	No	No	No	No	No	Partially	No
RRN281	Wesburn Recovery & Waste Transfer Station																			
RRN252	Mt Beauty Transfer Station	Yes					Yes	Yes	Yes	Yes	Stillage	In the open	Stone / rock		Yes	Yes	No	Yes	No	No
RRN253	Myrtleford Transfer Station	Yes				Yes	Yes	Yes	Yes	Yes	Stillage	In the open	No hardstand	No	Yes	Yes	No	Yes	No	No
RRN254	Porepunkah Transfer Station & Recycling Centre	Yes					Yes	Yes	Yes	Yes	Stillage	In the open	No hardstand	Partial	Yes	Yes	No	Yes	No	Partially
RRN255	Benalla Resource Recovery Centre	Yes				Yes	Yes	Yes	Yes	Yes	Stillage	In the open	Stone / rock	Partial	Yes	Partially	No	Yes	No	Partially
RRN256	Falls Creek Village Transfer Station																			

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RRN257	Beechworth Transfer Station	Yes					Yes	Yes	Yes	Yes	Stillage	In the open	Stone / rock	Partial	No	Yes	No	Yes	No	No
RRN258	Rutherglen Transfer Station	Yes					Yes	Yes	Yes	Yes	Small skip	In the open	Stone / rock	No	Yes	Yes	No	Yes	No	No
RRN259	Mansfield Resource Recovery Centre	Yes					Yes	Yes	Yes	Yes	Cage	In the open	Stone / rock	Partial	Yes	Yes	No	Yes	No	No
RRN260	Mt Buller Transfer Station																			
RRN261	Mt Hotham Resource Recovery Centre																			
RRN262	Corryong Resource Recovery Centre	Yes					Yes	Yes	Yes	Yes	Stillage	Covered area (with sides)	No hardstand	Partial	Yes	Yes	Partially	Yes	No	No
RRN263	Tallangatta Transfer Station	Yes					Yes	Yes	Yes	Yes	Stillage	In the open	Stone / rock	Partial	Yes	Yes	No	Yes	No	No
RRN267	Wangaratta Transfer Station	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Stillage	In the open	Sealed hardstand	Partial	Yes	Yes	No	Yes	No	Partially
RRN268	Wodonga Transfer Station	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Stillage	Full shedding	Sealed hardstand	Yes	Yes	Yes	Yes	Yes	Yes	Yes