health

Estimation of the remaining capacity of Victorian cemeteries

Cemeteries and Crematoria Regulation Unit

State Government Victoria

Department of Health

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Executive summary

This report details a project undertaken to estimate the number of remaining cemetery plots in Victoria, and the forecasted decrease in burial capacity (capacity) between 2010 and the end of 2035. This is the first time a project has been undertaken in Victoria to estimate the land available for burial purposes in public cemeteries.

The model was built on several assumptions, including:

- one single burial will take place per plot
- the existing burial compared to cremation rates will continue for the forecast period
- a link exists between location of a burial relative to residential location before death.

The information in the report was drawn from data provided to the Victorian Department of Health from approximately 470 public cemeteries across the state. This represents approximately 90 per cent of all Victorian cemeteries, and includes those with the highest level of burial activity.

The model estimates that approximately 3.58 million plots remain in Victoria, including undeveloped cemetery reserves managed by cemetery trusts, as well as undeveloped cemetery reserves in Melton and Whittlesea.

At a regional level, estimated remaining plots and 'plottable' land area are provided in Table 1.

Table 1 Remaining plots, percentage total plots and plottable land by region

Department of Health region	Remaining plots at end of 2010	Percentage of all remaining plots	Remaining plottable land (hectares)
Eastern Metropolitan	83,993	2.3	32.9
North & West Metropolitan	635,015	17.7	351.8
Southern Metropolitan	290,608	8.1	131.4
Metropolitan total	**1,009,616**	**28.2**	**516.1**
Barwon-South Western	472,188	13.2	212.5
Gippsland	431,102	12.0	200.8
Grampians	609,941	17.0	274.5
Hume	459,653	12.8	206.8
Loddon Mallee	596,190	16.7	268.3
Rural total	**2,569,073**	**71.8**	**1,162.9**
Victorian total	**3,578,690**	**100.0**	**1,679.1**

Remaining capacity—Metropolitan Melbourne and rural Victoria

To determine the remaining years of capacity, future deaths-requiring-burial were estimated using population projections and mortality rates, as well as estimated burial (compared to cremation) rates. These estimates indicate that at a statewide level, enough capacity exists to accommodate all Victorian deaths-requiring-burial beyond 2035. Between 2010 and the end of 2035, Victoria's capacity is expected to decrease at an average rate of 0.86 per cent per annum.

Based on the current rate of consumption, it is anticipated that by the end of 2035, 46.3 per cent of all metropolitan available cemetery reserves will have been consumed, while 11.7 per cent of rural available cemetery reserve will have been consumed. This is equivalent to 769,441 plots, or the consumption of approximately 346 hectares of current cemetery reserves.

At both a rural and metropolitan level, adequate capacity exists beyond 2035. Between 2010 and the end of 2035, rural capacity is expected to decrease at an average rate of 0.47 per cent per annum, and metropolitan capacity at an average rate of 1.85 per cent per annum. However, capacity is not evenly distributed across Victoria. A breakdown of available cemetery reserves at a regional level using Department of Health regional boundaries and from a local government area (LGA) perspective is given below.

Remaining capacity—regional perspective

It is estimated that in the Eastern Metropolitan Region cemetery reserves will be depleted by 2034; therefore, deaths-requiring-burial from Eastern Metropolitan Region will need to be accommodated elsewhere. All other regions will have capacity beyond 2035; however, for metropolitan regions, this relies on the development of undeveloped land, as well as the two greenfield sites in Melton and Whittlesea local government areas (LGAs) becoming operational.

Remaining capacity—LGA perspective

At the LGA level, there are 14 LGAs—all metropolitan—which do not have any cemetery reserves available for burial. By the end of 2035, 25 LGAs will have no available land for burial purposes. All these cemeteries are metropolitan LGAs, except for Warrnambool and Wodonga.[1]

By the end of 2035, it is expected that only eight metropolitan LGAs will have any remaining plots. These are:

- Greater Dandenong
- Hobsons Bay
- Hume
- Melton
- Moreland
- Mornington Peninsula
- Nillumbik
- Whittlesea.

The vast majority of these will be in Greater Dandenong, Melton and Moreland.

Designated growth areas

The following six LGAs are designated as growth areas under the Melbourne 2030 plan, so the burial capacities in these areas are of particular interest.

- **Cardinia**—capacity is decreasing at an average rate of 5.6 per cent per annum, and will be fully utilised by the end of 2029.
- **Casey**—capacity is decreasing at an average rate of 8.3 per cent per annum, and will be fully utilised by the end of 2023.
- **Hume**—capacity is decreasing at an average rate of 3.2 per cent per annum, and will last beyond 2035; however, it is unlikely to last beyond 2037.
- **Wyndham**—capacity is decreasing at an average rate of 14.3 per cent per annum, and will be fully utilised by the end of 2018.
- **Melton**—it is estimated that its existing cemetery has no remaining plots. However, this analysis includes a 198 hectare parcel of land designated for use as a cemetery. It is estimated that this cemetery will have capacity for approximately 330,000 plots, approximately nine per cent of all

[1] Where an LGA runs out of plots prior to 2035, the model redistributes its deaths-requiring-burial to another LGA; that is, all deaths-requiring-burial were accounted for in the period to 2035.

estimated remaining plots in Victoria.[2] Melton's capacity is decreasing at an average rate of 0.8 per cent per annum, and provided the greenfield site is developed, it will have cemetery reserves available beyond 2035. This includes deaths-requiring-burial redistributed from other LGAs which have already run out of plots, as well as LGAs that will run out of plots before the end of 2035.

- **Whittlesea**—existing cemeteries in this LGA have approximately 13,116 remaining plots. The Plenty Valley greenfield site[3] will offer an additional 100,000 plots. Whittlesea's capacity is decreasing at an average rate of 3.2 per cent per annum, and will last beyond 2035. As with Melton, this includes redistributed deaths-requiring-burial from LGAs that have or will run out of plots.

Greenfield sites and undeveloped land

By the end of 2035, it is estimated that 52.0 per cent of all remaining plots in metropolitan Melbourne will be in Melton or Whittlesea, each of which has a large greenfield site. This figure increases to 94.2 per cent with the inclusion of Greater Dandenong, which is home to Bunurong Cemetery and its 91 hectares of undeveloped land, and Moreland, home to Fawkner Northern Memorial Park and its 57 hectares of undeveloped land. Therefore, by the end of 2035, it is estimated that nearly 95 per cent of all remaining metropolitan plots will be concentrated in just four LGAs. Ongoing capacity within metropolitan Melbourne depends on the ongoing development of undeveloped land, particularly for large parcels such as those at Bunurong Cemetery, Fawkner Northern Memorial Park and Lilydale Memorial Park,[4] and the opening of cemeteries on greenfield sites in Melton and Whittlesea.

Conclusion

Sufficient land exists on existing cemetery reserves within Victoria to accommodate estimated burials beyond 2035. The two greenfield sites (in Whittlesea and Melton) contribute significantly to this situation; however, any delay in these cemeteries becoming operational may affect capacity in the short term. Within metropolitan Melbourne some LGAs no longer have any remaining capacity, and others will exhaust their capacity before 2035, some within the next two years. At a regional level, one area (Eastern Metropolitan) is expected to exhaust its capacity by the end of 2034 unless additional cemetery reserves are allocated to meet future need. By the end of 2035, approximately 22 per cent of Victoria's estimated remaining cemetery reserves available for burial will have been consumed.

Ongoing data collection and verification, including review of the assumptions applied, is required to enable continued analysis and monitoring of remaining capacity.

[2] This cemetery is not yet operational. However, this analysis treats this (future) cemetery as though it is operational.

[3] The Plenty Valley greenfield site is sometimes referred to as the 'Yan Yean/Plenty Valley greenfield site'. A Yan Yean Cemetery also exists. To avoid confusion, the greenfield site is referred to as the 'Plenty Valley greenfield site' in the **text** of this report, but in the **tables** its full name is given.

[4] Lilydale Memorial Park has approximately 22 hectares of undeveloped land. However, it is expected to run out of plots before 2035 due to an overall capacity shortage within the region. This contrasts with Bunurong and Fawkner, which both have significant capacity beyond 2035.

1 Introduction

1.1 Project description

The purpose of this project is to estimate the remaining capacity of Victorian cemeteries.

1.2 Background to the project

This project was identified during a review of the department's requirements for forecasts which was undertaken by the Planning and Analysis Unit of the Service and Workforce Planning Branch[5] in July–August 2008. During the review, departmental staff were asked to identify projects where the Planning and Analysis Unit could assist with the production of forecasts. The project was identified by the then Health Regulatory Compliance and Review Branch (now known as the Health Regulation and Reform Branch), and work commenced in August 2008. The project will assist the branch with the development of a set of forecast data to assist with and inform a broader strategic plan for cemetery land use, availability, and projected demand into the future.

1.3 Purpose of this report

This report was prepared for the Cemeteries and Crematoria Regulation Unit of the Regulation and Reform Branch. It describes how the project was undertaken, its findings and recommendations for further analysis.

1.4 Scope of the project

The project is concerned with all Victorian **public** cemeteries. Most of these are open and operating; however, some cemeteries have no remaining plots, and others are closed. A small number of such cemeteries were included in the analysis following the provision of detailed information from the Valuer General Victoria (VGV), because this information has informed the assumptions applied in the analysis (for example, the average area used for each classification of cemetery). The project has several elements, as discussed below.

1.4.1 Estimation of remaining capacity

The project estimates the remaining capacity (number of plots available for interment) of Victorian cemeteries as of 1 January 2011. Estimates are made available by:

- individual cemetery
- local government area (LGA)
- Department of Health region
- metropolitan and rural Victoria[6]
- the whole of Victoria.

The project is concerned with both the immediate availability of plots and the availability of plots each year until the end of 2035. It was therefore necessary to predict the number of deaths (and from this, the number of deaths-requiring-burial) which would occur in each year until 2035. This enabled the re-estimation of remaining capacity each year.

1.4.2 Definition of plot

In the context of this project, a plot can refer to an already-developed plot, or to a space for a plot in an undeveloped part of an existing cemetery, or indeed a greenfield site. That is, the plot may not yet be identifiable as a plot; the interest is focused on the space available for plots.

[5] The Planning and Analysis Unit is now the Modelling, GIS and Planning Products Unit and is part of the Business Planning and Communications Branch.

[6] As defined by the Department of Health.

1.4.3 Interment of cremated remains

For several reasons, interment of cremated remains was not considered as part of this project. First, many different options are available for the interment of cremated remains (for example, niche walls, individual positions in gardens, scatter gardens), and limited information exists about how much space is occupied by each of these. Second, cremated remains occupy minimal space relative to burials, and in many instances the space can be used more than once (for example, scatter gardens).

1.4.4 Crypts and mausolea

The exercise undertaken by VGV classified the usage of some sections of a cemetery as ‘mausolea’ and ‘crypts’. These classifications were relatively unusual, and were typically restricted to the larger cemeteries (such as those now managed by the Class A trusts), and did not represent large areas of land. For these reasons, land with these classifications is not included in the estimation of remaining plots.

1.4.5 Rate of decrease in capacity

The project also estimates the per annum rate of decrease in capacity (by LGA, region, metropolitan and rural Victoria, and Victoria as a whole) until 2035.

1.4.6 Cemetery capacity in growth areas

The project also focuses on cemetery capacity in designated urban growth areas and estimates the impact of rapid population growth on remaining capacity in the following LGAs:

- Cardinia
- Casey
- Hume
- Melton
- Whittlesea
- Wyndham.

1.4.7 Primary data to be used

The estimation was to be based primarily on existing/available data; the project did not include any large-scale data collection. Smaller data collection tasks, typically undertaken by phone, were undertaken for a small number of cemeteries. Data relating to cemeteries was provided by the Cemeteries and Crematoria Regulation Unit. Data relating to estimated deaths, including life tables and population data, were obtained from the Australian Bureau of Statistics (ABS) and the Department of Planning and Community Development (DPCD).

1.4.8 Additional data to be used

In addition to the above data, a data validation survey was undertaken for approximately 50 cemetery trusts. Finally, the VGV undertook an exercise to quantify and classify different areas in each cemetery for 37 cemeteries. Both of these data sources are discussed in more detail in the following section.

2 Overview

For the first time ever, the remaining capacity of Victorian public cemeteries was estimated. The recent work undertaken for the department by the Valuer-General Victoria (VGV), which looked at the majority of the largest and most active Victorian cemeteries, assisted greatly in the development of a model to estimate the number of remaining plots. A range of survey and data validation tasks were also invaluable in the development of the model and the refinement of its underlying assumptions. For some of the cemeteries considered, a full set of data was not always available, requiring the estimation of some values. The data provided through the VGV exercise and the various survey and validation tasks were critical in the calculation of these estimates.

2.1 Underlying assumptions

A conservative approach was taken in order to produce a conservative estimate. Several assumptions were applied in this model, including:

- where people would be buried relative to their local government area (LGA) of residence
- the number of interments per plot
- burial and cremation rates.

These assumptions were applied to every cemetery.

2.2 Use of estimated values

In the absence of data about a specific cemetery it was necessary to estimate:

- the proportion of plottable[7] land within the cemetery
- the proportion of plottable land already sold or used.

The estimates were based on what was known about cemeteries with similar activity levels and location (that is, metropolitan or rural).

2.3 Included cemeteries

Victoria has 522 active cemeteries; this project considers 477[8] of them. Only 50 (10.5 per cent) of these are located in metropolitan LGAs. Some cemeteries were not included in this report because of missing data sets (typically land size); however, records suggest that most of these are located in rural areas, and that they have minimal burial activity. Other cemeteries were excluded because they were closed.

2.4 Estimated deaths-requiring-burial

Consumption of existing capacity depends on future deaths—but specifically, future deaths-requiring-burial[9]. Future deaths were estimated using the Department of Planning and Community Development's population projections[10] and the *2010 Life Tables*[11] (which indicate the probability of death at different ages for both males and females) provided by the Australian Bureau of Statistics (ABS). It is estimated that between the start of 2011 and the end of 2035 there will be 769,441 deaths-requiring-burial.

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[7] Non-plottable land includes land used for roads, gardens, buildings, lakes and so on, as well as land with restrictions; for example, native vegetation restrictions.

[8] This includes a small number of cemeteries with no remaining plots, specifically: Brighton, Burwood, Coburg, Daylesford, Dromana, Grovedale, Preston, Templestowe and Seymour. They are included because they are still open, or because they were analysed in detail by VGV and their results have contributed to the model's assumptions.

[9] Compared to cremation.

[10] Population projections prepared by Department of Planning and Community Development in 2011 based on ABS population estimates for 30 June 2010.

[11] Released November 2011.

3 Background

More than 470 cemeteries operate in Victoria. Approximately 90 per cent of these are based in rural areas.

Cemeteries are managed by cemetery trusts appointed by the Governor-in-Council under the *Cemeteries and Crematoria Act 2003*. Trusts are self-funding, and most trusts are staffed solely by volunteers. Legislation enacted in 2009 led to the replacement of ten metropolitan and four regional reporting trusts with two metropolitan and three regional Class A cemetery trusts, specifically:

- Greater Metropolitan Cemeteries Trust, covering north, west and eastern metropolitan areas
- Southern Metropolitan Cemeteries Trust, covering the southern part of metropolitan Melbourne
- Ballarat, Bendigo and Geelong Cemetery trusts.

Each Class A trust has direct responsibility for multiple cemeteries, as well as assuming a leadership and support role for Class B cemetery trusts. Following the legislative changes, the majority of trusts retained their existing status, most commonly having responsibility for individual cemeteries only.

Many trusts, typically those with lower burial activity, have limited data about the cemeteries that they manage. This includes a lack of accurate information on:

- the proportion of land suitable for digging plots (‘plottable’)
- the proportion of land already sold or used (and from this, the proportion of remaining land)
- annual burial activity.

These factors limited the accuracy and/or availability of data for this project, and therefore required estimation of these values in some instances. Ongoing data collection and validation is imperative in order to reduce reliance on estimated values.

3.1 Definition of interment

The term ‘interment’ refers to either a burial within a gravesite or the placement of cremated remains in the cemetery (compared to cremated remains that are collected and taken off-site or scattered). This project is concerned only with burials within a gravesite.

4 Component datasets, their quality, and application

Data regarding cemeteries, their burial activity, land size and so on, came from a variety of sources, including:

- annual burial data—provided to the department in the trusts' abstract of accounts or financial reports
- the *Survey of Cemetery Trusts* (2004)—conducted by the Department of Human Services (DHS)
- land parcel data—provided by the Department of Sustainability and Environment (DSE) with additional data from the Department of Human Services
- data from the reporting trusts' financial reports for 2007–08.

However, each dataset presented limitations. Merging of the datasets was required to provide a fuller picture of each cemetery and was by far the most time-consuming aspect of the project. Each dataset contained differing numbers of records (that is, cemeteries), and matching cemeteries across datasets was difficult because cemetery names were not always consistent.

Each of the datasets, their limitations, the data cleansing undertaken and application are discussed below.

4.1 Annual burial data

The largest dataset was the annual burial data collected by the Cemeteries and Crematoria Regulation Unit. This includes records of the number of burials, plot sales and annual cremations for 1994–2007; that is, approximately 14 years of data for 622 separate entities.[12] Because it represents the largest number of cemeteries (compared to other datasets used), this was regarded as the primary dataset to which the records from other datasets were matched.

4.1.1 Limitations

In many cases fewer than 14 years of data were available. A range of other data quality issues were encountered, including:

- missing values
- duplication of annual entries
- extreme values; for example, significantly larger or smaller numbers than the majority of values relative to other years' data.

4.1.2 Data cleansing

Duplicate entries were removed. After consultation with the Cemeteries and Crematoria Regulation Unit, averages were used in place of missing values and/or extreme values.

4.1.3 Application

Annual burial data were not considered useful for predicting future burial activity (and its subsequent effect on remaining capacity) due to a combination of factors, specifically:

- the limited quantity of data
- concerns regarding data quality/accuracy
- difficulty in applying population projections in order to estimate future burial activity.

The average annual burials (including plot sales)[13] was calculated and used to classify each cemetery as small, medium or large, as will be described in *Section 6.4 Proportion of plottable land*. However, if

[12] As discussed later, many of these were duplicate entries or closed cemeteries.

[13] Even though a plot sale may not result in a burial in the same year, it provides an indication of a cemetery's activity, so is a useful input for classifying the cemetery.

the most recent year's burial activity was higher than the average, the higher figure was used to classify the cemetery.

The average annual burials was also used to estimate the amount of land that was used between 2004, when a survey was undertaken (see below), and the end of 2009, from which point the estimation was required. The assumptions derived from the data available between 2004 and 2009, were applied to provide a starting point of 'end of 2010' for the modelling exercise, as described in Section 6 and Section 7.

As stated previously, the annual average burial figure included plot sales. No data were available to determine the number of burials that took place in presold plots, but it is recognised that some of the plots sold during the year will not have been used for burial during that year. Therefore, the following statistics overestimate the land used between 2004 and 2009, but by how much is unknown. However, this is consistent with the conservative approach taken in this exercise, which is discussed in more detail below.

4.2 Survey of cemetery trusts (2004)

In 2004 a survey was undertaken to initiate work on a range of land related issues, but primarily to gather estimates on cemetery land availability. Currently, neither the trusts nor the department had knowledge or data relating to the size of cemeteries, annual burial rates and the proportion of land already used.

The survey was conducted via telephone with trust secretaries or other key contacts. The aim was to gather the following information for each cemetery:

- cemetery size
- total area used (as a percentage of total area)
- burials to date
- number of burials in 2004
- number of cremated interments in 2004
- number of unused graves
- area remaining
- more than 30 other fields relating to native vegetation, buildings, lease arrangements and so on, which were not directly relevant to this project.

4.2.1 Limitations

The survey data contained records for approximately 470 named cemeteries and six records where the cemetery was not named. In relation to the list above, not all fields were completed. Values for the 'area remaining' field were also entered inconsistently, for example:

- unlimited
- not known but plenty
- a lifetime.

Furthermore, where a numeric value was provided, the unit of measure ranged from square metres to acres to hectares; a 'hectares' field was added and the 'area remaining' was converted to hectares as required. The 'area remaining' field was blank for approximately 200 records.

For some cemeteries, a 'burials to date' figure was provided. Initial attempts were made to use this value to estimate the amount of land used (by multiplying 'burials to date' by plot size), and from this estimate the proportion of land still available. However, this calculation frequently resulted in the area of land used being larger than the entire cemetery, suggesting that the 'burials to date' value probably represented all interments, that is, burials and cremation, or was simply inaccurate. Therefore, 'burials to date' data were not used in any calculation.

A decision was made not to use the 'number of unused graves' values because it was only provided for fewer than half of the surveyed trusts. Further, most values appeared to have been roughly estimated (for example, 2,500, 4,000 and so on), rather than counted or calculated.

4.2.2 Data cleansing

Data cleansing involved standardisation of ‘area remaining’, as described above, and the merging of approximately five pairs of duplicate records.

4.2.3 Application

The data were used to obtain ‘cemetery size’ and ‘area remaining’, either directly or by applying the percentage area used to the total land size.

4.3 Land sizes

Another large dataset used was a MS Excel worksheet provided by the Cemeteries and Crematoria Regulation Unit (Cemeteries.xls), which contained numerous fields relating to land, such as address details, parcel data, reserve information, land size, local government area (LGA) and Department of Health region. It contains records on 569 cemeteries, and is a combination and reconciliation of two separate datasets:

- the dataset (ListCROWNcemeteriesDSEreport2006.xls), which is maintained by the Department of Sustainability and Environment which collects and reports on crown land reserves in Victoria
- data from the Cemeteries and Crematoria program (CMS) database, which includes a range of additional and updated information.

Due to missing data in both datasets, the data from these sources were combined, verified and reconciled by the Cemeteries and Crematoria Unit staff.

4.3.1 Limitations

Land size was not specified for a large number of cemeteries. Several cemeteries had names that were not represented in the primary dataset (‘annual burial data’).

4.3.2 Data cleansing

Data cleansing involved identification of cemeteries with unmatched names; this occurred through discussion with the Cemeteries and Crematoria Regulation Unit and via searches on the worldwide web. Missing land sizes were followed up by staff from the Cemeteries and Crematoria Program, and by checking the Department of Sustainability and Environment land parcel data records.

4.3.3 Application

This dataset provided ‘cemetery size’, ‘LGA name’ and ‘Department of Health region name’.

4.4 Amalgamation of the data

Elements of the above data sources were merged so that the following fields were populated or could be calculated for the majority of cemeteries:

1. cemetery name
2. annual burial activity
3. average annual burials
4. burials since 2004
5. LGA name
6. Department of Health region name
7. metropolitan/rural
8. classification (small, medium or large)
9. land size (hectares)
10. percentage available for plots (plottable land)
11. available for plots (hectares)
12. area used (per cent) to 2004
13. area used since 2004 (hectares)
14. area used to 2009 (hectares)
15. plottable area used (per cent) to 2009
16. plottable area unused (per cent) to 2009
17. remaining plottable capacity (hectares)
18. remaining capacity (plots)—calculated
19. remaining capacity (plots)—as reported
20. remaining capacity (plots)—to be used in analysis.

Ultimately, the measure of remaining capacity (plots) was required for each cemetery. If this had been

reported by a trust, the value was used in preference to using a combination of the above fields to calculate remaining capacity.[14]

4.5 Data validation survey

A survey was sent to 50 cemetery trusts in May 2009, which were selected by the Cemeteries and Crematoria Regulation Unit. None of the Class A trusts was surveyed, because they were included in the VGV exercise (see *Section 4.6 Valuer-General Victoria analysis*). For each cemetery they were responsible for, the trusts were asked the following questions:

1. What is the average number annual burials?
2. What percentage (or area) of the entire cemetery is occupied by infrastructure; that is, buildings, roads, lakes, gardens, trees and so on?
3. What percentage (or area) of the entire cemetery has already been used for burials?
4. What percentage (or area) of the entire cemetery cannot be used for burials because it is restricted by native vegetation?
5. What percentage (or area) of the entire cemetery cannot be used for burials (that is, land unsuitable for plots due to rock, steepness and so on)?
6. What percentage (or area) of the entire cemetery is still available for future burials (including undeveloped areas)?

The trusts were instructed that the percentages (or areas) in questions 2, 3, 4, 5 and 6 should total 100 per cent (or the entire area of the cemetery).

There was a reluctance to include all trusts in the survey, because several other requests for information were made in recent times, and this was expected to continue in the near future. Part of the reluctance was due to many of the trusts being operated by volunteers.

4.5.1 Outcomes of the survey

Responses were received from 22 trusts representing 25 cemeteries. Several of the responses required follow-up. For example, often the land totals or percentages given for each of the questions exceeded the total land size (or 100 per cent). In other instances, some questions were not answered.

4.6 Valuer-General Victoria analysis

Using aerial photography, the Geospatial Information Systems (GIS) team at the VGV categorised land usage for 37 Class A cemeteries, as listed in *Appendix 1 Cemeteries analysed by VGV*. For each cemetery surveyed, the analysis included:

- total land area
- amount of land classified as ‘right of interment’ (ROI) for graves
- amount of ROI (graves) land that was used or sold
- amount of land that was undeveloped and suitable for graves
- amount of land used for other purposes (for example, roads, native vegetation, buildings, gardens and so on).

The above data were then used to calculate:

- the proportion of plottable land
- the proportion of plottable land that was used or sold
- the amount of plottable land still available.

The last of these items was then converted to the number of remaining plots.

[14] An exception is Lilydale Memorial Park, where the reported number of plots had not taken into account a large area of undeveloped land.

5 Cemeteries excluded from the analysis

Of the 622 entities included in the annual burials dataset:

- fifty-three (53) duplicate records were identified (for example, ‘Elaine’ and ‘Elaine Cemetery Trust’, ‘Heathcote’ and ‘Heathcote Cemetery Trust’)
- thirty-eight (38) were closed or not accepting burials (for example, Box Hill, Footscray, Healesville)
- thirty-nine (39) had no/minimal burial activity (that is, fewer than one per year) and no corresponding record in the survey data (for example, Pompapiel Cemetery)
- twelve (12) had no burial data (for example, the ‘plots sold’ and ‘annual burial’ fields were blank) and/or no survey data (for example, Deans Marsh Cemetery, Yaugher Cemetery)
- five (5) had no land size provided in the survey data (for example, Burramine Cemetery)
- six (6) were known by another name in the parcel records (for example, Patho Cemetery was also known as Torrumbarry Cemetery).

These 153 cemetery records were not included in the analysis. Some of the records in the dataset were for trusts that represented multiple cemeteries; a benefit of the VGV exercise was that including the individual cemetery in the analysis was possible. In total, 477 individual cemeteries were included in the analysis. A list of the 153 excluded cemetery records is in *Appendix 2 Excluded cemeteries*. Because most of these were closed (or effectively closed) cemeteries or duplicate records, the impact of their exclusion is expected to be minimal. (It is estimated that the 153 records represent approximately 50 cemeteries). Furthermore, the 12 cemeteries with no burial and/or no survey data and the five with no land data were all rural cemeteries where burial activity was minimal. However, because they may contain a large number of remaining plots, if the missing data become available for these 17 cemeteries, they should be included in future analyses.

6 Approach and assumptions

For the purpose of this exercise, it was considered preferable to apply a conservative approach and **underestimate** remaining capacity—thereby identifying a capacity problem prematurely, rather than failing to identify a potential problem at all. This was achieved through the application of assumptions relating to:

- burials per plot
- burial rates compared to cremation rates
- plot size
- proportion of plottable land.

The assumptions made are discussed below.

6.1 Burials per plot

Utilisation of remaining capacity was underestimated by limiting the number of burials per plot to one person; where in reality, two to three interments in a single plot is not uncommon. However, the project was also limited by the absence of any data source regarding the number of burials per plot. That is, a more specific assumption about the expected number of burials per plot was not possible.

The assumption of one burial per plot was applied to all cemeteries in the analysis.

6.2 Burial rates compared to cremation rates

In order to predict how long remaining capacity will last, this project focused on deaths-requiring-burial—not deaths resulting in cremation. The *Victorian Cremation Industry Viability* report, completed for the Department of Human Services by Marsden Jacob Associates (MJA) in 2004, included a range of cremation rates (low, medium and high assumption) for metropolitan/non-metropolitan by urban/non-urban areas. These data were used to estimate burial compared to cremation rates to inform likely demand for burial services. These rates are shown in Table 2, below.

Table 2 Cremation rates identified in MJA report (2004)

	Level								
	Urban (%)			Non-urban (%)			Total (%)		
Place of residence	**low**	**medium**	**high**	**low**	**medium**	**high**	**low**	**medium**	**high**
Metropolitan	54	55	60	59	60	60	54	55	60
Non-metropolitan	33	40	45	29	30	35	31	36	41
Total	49	52	57	33	35	39	46	49	54

This project required only rural and metropolitan rates. These were set around the low assumptions made by MJA, and are shown in Table 3, below.

Table 3 Burial and cremation rates applied in this project

Location	Burial (%)	Cremation (%)
Metropolitan	50	50
Rural	70	30

These rates were applied to all cemeteries in the analysis.

6.3 Plot size

The standard plot size is 1.22 m × 2.44 m (approximately 3 m^2). For this exercise, a plot size of 1.5 m × 3 m (4.5 m^2) was used to account for space immediately around plots, because this space is effectively occupied. This plot size was applied to all cemeteries in the analysis.

6.4 Proportion of plottable land

Underestimating the proportion of land available in each cemetery for actual burials (plottable land) was also considered preferable. The work undertaken by VGV assisted in determining the proportions of plottable and non-plottable land which are typical in a cemetery. In addition, default values (those used in the absence of specific information about a cemetery) were established, based on program staff's knowledge of cemeteries.

The proportions applied were based on the classification[15] of cemeteries according to burial activity, as shown in Table 4, below.

Table 4 Classification of cemeteries and proportion available for plots

Average burials per year	Classification assigned	Proportion available for plots (%)	Equivalent plots per hectare
300+ or Class A	large	60	1,778
100—299	medium	70	1,556
0—99	small	80	1,333

To put this in context, it was assumed that a 'large' cemetery (servicing in excess of 300 burials per year on average), has a considerable amount of infrastructure on its land. This could include, for example, roads and paths, buildings such as administrative buildings, sheds, chapels, toilet blocks and so on, as well as ponds or water features, garden beds and tree areas. That some areas of a cemetery will be unsuitable for plots is also possible; for example, rocky or inclined areas, or zones prone to interference by tree roots. So, an assumption of 60 per cent plottable land was used in the absence of more specific information, such as that provided following the VGV exercise, or the trust providing this detail.

Conversely, a small cemetery (servicing fewer than 100 burials per year) is less likely to have buildings, garden beds, roads and so on, but is still likely to have paths, fencing and areas unsuitable for plots (which could also include areas restricted by native vegetation). Therefore, the assumption for small cemeteries is that 80 per cent of the land is plottable.

All cemeteries belonging to Class A trusts were automatically classified as large (as agreed by the Cemeteries and Crematoria Regulation Unit). A small number of Class A cemeteries will have fewer than 300 burials per year; however, for most Class A cemeteries, the actual proportion of plottable land was calculated by VGV; therefore, default values were not used. The above proportions were only applied in the absence of actual values for a specific cemetery.

6.4.1 Maximum proportion of plottable land

Some cemeteries considered by the VGV had a proportion of plottable land higher than 80 per cent, the highest default value used. It was agreed that 80 per cent be set as a maximum for plottable area, which takes into account that an area classified as 'ROI for graves' will also include paths or small areas covered by trees. Therefore, if the proportion of plottable land for a cemetery provided (either by the trust, or following the VGV exercise) was in excess of 80 per cent, it was adjusted down to 80 per cent—unless the cemetery had already used or sold in excess of 80 per cent of its land for plots.

6.4.2 Proportion of plottable land for greenfield sites and undeveloped land

The proportion of plottable land was set to 75 per cent for greenfield sites, and 80 per cent for undeveloped land within established cemeteries. In the case of greenfield sites, this is higher than the

[15] This classification system was developed for the purposes of this project only, and does not have broader or general application.

default value of 60 per cent used for large cemeteries, because it recognises that more incentive exists to maximise revenue in the future, so newly established cemeteries are likely to use land more efficiently. A similar rationale was applied to undeveloped land in existing cemeteries; however, because existing infrastructure is in place to service new plots, a slightly higher proportion (80 per cent) was allowed.

6.5 Land requirements for cremated remains

As stated, each of the above assumptions contributes to an **underestimation** of remaining capacity. However, no attempt was made to allocate land for the interment of cremated remains.[16] First, this is considered to be negligible relative to the land required for burial, but also because no data is available in relation to the land size occupied by cremated remains memorials due to the range of options available. Therefore, ignoring land used for the interment of cremated remains led to a slight overestimation of remaining plots (because land used for cremations was treated as plottable), but this will be counteracted by the applications of the other assumptions applied.

[16] An exception was for the cemeteries included in the VGV exercise, because area used for cremated remains was specifically identified and measured.

7 Methodology

In addition to estimating the number of deaths-requiring-burial in coming years, this project estimates the number of remaining plots within each cemetery. A small number of trusts could provide this number directly. For the remaining cemeteries, estimating this figure was necessary, using the following items:

- the size of the cemetery
- the proportion of the land available for plots (plottable land, as described in Section 6.4 Proportion of plottable land)
- the proportion (or actual amount) of land already used
- agreed plot size; that is, 1.5 m × 3 m.

7.1 Size of the cemetery

Many cemetery trusts were unable to state accurately the size of their cemetery (or cemeteries). Where this figure was missing, the Department of Sustainability and Environment land parcel data were reviewed. If the information was not found there, a staff member from the Cemeteries and Crematoria Regulation Unit contacted the cemetery trust to obtain details of land size. However, if this could not be obtained, it was agreed that these cemeteries would be excluded from the calculation, as discussed in Section 5 Cemeteries excluded from the analysis.

7.2 Proportion of land already used

For several cemeteries, the survey undertaken in 2004 included an estimation of the proportion of land used. In order to calculate the remaining land at the end of 2009, the higher figure of either the average annual burial data or the most recent year's burials was multiplied by five (for each of the intervening years) then converted to area (hectares) by multiplying by plot size. This area was added to the 2004 total area used (calculated by multiplying the land size by the proportion of land used) to obtain the total area used at end of 2009.

7.2.1 Estimating the proportion of land used

As stated above, some trusts specifically provided the proportion of land already used, but the majority did not. Where this occurred, the average proportion of land used was calculated for each classification of cemetery for both metropolitan and rural locations:

- metropolitan: small, medium, large
- rural: small, medium, large.

These averages were then allocated to cemeteries where the 'proportion of land used' was not available. For example, small rural cemeteries were, on average, 37 per cent used, so this figure was applied to other small rural cemeteries for which the 'proportion of land used' was not available. Where data was missing, the Cemeteries and Crematoria Regulation Unit agreed that assigning averages in this manner was the most appropriate method for estimating the proportion of land used. **Values can and should be amended as and when accurate data about an individual cemetery is obtained**.

Table 5 shows the 'average area used' percentages that were applied. An alternative to applying these percentages involved assuming that (in the absence of other information), cemeteries were 50 per cent used. However, it was considered preferable to use estimates based on actual data; that is, the average value where the area used was in fact known, rather than taking a 50:50 approach. All of the average values are close to 50 per cent, so limited possibility exists for large errors when these averages are applied.

Table 5 Average area used (per cent) to be applied in this project

Location	Classification	Average area used (%)
	large	69
	medium	51
	small	53
Metropolitan	all metro	64
	large	61
	medium	51
	small	37
Rural	all rural	41
All cemeteries		**45**

The purpose of determining the 'area used to date' was to calculate the unused plottable area, so that this could be converted to the number of plots.

7.3 The proportion of land available for plots (plottable land)

This is discussed in *Section 6.4 Proportion of plottable land*, above.

7.4 Dealing with multiple results

Where multiple ways of deriving the number of remaining plots existed, the following order of precedence was applied:

- as reported to the department by the trust[17]
- 'proportion of land unused', as provided by cemetery trusts, converted into 'proportion plottable area unused' by multiplying by the proportion of plottable land applicable to the particular cemetery, then converted to number of plots by dividing by plot size
- estimate of 'proportion of land unused', as described above, converted into 'proportion plottable area unused' by multiplying by the proportion of plottable land applicable to the particular cemetery, then converted to number of plots by dividing by plot size.

7.5 Estimating future deaths

In order to estimate how long remaining capacity would last, future deaths (from 2011 to 2035) were required for each LGA. These are not produced by the ABS, so were estimated using:

- **2011 Department of Planning and Community Development** population projections. These are the most recently released projections (although unpublished at the time of writing this report), and estimate population by age (0–85+) and gender for each LGA for each year to 2036.
- **2010 ABS Life Tables for Victoria**.[18] These indicate the probability of dying between age x and age x + 1 for both males and females. For example, the life tables indicate a 0.01 per cent chance that a 10 year old male will die before turning 11, a 0.284 per cent chance that a 50 year old male will die before turning 51, and a 5.672 per cent chance that an 80 year old male will die before turning 81.

To calculate the number of deaths expected in each LGA in each year from 2011 to 2035, the two values above were multiplied for each age/gender group, then the products were added together. An example is shown in Table 6.

[17] As stated earlier, an exception is Lilydale Memorial Park.

[18] Released November 2011.

Table 6 Example of the calculation of expected deaths, Darebin, 2020

Age (years)	Gender	Projected population (A)	Probability of dying at that age (B)	Expected number of deaths (A × B)
0	male	1089.3	0.0043	4.68399
0	female	993.3	0.00367	3.645411
1	male	1006.4	0.00031	0.311984
1	female	961	0.00027	0.25947
2	male	969.7	0.00017	0.164849
2	female	956	0.00018	0.17208
…	…	…	…	…
20	male	795	0.00067	0.53265
20	female	898.7	0.00027	0.242649
21	male	866.9	0.00069	0.598161
21	female	874.1	0.00027	0.236007
22	male	999.2	0.00069	0.689448
22	female	940.1	0.00027	0.253827
…	…	…	…	…
66	male	560.3	0.01243	6.964529
66	female	614.2	0.00726	4.459092
67	male	605.4	0.01368	8.281872
67	female	567.6	0.00799	4.535124
68	male	563.9	0.01502	8.469778
68	female	579.4	0.00883	5.116102
…	…	…	…	…
85+	male	1499.8	0.15243	228.614514
85+	female	2490.5	0.12903	321.349215
All ages	**all**	**144,868.80**	**NA**	**1,217.87**

Appendix 3 Estimated future deaths-requiring-burial 2010–2035 by LGA shows estimated future deaths-requiring burial by LGA for each year from 2010 to 2035. As a point of reference, ABS data indicate that 35,623 Victorians[19] died in 2010, equating to an average of 98 deaths per day. By 2035, estimates indicate that approximately 76,910 deaths will occur for the year, or approximately 211 per day on average (however, this project is interested in deaths-requiring-burial, not all deaths).

7.6 Actual deaths to 2010

The ABS provides data on actual deaths from 2000 to 2010. These are shown alongside the estimated future deaths in Figure 1 below.

[19] People whose state of usual residence was Victoria.

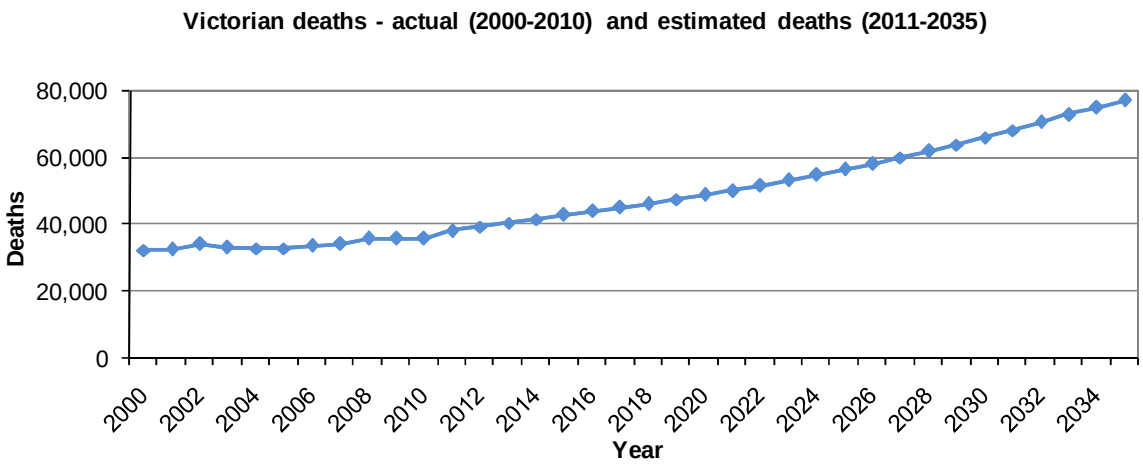

Figure 1 Actual deaths and estimated future deaths

A steady increase is predicted, which can be attributed to the projected population growth, as illustrated below. By 2035, the projected population will be 7.6 million; currently it is approximately 5.5 million, as shown in Figure 2, below.

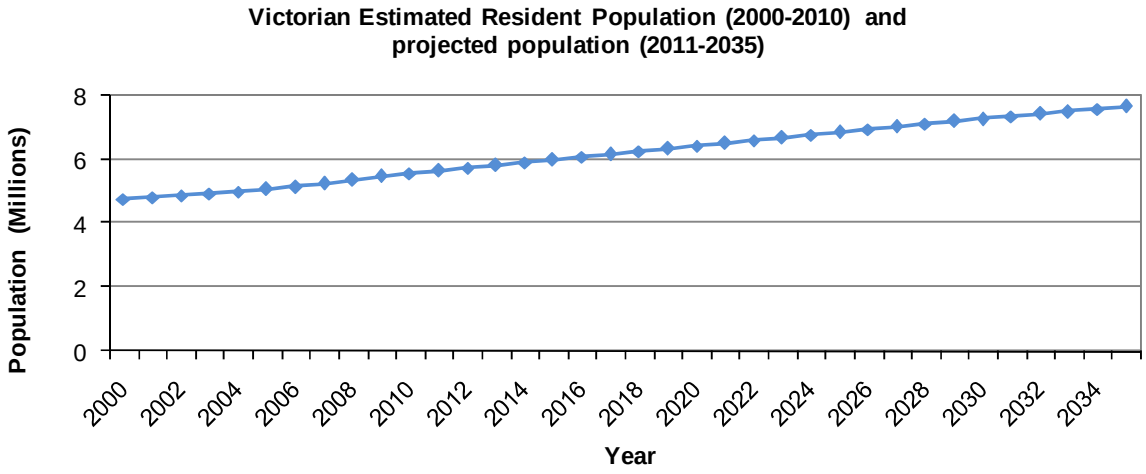

Figure 2 Victorian Estimated Resident Population (ERP) and population projections

The number of deaths per 1,000 population was calculated using actual deaths and population to 2010, and estimated deaths and projected population from 2011 to 2035. These values are shown in Figure 3, below.

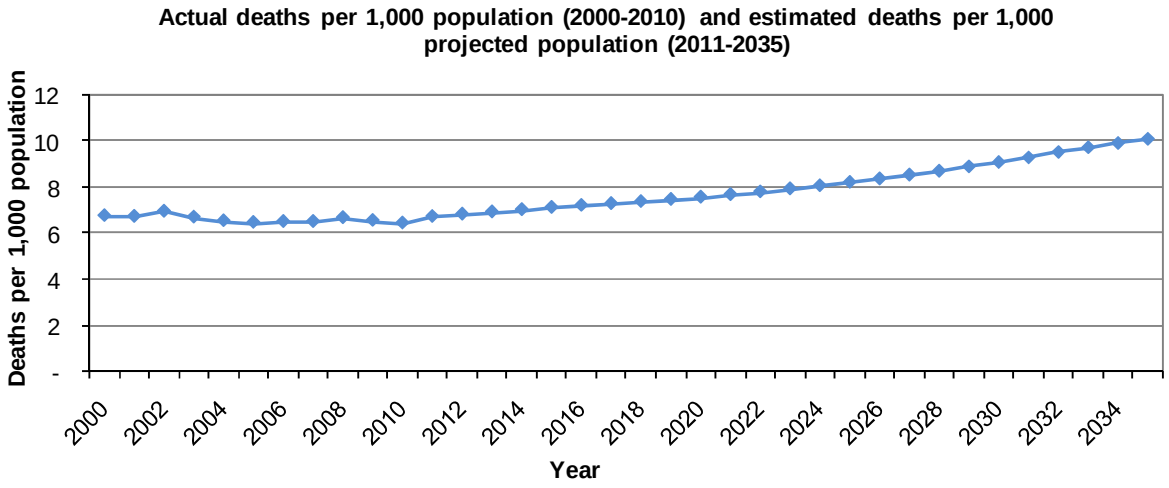

Figure 3 Actual/estimated deaths per 1,000 population/projected population

Figure 3, above, shows an increase from approximately 6.4 deaths per 1,000 in 2010 to 10.1 deaths per 1,000 in 2035. This can be explained by the ageing population; that is, there will be a higher proportion of older people, and older people have a higher likelihood of dying.

Life tables are republished every one to two years, and the probability of dying at each age will likely change between now and 2035. Similarly, population projections are reissued approximately every three to five years. Therefore, the number of deaths in future will probably differ from the estimate; however, this is unlikely to have much effect on the findings of this project. Nevertheless, updated life tables and populations projections should be used in future calculations.

7.7 Allocation of burials to cemeteries

Initially, it was assumed that burial would occur in the deceased person's LGA of their residence. The limitations of this assumption are acknowledged; place of interment is determined by many factors, including culture, religion, family traditions and so on. However, in the absence of data to support a more suitable allocation, it was agreed that this was a reasonable approach. However, it quickly became apparent that the approach would not be possible, because many LGAs had no open cemeteries or a very low number of remaining plots. These are:

- Banyule
- Boroondara
- Brimbank
- Darebin
- Frankston
- Glen Eira
- Kingston
- Maribyrnong
- Maroondah
- Monash
- Port Phillip
- Stonnington
- Whitehorse
- Yarra.

These are all metropolitan LGAs, as shown in 0, below. All rural LGAs have open cemeteries with remaining plots. It was therefore decided that deaths-requiring-burial from an LGA with no open cemetery (or a low very number remaining plots) would be redistributed to LGAs in the same Department of Health region which had a large number of remaining plots. The redistribution of deaths-requiring-burial at the end of 2010 is detailed in Table 7, below.

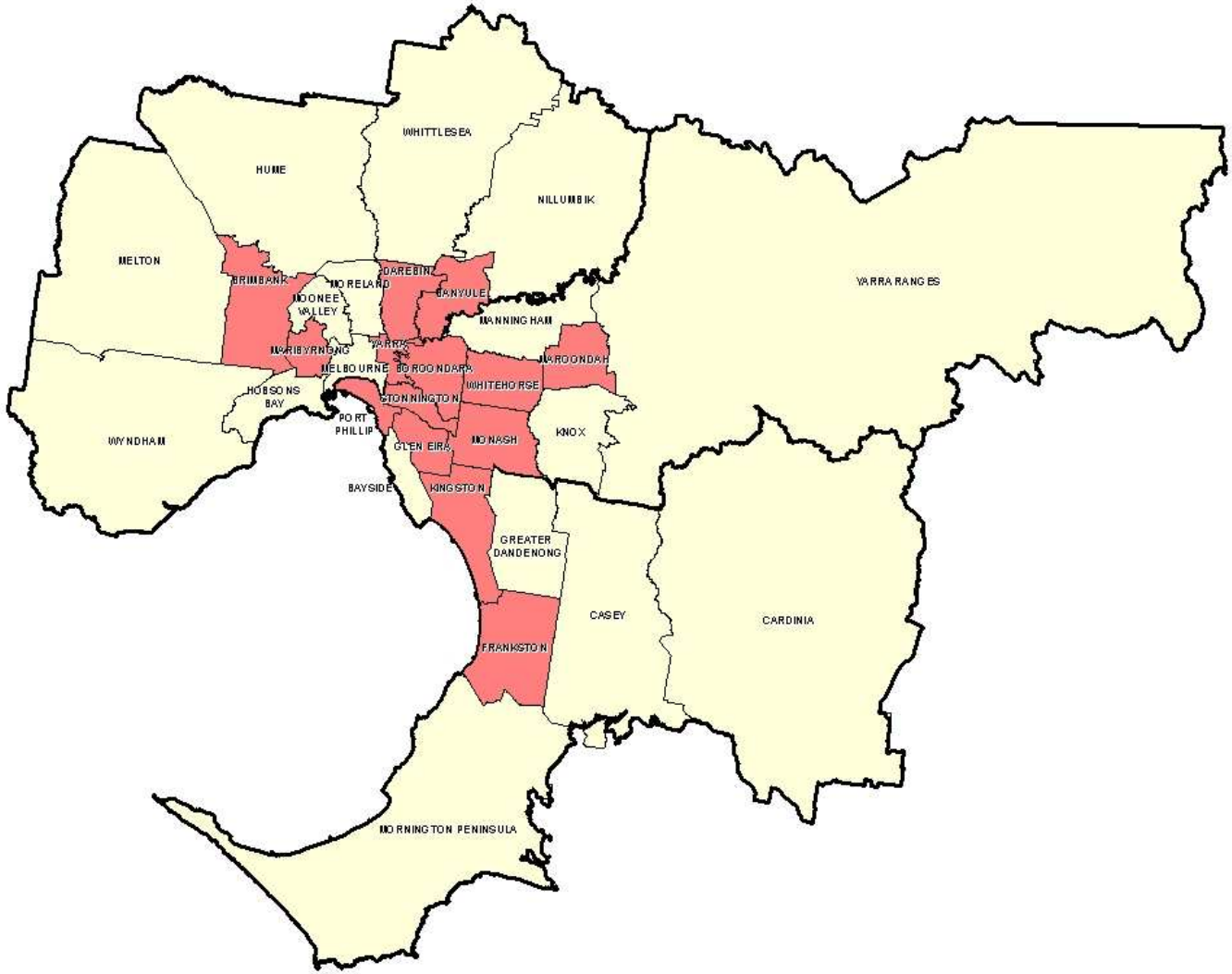

Figure 4 Map of metropolitan Melbourne showing LGAs with no open cemeteries or no remaining plots at end of 2010

Table 7 Redistribution of deaths-requiring-burial at end of 2010

LGA with no open cemetery or a very low number of remaining plots	Department of Health Region	LGA/s to which deaths-requiring-burial will be redistributed
Banyule	North and West	Whittlesea
Boroondara	Eastern	Yarra Ranges
Brimbank	North and West	Melton
Darebin	North and West	Moreland and Whittlesea
Frankston	Southern	Greater Dandenong
Glen Eira	Southern	Greater Dandenong
Kingston	Southern	Greater Dandenong
Maribyrnong	North and West	Hobsons Bay and Melton
Maroondah	Eastern	Yarra Ranges
Monash	Eastern	Yarra Ranges
Port Phillip	Southern	Melton
Stonnington	Southern	Greater Dandenong
Whitehorse	Eastern	Yarra Ranges
Yarra	North and West	Moreland

For most LGAs with no open cemetery or very low number of remaining plots, capacity exists in an adjacent LGA. However, because many of these adjacent LGAs had relatively modest remaining capacity, and that capacity could well have been exhausted in a short period if another LGA's deaths-requiring-burial was allocated to them, this would necessitate a further redistribution to another LGA. Therefore, the model redistributes the deaths-requiring-burial to LGAs with a large number of remaining plots, where in reality, a person could actually choose to be buried closer to their LGA of residence.

8 Review of preliminary findings

Preliminary findings were reviewed by the Cemeteries and Crematoria Regulation Unit. While confirming every value used in the calculation was not practical, checking the values which had the most effect on the overall findings was nevertheless important. This included land sizes exceeding 20 hectares and cemeteries with estimated remaining plots in excess of 20,000.

Where necessary, the relevant component of the calculation (for example, land size, percentage area used and so on) was corrected; this often required contact with the relevant trust.

9 Findings

The key findings of the project are detailed below.

9.1 Situation at the end of 2010

The first part of this section relates to the situation at the end of 2010. That is, the estimated number of remaining plots at the end of 2010.

9.1.1 Estimated remaining plots—metropolitan and rural

It was estimated that at the end of 2010 approximately 3.58 million plots remained in Victoria. Table 8 shows that the majority of these were in rural LGAs.

Table 8 Estimated remaining plots (at end 2010)—metropolitan and rural

Location	Remaining plots at end 2010	Percentage of all Victorian plots
Metropolitan	1,009,616	28.2
Rural	2,569,073	71.8
Total	3,578,690	100.0

9.1.2 Estimated remaining plots by region

Table 9 shows the estimated number of remaining plots, the percentage of remaining plots and the percentage of the Victorian population by Department of Health region at the end of 2010. The region with the fewest remaining plots is Eastern Metropolitan, and the region with the greatest number of plots is North & West Metropolitan. Over 69 per cent of North & West Metropolitan Region's remaining plots are associated with the greenfield sites at Melton and Whittlesea; therefore, they are not currently available.

North & West Metropolitan Region is the anomaly amongst the metropolitan regions—the other metropolitan regions have much fewer plots than any of the rural regions. Unsurprisingly, rural areas have smaller percentages for population, but (with the exception of North & West Metropolitan Region) they have the highest percentage of plots.

Table 9 Estimated remaining plots, remaining land, and population by Department of Health region

Department of Health region	Remaining plots at end 2010	Percentage of all remaining plots	Remaining plottable land (hectares)	Victorian population at 30 June 2010	Percentage of Victorian population
Eastern Metropolitan	83,993	2.3	32.9	1,037,347	18.7
North & West Metropolitan	635,015	17.7	351.8	1,710,473	30.8
Southern Metropolitan	290,608	8.1	131.4	1,329,840	24.0
Barwon-South Western	472,188	13.2	212.5	378,724	6.8
Gippsland	431,102	12.0	200.8	265,990	4.8
Grampians	609,941	17.0	274.5	228,155	4.1
Hume	459,653	12.8	206.8	274,236	4.9
Loddon Mallee	596,190	16.7	268.3	320,397	5.8
Victoria	**3,578,690**	**100.0**	**1,679.1**	**5,545,162**	**100.0**

A map of remaining plots by region is shown 0, below.

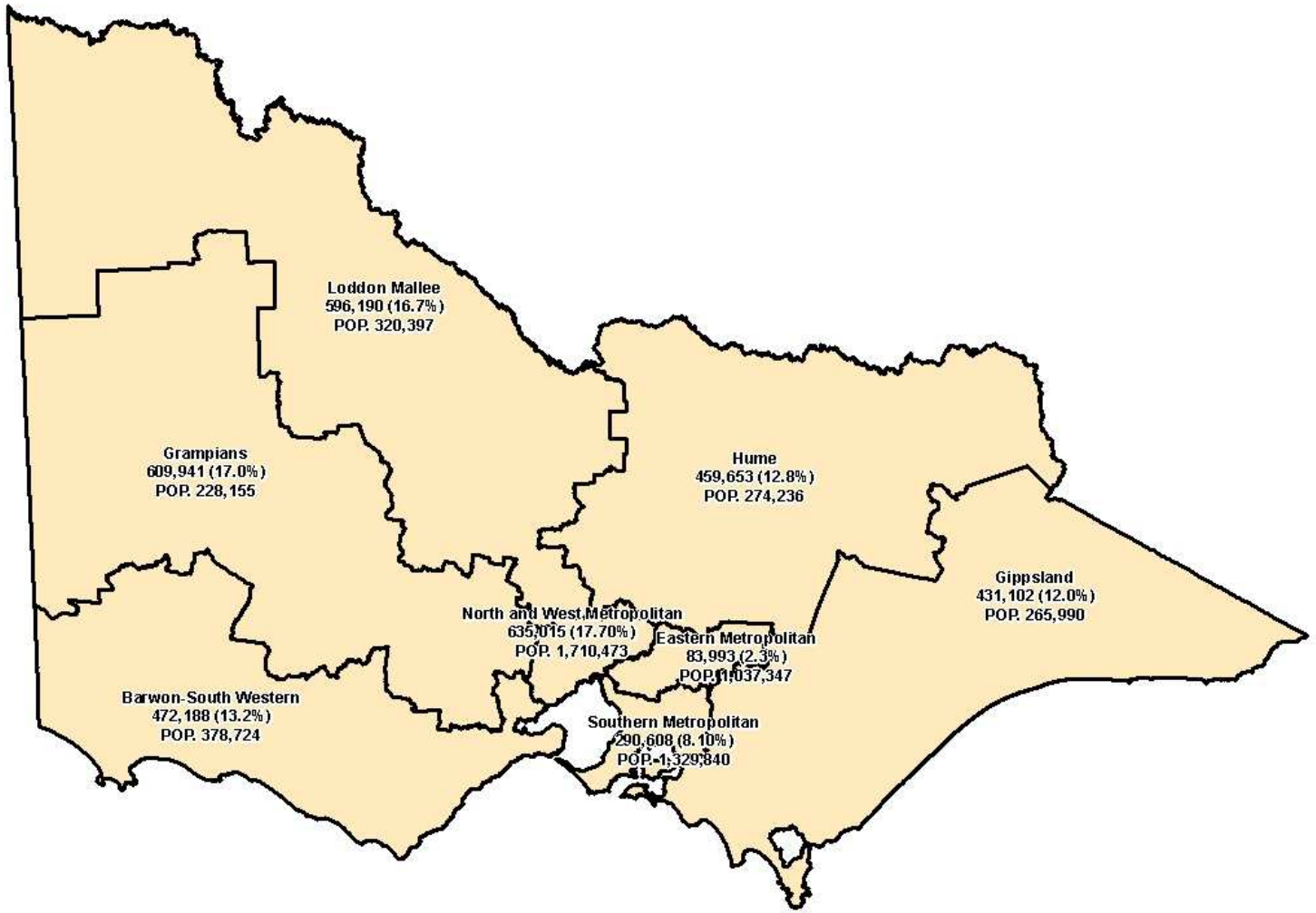

Figure 5 Estimated remaining plots (per cent of all plots) at end of 2010, and Estimated Resident Population (June 30 2010) by Department of Health region

9.1.3 Burial within LGA of residence

As stated previously, residents of 14 metropolitan LGAs cannot be buried within their LGA of residence, because no open cemetery in their LGA exists, or the cemeteries in their LGA have no remaining plots. These are listed in *Section 7.7 Allocation of burials to cemeteries*, and mapped in 0, above.

9.1.4 Estimated remaining plots by LGA

Appendix 4 Estimated remaining plots (at end 2010) by region and LGA shows the estimated remaining plots at the end of 2010 for each of the 79 Victorian LGAs. The number of remaining plots ranges from zero (for several LGAs) to 329,350 (Melton) for metropolitan Melbourne, and 380 (Warrnambool) to 158,255 (Mitchell) for rural Victoria. Melton has the highest percentage (9.2 per cent) of all remaining plots, but nearly all of these are within the 198 hectare undeveloped greenfield site; therefore, they are currently unavailable.

As a reference point, if all remaining plots were distributed equally across each of the 79 LGAs, each LGA would have 45,300 plots, or 1.27 per cent of Victoria's plots. Because population is not distributed evenly across each of the 79 LGAs, no requirement exists for plots to be distributed evenly, but this average number highlights that many LGAs have a low number of plots. This is most notably the case in some of the 31 metropolitan LGAs, including Bayside, Casey, Cardinia, Knox, Manningham, Melbourne, Moonee Valley, Port Phillip and Wyndham: while they do have some remaining plots, they do not have very many.

Maps of remaining plots as a percentage of the total number of plots are included in *Appendix 5 Estimated remaining plots (including percentage of total remaining plots) by LGA (rural) at end 2010* (for rural LGAs) and *Appendix 6 Estimated remaining plots (including percentage of total remaining plots) by LGA (metropolitan) at end 2010.*

9.2 Expected situation at the end of 2035

Having estimated the number of remaining plots at the end of 2010, deaths-requiring-burial were allocated to LGAs as previously described. This part of the findings focuses on the expected situation at the end of 2035.

9.2.1 Total estimated deaths-requiring-burial by the end of 2035

The number of deaths-requiring-burials was estimated using population projections, life tables and burial (compared to cremation) rates. By the end of 2035, the total number of metropolitan deaths-requiring-burial is estimated at 467,921, and the total number of rural deaths-requiring-burial at 301,520. The total number of estimated deaths-requiring-burial from the end of 2010 to the end of 2035 for each LGA is included in *Appendix 77 Plots and estimated deaths-requiring-burial by LGA* alongside the number of remaining plots at the end of 2010. The difference between the two values (plots minus deaths-requiring-burial) is also shown.

9.2.2 LGAs which are expected to exhaust their capacity before 2035

In addition to the 14 LGAs which currently have no open cemeteries or no remaining plots, it was estimated that another 11 LGAs will exhaust their capacity before 2035. These are listed in Table 10 with the year in which capacity is estimated to be fully utilised. Nine of these are in metropolitan Melbourne, two are in rural Victoria. A map of metropolitan LGAs showing estimated run-out year, LGAs with no open cemeteries (or remaining plots), and LGAs with capacity beyond 2035 is also provided in Figure 6 Remaining plots, percentage total plots and plottable land by region, below.

Table 10 LGAs expected to exhaust their capacity before 2035

LGA	Location	Year capacity is estimated to run out
Bayside	Metropolitan	2011
Manningham	Metropolitan	2012
Knox	Metropolitan	2013
Warrnambool	Rural	2013
Moonee Valley	Metropolitan	2016
Wyndham	Metropolitan	2018
Melbourne	Metropolitan	2019
Casey	Metropolitan	2023
Wodonga	Rural	2024
Cardinia	Metropolitan	2029
Yarra Ranges	Metropolitan	2034

9.2.3 Redistribution of deaths-requiring-burial at end of 2035

Because another 11 LGAs will exhaust capacity before 2035, a second redistribution of deaths-requiring-burial was required. Due to the complexity of reallocating deaths-requiring-burial at the time each LGA ran out of plots, this was done only at the end of the 2035. Details are provided in Table 11.

Yarra Ranges, which had a large number of remaining plots at the end of 2010, is expected to run out before 2035. This is due to it receiving a high volume of deaths-requiring-burials from other LGAs in Eastern Region which had no plots to begin with (as shown in Table 7 Redistribution of deaths-requiring-burial at end of 2010).

Table 11 Redistribution of deaths-requiring-burial at end of 2035

LGA with no remaining plots at end of 2035	Location	LGA to which deaths-requiring-burial will be allocated
Bayside	metropolitan	Greater Dandenong
Cardinia	metropolitan	Greater Dandenong
Casey	metropolitan	Greater Dandenong
Knox	metropolitan	Whittlesea
Manningham	metropolitan	Whittlesea
Melbourne	metropolitan	Whittlesea
Moonee Valley	metropolitan	Melton
Warrnambool	rural	Moyne
Wodonga	rural	Towong
Wyndham	metropolitan	Melton
Yarra Ranges	metropolitan	Whittlesea

With the exception of Moyne and Towong in rural Victoria, all of the deaths-requiring-burial were redistributed to three LGAs: Greater Dandenong, Whittlesea and Melton—all of which are expected to have remaining plots at the end of 2035.

Because Eastern Region will have completely run out of plots, deaths-requiring-burial after 2034 were redistributed to Whittlesea in the North & West Metropolitan Region.

By the end of 2035, it is expected that only eight metropolitan LGAs will have any remaining plots, namely:

- Greater Dandenong
- Hobsons Bay
- Hume
- Melton

- Moreland
- Mornington Peninsula
- Nillumbik
- Whittlesea.

In relation to metropolitan Melbourne, the vast majority of remaining plots at the end of 2035 will be in Melton, Greater Dandenong and Moreland.

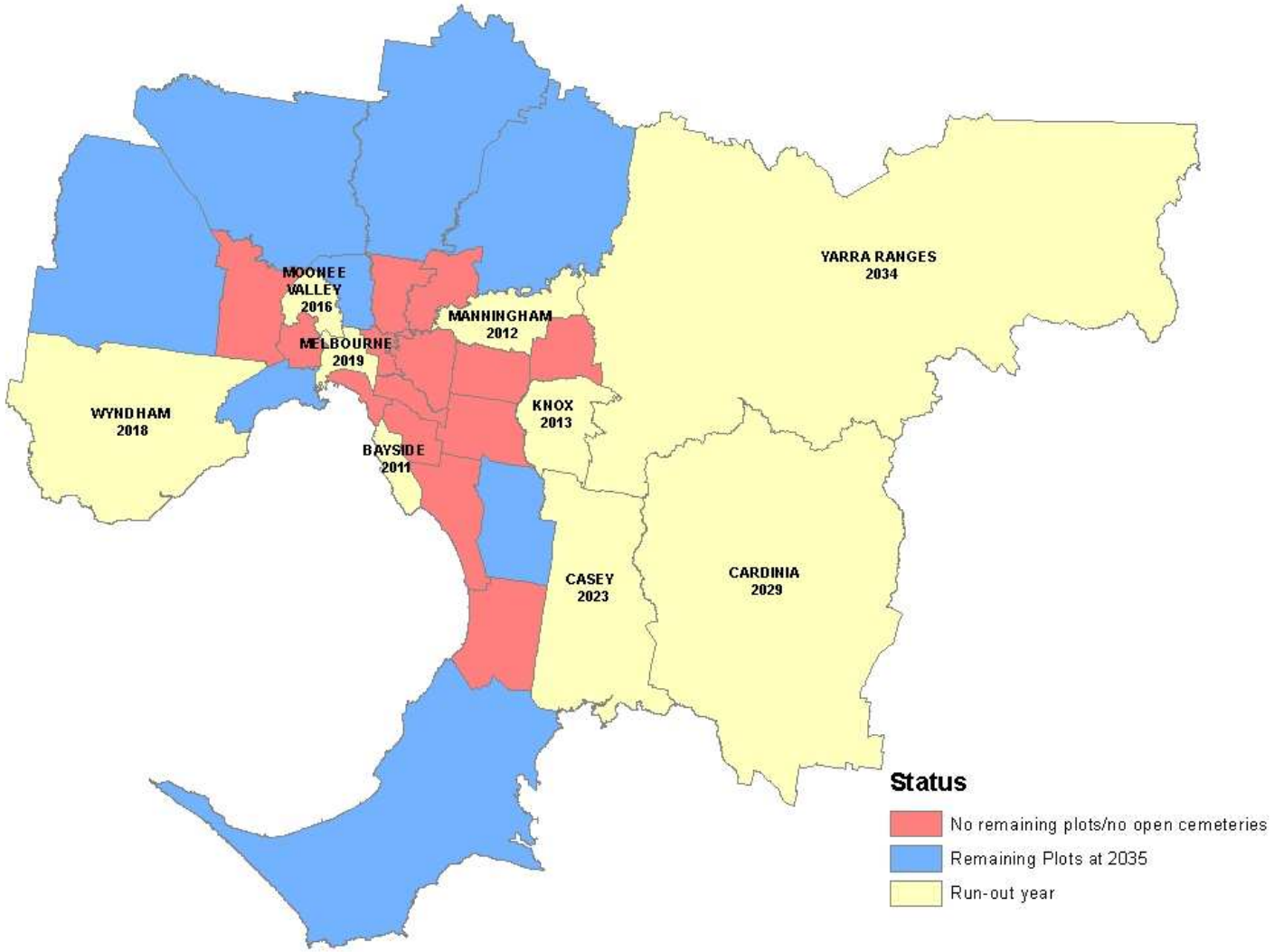

Figure 6 Estimated run-out year—Metropolitan LGAs only

9.2.4 Remaining capacity at the end of 2035

By the end of 2035, it is estimated that approximately 2.8 million plots will remain in Victoria. Table 12, below, shows the number of remaining plots by location (metropolitan or rural) and region. Nearly 80 per cent of these are located in rural Victoria. All rural regions have in excess of 360,000 remaining plots. In the metropolitan area nearly three-quarters of remaining plots are in North & West Metropolitan Region. Eastern Metropolitan Region has no remaining plots.

Table 12 Remaining plots at end of 2035 by Department of Health region

Location	Region	Remaining plots at the end of 2035
Metropolitan	Eastern	0
	North and West	402,824
	Southern	138,871
Metropolitan total		**541,695**
Rural	Barwon South West	395,003
	Gippsland	371,959
	Grampians	564,397
	Hume	403,308
	Loddon Mallee	532,887
Rural total		**2,267,554**
Victoria total		**2,809,249**

Appendix 8 Remaining plots at end of 2035 by region and LGA includes the remaining number of plots at the end of 2035 by LGA and region. It shows 54 LGAs with remaining capacity; 46 of which are in rural Victoria and eight in metropolitan Melbourne. Table 13, below, shows that 22 LGAs are estimated to have in excess of 50,000 plots by the end of 2035. Of the 22 LGAs, three are located in metropolitan areas (Melton, Moreland and Greater Dandenong). Together, these three LGAs will constitute 90.2 per cent of all remaining metropolitan plots at the end of 2035. A large number of these plots are on undeveloped land at Bunurong Cemetery in Greater Dandenong, Melton greenfield site in Melton and Plenty Valley greenfield site in Whittlesea. The remaining 19 LGAs are in rural Victoria.

Table 13 LGAs with more than 50,000 remaining plots at the end of 2035

Location	Region	LGA	Remaining plots at end of 2035
metropolitan	North & West Metropolitan	Melton	259,911
metropolitan	North & West Metropolitan	Moreland	98,767
metropolitan	Southern Metropolitan	Greater Dandenong	129,781
rural	Barwon-South Western	Corangamite	74,173
rural	Barwon-South Western	Glenelg	64,892
rural	Barwon-South Western	Greater Geelong	102,652
rural	Barwon-South Western	Moyne	63,238
rural	Gippsland	Bass Coast	55,859
rural	Gippsland	East Gippsland	88,304
rural	Gippsland	South Gippsland	62,712
rural	Gippsland	Wellington	100,655
rural	Grampians	Ballarat	60,603
rural	Grampians	Golden Plains	56,149
rural	Grampians	Hepburn	50,637
rural	Grampians	Horsham	64,881

Location	Region	LGA	Remaining plots at end of 2035
rural	Grampians	Northern Grampians	105,902
rural	Hume	Mitchell	151,437
rural	Loddon Mallee	Campaspe	61,490
rural	Loddon Mallee	Central Goldfields	70,801
rural	Loddon Mallee	Loddon	82,264
rural	Loddon Mallee	Mildura	80,930
rural	Loddon Mallee	Mount Alexander	57,932

Figure 7 (overleaf) shows these LGAs within a map of Victoria.

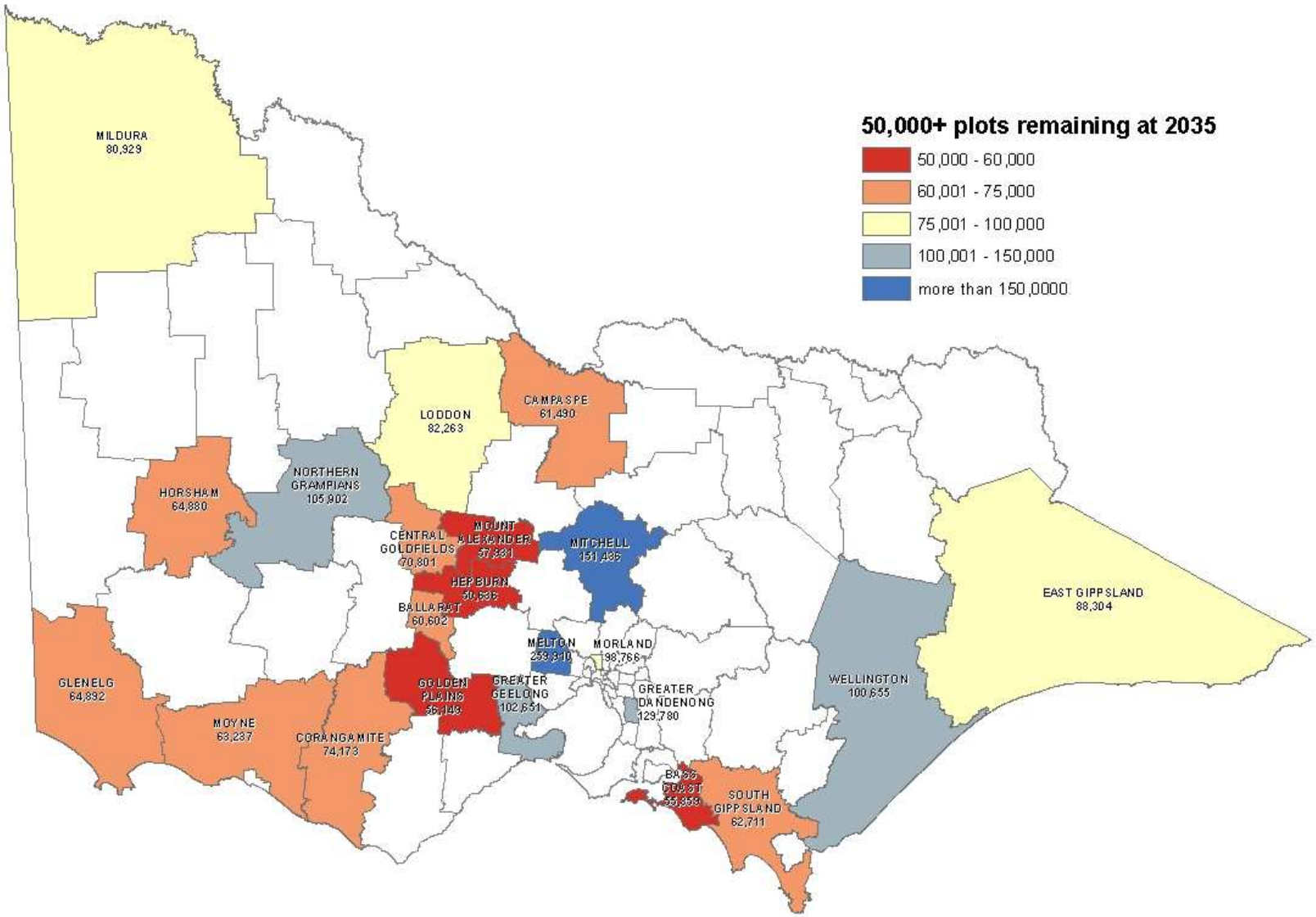

Figure 7 Map of LGAs with more than 50,000 remaining plots at end 2035

9.2.5 Rate of decrease in capacity—Victoria

The average[20] rate of decrease in capacity is estimated to be 0.86 per cent per annum for Victoria between the start of 2011 and the end of 2035. Sufficient remaining cemetery space exists to cater for Victorian burials until well beyond 2035, when approximately 2,809,249 plots will remain. Between the end of 2010 and the end of 2035, approximately 21.5 per cent of current capacity will have been consumed.

9.2.6 Rate of decrease in capacity—metropolitan Melbourne

The average rate of decrease in capacity between the start of 2011 and the end of 2035 is estimated to be 1.85 per cent per annum for metropolitan Melbourne. It is estimated that capacity exists for all metropolitan deaths-requiring-burial to take place somewhere in metropolitan Victoria until at least 2035, when approximately 541,695 plots will still remain. Approximately 52 per cent of these will be in Melton or Whittlesea; therefore, it is important that the two greenfield sites in these LGAs become operational in the near future. This is discussed in more detail in *Section 10 Melton and Whittlesea Greenfield sites.*

9.2.7 Rate of decrease in capacity—rural Victorian

The average rate of decrease in capacity is estimated to be 0.47 per cent per annum for rural Victoria. It is estimated that capacity exists for all rural deaths-requiring-burial to take place somewhere in rural Victoria until beyond 2035, when approximately 2,267,554 plots will still remain.

9.2.8 Rate of decrease in capacity—Department of Health regions

Eastern Metropolitan Region will have no remaining capacity by the end of 2034. Between the start of 2011 and the end of 2034 its capacity will decrease at an average rate of 4.35 per cent per annum.

North & West Metropolitan Region's capacity is decreasing at an average rate of 1.46 per cent per annum, but it will last beyond 2035. (North & West Metropolitan Region is home to both Melton and Whittlesea, so this estimation depends on the two greenfield sites becoming operational in the near future.)

Southern Region's capacity is decreasing at an average rate of 2.1 per cent per annum, but it will also last beyond 2035. Southern Region is home to Bunurong Cemetery, which has approximately 91 hectares of undeveloped land, equivalent to 191,162 plots.

All other Department of Health regions (that is, all rural regions) have capacity well beyond 2035.

9.2.9 Rate of decrease in capacity—LGAs

The average per annum rate of decrease in capacity for LGAs which are not expected to exhaust their capacity before the end of 2035 ranges from 0.09 per cent (Loddon) to 3.23 per cent (Hume and Whittlesea).

For those LGAs which are expected to exhaust their capacity before the end of 2035, the rate of decrease ranges from 4.35 per cent (Yarra Ranges) to 100 per cent[21] (Manningham).

9.2.10 Rate of decrease in capacity—growth area LGAs

At the end of 2010, Cardinia had an estimated 5,780 remaining plots. Its capacity is decreasing at an average rate of 5.6 per cent per annum, and will be fully utilised by the end of 2029. Beyond this time, the model redistributes Cardinia's deaths-requiring-burial to Greater Dandenong.

[20] That is, the decrease in capacity is spread evenly over the 26-year period.

[21] That is, the remaining capacity will run out by the end of 2010.

Casey had 8,692 remaining plots, and its capacity is decreasing at an average rate of 8.3 per cent per annum. Capacity will be fully utilised by the end of 2023. Beyond this time, the model redistributes its deaths-requiring-burial to Greater Dandenong.

Hume has an estimated 20,771 remaining plots. Its capacity is decreasing at an average rate of 3.23 per cent per annum, and will be extend beyond 2035, but only for approximately two years.

Melton owes its large remaining capacity (329,350 plots) to a 198 hectare greenfield site. Assuming that the greenfield site becomes operational, Melton's capacity is decreasing at an average rate of 0.84 per cent per annum.

Whittlesea also has a large greenfield site which contributes an estimated 100,000 plots to its total of 113,115 remaining plots. Its rate of decrease in capacity is 3.23 per cent, and its capacity will extend beyond 2035. However, because it is accommodating deaths-requiring-burial from Eastern Metropolitan Region, capacity is not expected to last beyond 2036 if this situation persists. Whittlesea has two already-established cemeteries and these will ensure that Whittlesea has ongoing capacity for the medium term.

Wyndham's capacity of 2,439 plots will decrease at an average rate of 14.3 per cent per annum, and capacity will be fully utilised by the end of 2018. Beyond this time, the model redistributes its deaths-requiring-burial to Melton.

9.2.11 Rate of decrease in capacity—individual cemeteries

Estimating the rate of capacity decrease for individual cemeteries was not feasible. This was primarily due to the large number of cemeteries, but also because the current data do not provide a valid methodology for distributing an LGA's deaths-requiring-burial across cemeteries.

10 Melton and Whittlesea Greenfield sites

As previously mentioned, both Melton and Whittlesea LGAs have large greenfield sites. While they are not currently operating, this model treated them as though they are operating, and that deaths-requiring-burial can be allocated to them. Similarly, approximately 91 hectares of undeveloped land are available in Bunurong Cemetery in Greater Dandenong, and 57 hectares of undeveloped land in Fawkner Northern Memorial Park in Moreland, to which deaths-requiring-burial were allocated.

In addition to Bunurong Cemetery and Fawkner Northern Memorial Park, a large number of other cemeteries include areas of undeveloped land. However, these areas are typically dispersed among developed areas, and are generally considerably smaller.[22] Bunurong and Fawkner are highlighted because the areas are large and distinct from the developed areas within these cemeteries. They are also in the metropolitan area, where ongoing capacity is limited compared to rural Victoria.

Table 14 shows the number of deaths-requiring-burial accommodated by these four LGAs between the end of 2010 and the end of 2035.

Table 14 Deaths-requiring-burial accommodated in Greater Dandenong, Melton, Moreland and Whittlesea

LGA	Deaths-requiring-burial accommodated to end 2035
Greater Dandenong	111,170
Melton	69,439
Moreland	29,764
Whittlesea	91,315
Total	**301,689**

The model estimates that between the end of 2010 and the end of 2035, Melton, Whittlesea, Greater Dandenong and Moreland LGAs will have accommodated a total of 301,689 deaths-requiring-burial, which is 39.2 per cent of all Victorian deaths-requiring-burial, and 64.5 per cent of all **metropolitan** deaths-requiring-burial.

The two greenfield sites, and the undeveloped land at Bunurong Cemetery and Fawkner Northern Memorial Park, had capacity for approximately 691,000 plots at the end of 2010. The development of one or more of these cemeteries/sites, as well as full development and utilisation of all other undeveloped land in all cemeteries in metropolitan Melbourne, is critical to ensuring ongoing burial capacity in the metropolitan area.

[22] An exception is Lilydale Memorial Park, which has approximately 22 hectares of undeveloped land. It is estimated that this will be used prior to 2035, because the cemetery accommodates the majority of deaths-requiring-burial for the Eastern region.

11 Recommendations for further analysis

As previously stated, this is the first time this exercise has been attempted. Work undertaken by the VGV, as well as various surveys and contact with the trusts, provided an accurate picture of several cemeteries, including most of the cemeteries with high burial activity. However, for some cemeteries data quality was limited, and the use of estimated values where actual values were unavailable may have led to a miscalculation of remaining capacity. Similarly, the assumptions used in the model, such as burial rates, plot size and interments per plot, may have impacted the accuracy of the results.

Ongoing data collection is planned. This will enable estimated values to be replaced with actual values, and for records to be updated to reflect change over time.

The model was developed using MS Excel, which allows refinement of records and assumptions as cemetery related activity changes, or new information becomes available.

The following activities are recommended:

1. A review of cemeteries within LGAs which are identified as running out of capacity. Priority should be given to LGAs with higher annual burial activity and those where capacity is expected to run out in the near future. For each cemetery within the LGA, the review should verify:
   - actual land size
   - proportion of land used
   - actual amount of remaining plottable land (or preferably, the actual number of remaining plots, if available).

   Existing data should be updated, as discussed below. Particular attention should be paid to Preston Cemetery, part of a Class A trust in Darebin, which reportedly has no remaining plots.
2. Ongoing correction to and updating of existing data, including:
   - actual land size
   - proportion/amount land used
   - number of remaining plots (for example, as reported by the relevant trust).
3. Creation of new records for the cemeteries that were excluded from the analysis because of missing data (refer to *Appendix 2 Excluded cemeteries*), and their inclusion in the analysis.
4. Creation of new records for cemeteries not identified during this exercise, or newly established cemeteries, or re-opened cemeteries, and their inclusion in the analysis.
5. Evaluation and/or refinement of assumptions applied, including:
   - the proportion of land available for plots (the assumption is based on classification of cemetery—small, medium, large—and ranges from 60 per cent for large cemeteries to 80 per cent for small cemeteries)
   - following the amendment of any records, recalculation and reapplication of average of proportions of land used for each classification of cemetery (as described in *Section 7.2.1 Estimating the proportion of land used*)
   - number of burials per plot
   - rates of burial compared to cremation.
6. Re-estimation of annual deaths by LGA by applying ABS mortality rates (‘life tables’) as these become available each year. Because the change to mortality rates is minimal from year to year, this could be done on a less frequent basis; for example, every five years. Also, new population projections become available every five years (approximately), and these should be used in the re-estimation of annual deaths by LGA.

7. While neither Moreland or Whittlesea will run out of plots by the end of 2035, the model reveals that at the end of 2035 Moreland has considerably more remaining plots than Whittlesea. The redistribution of deaths-requiring-burial within the North & West Metropolitan Region could be changed so that Moreland receives a higher proportion than Whittlesea (which also receives redistributed deaths-requiring-burial from Eastern Region once it runs out).

11.1 Other considerations

Some of the estimated remaining plots are from the yet-to-be-developed Plenty Valley greenfield site in Whittlesea, and the yet-to-be-developed greenfield site in Melton. For the purpose of this model, they were treated as though they are operational. To this end, each site accommodates deaths-requiring-burial from the LGA itself, as well as redistributed deaths from other metropolitan LGAs. If they do not commence operation within the next 5–10 years (approximately), the estimations for all metropolitan LGAs distributing deaths-requiring-burial to Melton and Whittlesea will not be valid, and consequently, the estimates for North & West Metropolitan Region will also be invalid.

12 Summary and conclusions

Victoria has more than 500 cemeteries, most of which are located in rural areas. A detailed analysis of the most active cemeteries by the VGV provided a strong basis for the estimation of remaining capacity. Survey data about a large number of cemeteries further contributed to the project. However, for other cemeteries, limited data necessitated the use of average values in place of actual values, and this will affect the estimation of remaining plots. However, because this is the first time any attempt has been made to estimate remaining capacity, delaying the project while missing data were pursued was impractical. Opportunities exist for improving the accuracy of the model via ongoing data collection and data validation activities.

A range of assumptions was applied in the development of the model, and these have tended to be conservative, in order to create a worst-case-scenario result. For example, the number of interments per plot were underestimated, but this was done in the absence of more accurate information. Furthermore, at least 100 cemeteries are excluded from the analysis due to lack of data.

Preliminary results suggest that Victoria has adequate burial capacity beyond 2035. Metropolitan Melbourne will be heavily reliant on large cemeteries in LGAs such as Melton, Whittlesea, Greater Dandenong and Yarra Ranges. A large number of metropolitan LGAs already have no open cemeteries, and this number will increase in coming years. Providing that land in existing cemeteries is developed, and two greenfield sites begin operation as cemeteries, both metropolitan and rural capacity will extend beyond 2035.

13 References

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RSM Bird Cameron August 2002, *Evaluation of the Financial Viability of Victoria's Cemeteries and Development of Fee Models*, prepared for the Department of Human Services.

Appendices

Appendix 1 Cemeteries analysed by VGV

Cemetery name	Trust name
Andersons Creek	Greater Metropolitan Cemeteries Trust
Axedale	Bendigo Cemeteries Trust
Ballarat New	Ballarat General Cemeteries Trust
Ballarat Old	Ballarat General Cemeteries Trust
Barrabool Hills	Geelong Cemeteries Trust
Bendigo	Bendigo Cemeteries Trust
Brighton	Southern Metropolitan Cemeteries Trust
Bunurong	Southern Metropolitan Cemeteries Trust
Cheltenham Memorial Park	Southern Metropolitan Cemeteries Trust
Cheltenham Pioneer	Southern Metropolitan Cemeteries Trust
Coburg	Greater Metropolitan Cemeteries Trust
Dandenong	Southern Metropolitan Cemeteries Trust
Drysdale	Geelong Cemeteries Trust
Eaglehawk	Bendigo Cemeteries Trust
Emerald Macclesfield	Greater Metropolitan Cemeteries Trust
Fawkner	Greater Metropolitan Cemeteries Trust
Fawkner Northern Memorial Park	Greater Metropolitan Cemeteries Trust
Flinders Memorial Park	Geelong Cemeteries Trust
Geelong Eastern	Geelong Cemeteries Trust
Geelong Memorial Park	Geelong Cemeteries Trust
Geelong Western	Geelong Cemeteries Trust
Grovedale	Geelong Cemeteries Trust
Healesville	Greater Metropolitan Cemeteries Trust
Kangaroo Flat	Bendigo Cemeteries Trust
Keilor	Greater Metropolitan Cemeteries Trust
Leopold	Geelong Cemeteries Trust
Lilydale Lawn	Greater Metropolitan Cemeteries Trust
Melbourne General	Greater Metropolitan Cemeteries Trust
Mt Duneed	Geelong Cemeteries Trust
Port Arlington	Geelong Cemeteries Trust
Springvale	Southern Metropolitan Cemeteries Trust
St Kilda	Southern Metropolitan Cemeteries Trust
Templestowe	Greater Metropolitan Cemeteries Trust
Werribee	Greater Metropolitan Cemeteries Trust
White Hills	Bendigo Cemeteries Trust
Yan Yean	Greater Metropolitan Cemeteries Trust
Yarra Glen	Greater Metropolitan Cemeteries Trust

Appendix 2 Excluded cemeteries

Cemeteries identified in the annual burial dataset excluded from the analysis.

Cemetery name[23]	Primary reason for exclusion	Secondary reason for exclusion (if applicable)
Aberfeldy	closed	
Adass Israel	no survey data	
Alma	no/minimal burial activity	no survey data
Apsley	no/minimal burial activity	no survey data
Barkly	closed	
Bendoc	no/minimal burial activity	no survey data
Boinka	no/minimal burial activity	no survey data
Boorhaman	no/minimal burial activity	no survey data
Boroondara (Kew)	closed	
Box Hill	closed	
Bridgewater (Old)	closed	
Brimpaen	no/minimal burial activity	no survey data
Brimpaen Cemetery Trust	duplicate record	
Buckland	no/minimal burial activity	no survey data
Bullarto	no/minimal burial activity	no survey data
Burramine	no land data	
Cape Clear	no/minimal burial activity	no survey data
Cape Otway	closed	
Caramut	no/minimal burial activity	no survey data
Cassilis	closed	
Casterton (Old)	closed	
Chiltern (Old)	closed	
Corack	no/minimal burial activity	no survey data
Cowangie	no/minimal burial activity	no survey data
Deans Marsh	no burial data	
Derrinallum	no/minimal burial activity	no survey data
Dunolly (Old)	closed	
Edenhope	no burial data	no survey data
Elaine Cemetery Trust	duplicate record	
Elmore Cemetery Trust	duplicate record	
Eltham	closed	
Emerald (Nangana)	known by another name	
Ensay Cemetery Trust	duplicate record	
Epping	closed	
Epping Cemetery Trust	duplicate record	
Eureka (Chinkapook)	no/minimal burial activity	no survey data
Euroa Cemetery Trust	duplicate record	
Flinders Cemetery	duplicate record	
Footscray	closed	
Footscray Cemetery Trust	duplicate record	

[23] As entered in the annual burial dataset.

Cemetery name[23]	Primary reason for exclusion	Secondary reason for exclusion (if applicable)
Foster Cemetery Trust	duplicate record	
Franklinford Cemetery Trust	duplicate record	
Frankston	closed	
Frankston Cemetery Trust	duplicate record	
French Island Cemetery Trust	duplicate record	
Garvoc Cemetery Trust	duplicate record	
Gembrook Cemetery Trust	duplicate record	
Gippsland Memorial Park & Cemetery (Traralgon)	duplicate record	
Gisborne Cemetery Trust	duplicate record	
Glen Wills Cemetery	duplicate record	
Glenaladale Cemetery	duplicate record	
Glendaruel Cemetery Trust	duplicate record	
Glengower Cemetery Trust	duplicate record	
Glenlogie (see Amphitheatre)	known by another name	
Glenlyon Cemetery Trust	duplicate record	
Glenmaggie Cemetery Trust	duplicate record	
Glenpatrick	closed	
Glenpatrick Cemetery Trust	duplicate record	
Glenthompson Cemetery Trust	duplicate record	
Gobur Cemetery Trust	duplicate record	
Goornong Cemetery Trust	duplicate record	
Gordon Old	closed	
Gormandale Cemetery Trust	duplicate record	
Goroke	closed	
Goroke Cemetery Trust	duplicate record	
Grantville Cemetery Trust	duplicate record	
Great Western Cemetery Trust	duplicate record	
Green Hill Cemetery Trust	no/minimal burial activity	no survey data
Green Lake Cemetery Trust	no/minimal burial activity	no survey data
Greendale	duplicate record	
Greensborough (see Warringal)	known by another name	
Greta Cemetery Trust	duplicate record	
Gulwarra Heights Memorial Park	no burial data	
Hamilton Cemetery Trust	duplicate record	
Harkaway Cemetery Trust	duplicate record	
Harrietville Cemetery Trust	duplicate record	
Harrow Cemetery Trust	duplicate record	
Havilah	no/minimal burial activity	no survey data
Hawkesdale Cemetery Trust	duplicate record	
Healesville	closed	
Heathcote Cemetery Trust	duplicate record	
Jamieson Cemetery Trust	no/minimal burial activity	no survey data
Jericho Cemetery Trust	closed	
Jung (Jerro) Public Cemetery	duplicate record	
Kangaroo Ground Public Cemetery	duplicate record	
Karnak Public Cemetery	duplicate record	

Cemetery name[23]	Primary reason for exclusion	Secondary reason for exclusion (if applicable)
Katamatite Public Cemetery	duplicate record	
Katandra Public Cemetery	duplicate record	
Katyil Public Cemetery	duplicate record	
Kilnoorat	no/minimal burial activity	no survey data
Lake Bolac Public Cemetery	duplicate record	
Lake Rowan Public Cemetery	duplicate record	
Landsborough Cemetery Trust	duplicate record	
Lethbridge Cemetery Trust	no/minimal burial activity	no survey data
Loch Ard Cemetery Trust	no/minimal burial activity	no survey data
Maddingley Cemetery Trust	duplicate record	
Mallacoota Cemetery Trust	no/minimal burial activity	no survey data
Maramingo (see Gipsy Point)	duplicate record	
Marnoo (see Gray's Bridge)	known by another name	
Maryborough	no survey data	
Matlock Cemetery	no/minimal burial activity	no survey data
Melbourne Chevra Kadisha Cemetery Trust	no survey data	
Melbourne Chevra Kadisha Public Cemetery (Noble Park)	no survey data	
Merino Cemetery Trust	no/minimal burial activity	no survey data
Merton	no/minimal burial activity	no survey data
Merton Cemetery Trust	duplicate record	
Millers Hill Cemetery	no burial data	no survey data
Minimay	no/minimal burial activity	no survey data
Minyip Cemetery Trust	no/minimal burial activity	no survey data
Mitiamo Cemetery Trust	no/minimal burial activity	no survey data
Moonlight Head Cemetery Trust	closed	
Mortlake Cemetery Trust	no land data	
Morwell (see Hazelwood)	known by another name	
Moyston Cemetery Trust	no/minimal burial activity	no survey data
Nagambie Cemetery Trust	no land data	
Nangana (see Emerald)	no/minimal burial activity	no survey data
Nillumbik (Diamond Creek)	closed	
Northcote	closed	
Oakleigh Cemetery Trust	closed	
Outtrim Cemetery Trust	closed	
Polkemmet Cemetery Trust	no/minimal burial activity	no survey data
Pompapiel Cemetery Trust	no/minimal burial activity	no survey data
Portland North (Old)	closed	
Pyalong	closed	
Quambatook	closed	
Queenstown Cemetery Trust	closed	
Red Jacket	closed	
Ripplebrook	no/minimal burial activity	no survey data
Sanford	no/minimal burial activity	no survey data
Smythesdale Cemetery Trust	closed	
Surf Coast Cemeteries Trust	duplicate record	

Cemetery name[23]	Primary reason for exclusion	Secondary reason for exclusion (if applicable)
Tarrayoukyan Cemetery Trust	no/minimal burial activity	no survey data
Thoona Cemetery Trust	no/minimal burial activity	no survey data
Toolamba Cemetery Trust	closed	
Torrumbarry (see Patho)	known by another name	
Truganina	only part of the site can be used for cemetery purposes due to rare flora	
Upper Regions (Wail)	no/minimal burial activity	no survey data
Vaughan Cemetery Trust	no/minimal burial activity	no survey data
Wahgunyah	no/minimal burial activity	no survey data
Wahgunyah Public Cemetery	duplicate record	
Wangaratta East	no burial data	no survey data
Warburton (see Upper Yarra)	closed	
Warringal	closed	
Wedderburn Cemetery Trust	closed	
Welshman's Reef (Mt Alexander Shire Council)	closed	
Whroo Public Cemetery	closed	
Wilby	no burial data	
Winchelsea Surf Coast Shire Council	duplicate record	
Woomelang Cemetery Trust	no land data	
Yabba Cemetery Trust	no land data	
Yackandandah Cemetery Trust	no survey data	
Yaugher Cemetery Trust	no survey data	
Yea Shire of Murrindindi	closed	

Appendix 3 Estimated future deaths-requiring-burial 2010–2035 by LGA

Region	LGA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	LGA total
Hume	Alpine (S)	89	87	90	93	96	100	103	106	109	112	116	120	124	128	133	138	143	147	152	157	163	169	175	180	185	189	3403
Grampians	Ararat (RC)	91	75	77	79	82	84	86	88	89	91	93	95	97	99	102	104	107	110	113	116	119	122	125	128	131	134	2638
Grampians	Ballarat (C)	532	487	505	523	541	559	577	596	614	634	655	677	701	726	752	779	807	838	869	902	937	972	1014	1053	1090	1127	19469
North and West	Banyule (C)	412	488	498	507	517	526	535	542	549	558	566	576	588	600	613	627	641	658	674	693	713	734	756	776	795	814	15956
Gippsland	Bass Coast (S)	215	221	230	238	246	255	264	271	280	288	297	307	317	328	340	352	365	380	395	411	427	444	464	484	502	520	8842
Gippsland	Baw Baw (S)	230	223	233	244	254	265	276	285	295	306	317	328	342	355	369	384	399	415	431	448	465	483	503	520	537	553	9460
Southern Metro	Bayside (C)	414	465	468	470	472	474	475	475	476	478	479	482	488	494	501	508	516	529	542	557	572	588	606	623	638	654	13444
Hume	Benalla (RC)	109	101	104	107	109	112	115	117	120	123	126	129	132	136	140	144	148	153	158	163	169	175	182	188	194	201	3654
Eastern Metro	Boroondara (C)	542	685	687	689	690	691	692	690	689	689	689	690	695	701	707	715	723	737	752	768	786	804	828	849	869	890	18947
North and West	Brimbank (C)	471	489	515	540	565	591	617	640	663	688	713	739	766	794	823	852	883	917	951	987	1024	1063	1108	1151	1192	1233	20975
Loddon Mallee	Buloke (S)	67	56	57	59	60	62	63	64	65	65	66	67	69	70	71	73	75	76	78	80	82	84	85	87	88	89	1855
Loddon Mallee	Campaspe (S)	246	230	236	241	247	253	259	266	272	279	287	295	304	314	324	334	345	357	370	383	397	411	425	438	449	461	8423
Southern Metro	Cardinia (S)	178	188	200	213	226	239	251	265	279	293	307	322	338	354	370	386	403	421	439	457	476	496	516	535	553	571	9280
Southern Metro	Casey (C)	547	527	559	591	622	654	686	722	758	795	833	872	915	959	1004	1050	1097	1151	1205	1262	1320	1379	1449	1517	1582	1647	25703
Loddon Mallee	Central Goldfields (S)	122	99	102	106	109	113	117	119	122	125	128	132	135	139	143	147	152	156	160	165	170	175	180	185	189	193	3681
Barwon S/W	Colac-Otway (S)	145	131	135	140	144	149	154	158	163	167	172	177	182	187	192	198	204	210	216	223	231	238	246	253	259	265	4939
Barwon S/W	Corangamite (S)	109	104	107	110	114	117	121	124	127	130	133	137	141	144	148	152	157	160	164	168	173	177	182	186	190	193	3769
North and West	Darebin (C)	484	541	548	556	562	570	577	579	582	586	590	596	600	604	610	616	623	628	633	641	648	656	668	678	686	695	15760
Gippsland	East Gippsland (S)	322	297	307	318	329	340	351	362	374	386	398	412	427	442	459	475	493	511	530	551	571	593	616	638	658	678	11836
Southern Metro	Frankston (C)	409	423	434	445	456	467	478	491	504	518	532	547	563	580	598	616	635	656	677	700	723	747	773	797	820	843	15431
Loddon Mallee	Gannawarra (S)	88	79	81	83	84	86	88	89	90	92	93	95	96	98	100	102	105	107	109	111	114	117	119	122	123	125	2597
Southern Metro	Glen Eira (C)	471	609	609	608	607	606	605	601	598	596	594	594	599	606	613	622	631	642	653	667	681	696	719	741	762	783	16515

Region	LGA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	LGA total
Barwon S/W	Glenelg (S)	127	124	127	130	134	137	141	144	148	152	156	161	166	170	176	181	187	193	199	205	212	219	227	235	242	250	4544
Grampians	Golden Plains (S)	60	58	61	64	67	70	73	77	81	85	89	94	99	105	111	117	123	130	137	145	152	160	169	177	185	193	2884
Loddon Mallee	Greater Bendigo (C)	544	539	553	568	583	599	615	632	649	668	687	708	731	755	779	805	833	863	893	926	959	994	1033	1069	1104	1137	20227
Southern Metro	Greater Dandenong (C)	449	464	482	499	516	533	550	565	580	596	613	630	646	663	681	699	718	737	755	777	798	820	845	868	888	908	17280
Barwon S/W	Greater Geelong (C)	1233	1251	1289	1327	1366	1407	1446	1484	1524	1564	1607	1656	1706	1758	1813	1871	1932	1994	2057	2125	2196	2272	2354	2428	2498	2566	46724
Hume	Greater Shepparton (C)	284	308	320	331	343	355	367	378	389	400	412	426	439	452	467	482	498	514	529	546	564	582	601	618	634	649	11888
Grampians	Hepburn (S)	92	91	94	97	100	103	107	109	112	115	118	121	125	128	132	136	141	145	150	155	161	166	172	177	182	187	3417
Grampians	Hindmarsh (S)	64	57	58	58	58	58	59	59	59	59	59	60	60	61	61	62	63	63	64	65	67	68	69	70	71	72	1625
North and West	Hobsons Bay (C)	289	299	306	313	320	327	334	340	347	354	361	370	376	384	392	400	408	417	426	436	446	457	469	481	491	502	10046
Grampians	Horsham (RC)	123	117	120	123	125	128	131	133	136	139	142	146	149	152	156	160	164	169	174	179	184	190	196	202	208	213	4060
North and West	Hume (C)	356	341	362	384	405	427	449	474	499	524	550	577	607	637	669	701	734	772	810	849	889	930	979	1026	1071	1116	17137
Hume	Indigo (S)	81	80	83	87	90	93	96	99	103	106	110	114	117	121	125	129	133	139	144	149	155	161	168	174	180	186	3221
Southern Metro	Kingston (C)	538	596	610	623	636	649	661	673	685	698	711	726	741	756	773	791	809	829	849	872	895	920	946	970	991	1013	19960
Eastern Metro	Knox (C)	435	448	470	492	514	536	557	581	605	631	656	682	711	741	772	804	836	873	909	948	989	1030	1076	1119	1159	1199	19775
Gippsland	Latrobe (C)	395	374	386	397	408	420	432	445	458	472	486	502	520	538	557	577	598	620	643	667	692	718	747	774	800	825	14450
Loddon Mallee	Loddon (S)	55	60	61	62	63	64	65	66	67	68	69	70	71	72	74	75	77	77	78	79	80	82	84	86	88	90	1886
Loddon Mallee	Macedon Ranges (S)	153	173	181	189	197	205	213	222	231	240	249	259	271	283	296	309	322	338	354	370	387	403	423	442	459	477	7643
Eastern Metro	Manningham (C)	367	465	485	505	525	545	565	586	607	630	652	676	699	722	746	772	797	816	834	855	877	900	918	932	944	956	18377
Hume	Mansfield (S)	43	43	44	46	48	50	52	54	56	58	60	62	64	66	69	71	74	78	81	85	89	93	98	102	106	110	1803
North and West	Maribyrnong (C)	206	227	226	226	226	226	225	222	220	218	216	214	212	209	207	206	204	204	204	204	204	205	209	212	216	219	5566
Eastern Metro	Maroondah (C)	384	394	409	423	438	452	466	481	495	511	526	543	560	578	597	617	637	659	680	704	728	753	781	807	830	854	15308
North and West	Melbourne (C)	141	165	168	172	175	179	183	189	194	200	207	213	223	233	243	254	264	279	294	310	326	342	363	384	404	424	6529
North and West	Melton (S)	177	183	211	239	266	294	322	352	382	413	444	476	511	546	582	619	657	696	735	776	818	860	908	953	996	1039	14454

Region	LGA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	LGA total
Loddon Mallee	Mildura (RC)	283	278	286	295	304	313	322	330	338	346	354	364	373	383	394	405	417	428	439	451	464	477	493	508	522	535	10103
Hume	Mitchell (S)	133	126	133	141	149	157	166	176	188	199	211	223	238	253	269	285	301	320	339	359	379	400	421	442	462	482	6952
Hume	Moira (S)	202	196	202	207	212	218	223	229	236	242	249	257	264	271	279	287	296	306	315	325	336	347	359	370	381	391	7201
Eastern Metro	Monash (C)	564	693	710	726	743	760	777	788	800	814	827	843	853	863	876	890	904	912	920	931	942	955	965	971	974	978	21981
North and West	Moonee Valley (C)	383	437	446	454	462	471	479	485	492	500	508	517	524	532	541	550	560	568	577	587	598	609	623	635	646	656	13841
Grampians	Moorabool (S)	121	118	125	131	138	144	151	158	165	172	180	187	196	204	213	221	231	242	254	266	278	291	304	317	329	341	5475
North and West	Moreland (C)	573	584	594	602	611	620	629	630	631	634	637	642	640	639	639	640	641	638	635	634	634	634	640	645	648	651	16342
Southern Metro	Mornington Peninsula (S)	661	719	744	768	792	816	840	861	883	906	930	956	981	1007	1036	1065	1096	1127	1157	1192	1228	1265	1304	1338	1370	1401	26442
Loddon Mallee	Mount Alexander (S)	116	122	125	128	131	134	137	141	144	148	152	156	162	167	173	179	186	193	199	207	215	222	232	240	248	256	4513
Barwon S/W	Moyne (S)	95	94	95	96	96	97	98	100	101	103	104	106	109	112	115	118	122	125	129	133	137	142	147	152	156	161	3045
Hume	Murrindindi (S)	76	81	84	86	89	92	95	98	101	104	107	111	115	119	123	127	132	137	142	148	154	159	166	172	177	183	3177
North and West	Nillumbik (S)	112	133	139	146	152	158	164	172	180	188	196	205	216	227	239	251	263	277	292	308	323	339	357	374	391	408	6210
Grampians	Northern Grampians (S)	96	84	85	86	87	89	90	91	93	94	96	98	100	102	104	107	109	113	116	120	124	128	132	135	138	141	2755
Southern Metro	Port Phillip (C)	256	267	266	265	264	264	263	264	266	267	269	272	278	285	291	298	305	316	327	338	349	360	373	386	399	411	7900
Grampians	Pyrenees (S)	49	47	48	50	51	53	55	56	57	59	60	62	63	65	67	69	72	74	76	78	80	83	85	88	90	92	1729
Barwon S/W	Queenscliffe (B)	30	40	40	40	40	40	40	40	41	41	41	41	42	43	43	44	45	46	47	48	49	50	51	53	54	55	1145
Gippsland	South Gippsland (S)	174	168	174	181	187	194	201	207	214	221	228	236	245	254	264	274	284	296	307	319	332	345	358	370	381	393	6806
Barwon S/W	Southern Grampians (S)	126	121	122	124	126	128	129	131	132	133	135	137	140	142	145	148	151	155	158	163	167	171	177	182	186	191	3820
Southern Metro	Stonnington (C)	281	372	378	382	387	392	397	401	405	409	414	420	428	436	446	456	466	477	488	501	514	528	543	556	568	581	11627
Hume	Strathbogie (S)	87	77	79	81	83	85	87	90	92	95	97	100	103	106	109	112	115	119	122	126	130	134	139	143	146	150	2807
Barwon S/W	Surf Coast (S)	113	123	127	130	133	137	141	145	150	155	160	165	172	180	187	194	203	212	221	231	240	251	263	275	286	298	4892
Loddon Mallee	Swan Hill (RC)	120	123	126	128	130	133	135	138	140	143	146	149	152	156	160	165	169	174	178	183	189	194	201	206	212	217	4167
Hume	Towong (S)	43	48	49	51	52	54	55	56	57	59	60	61	63	64	65	67	69	71	74	76	79	81	84	87	89	92	1705

Region	LGA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	LGA total
Hume	Wangaratta (RC)	169	178	182	186	189	193	197	200	204	208	212	217	222	228	234	240	247	254	261	269	277	286	295	303	310	317	6079
Barwon S/W	Warrnambool (C)	186	176	181	185	190	194	199	204	210	216	222	229	235	242	250	257	265	274	284	293	304	314	325	336	346	355	6472
Gippsland	Wellington (S)	246	236	243	251	258	266	274	282	291	300	310	321	333	345	358	372	386	402	418	435	452	470	491	511	530	548	9330
Grampians	West Wimmera (S)	34	30	30	30	31	31	31	32	32	33	34	34	35	36	37	38	39	39	39	40	41	41	42	43	43	44	937
Eastern Metro	Whitehorse (C)	558	676	689	701	712	724	736	744	752	762	773	785	794	805	818	831	845	857	869	884	900	917	936	951	964	977	20960
North and West	Whittlesea (C)	345	347	377	407	436	466	496	527	559	591	624	658	690	724	758	793	829	864	899	936	974	1013	1059	1102	1143	1184	18801
Hume	Wodonga (RC)	132	143	149	154	160	166	171	178	184	191	197	205	213	222	231	240	249	259	269	280	291	303	314	324	334	343	5903
North and West	Wyndham (C)	254	268	292	316	340	364	388	414	441	468	495	523	557	591	626	662	698	740	781	825	869	913	965	1016	1064	1113	15985
North and West	Yarra (C)	178	199	202	205	207	210	213	216	219	223	227	232	237	243	248	254	261	269	277	287	296	305	316	327	337	347	6533
Eastern Metro	Yarra Ranges (S)	393	417	431	445	459	473	487	503	519	536	553	571	594	617	641	666	691	721	752	784	817	850	887	922	955	988	16674
Grampians	Yarriambiack (S)	69	63	64	65	66	67	69	69	69	69	69	70	70	71	72	73	74	75	76	77	78	80	82	83	84	85	1889

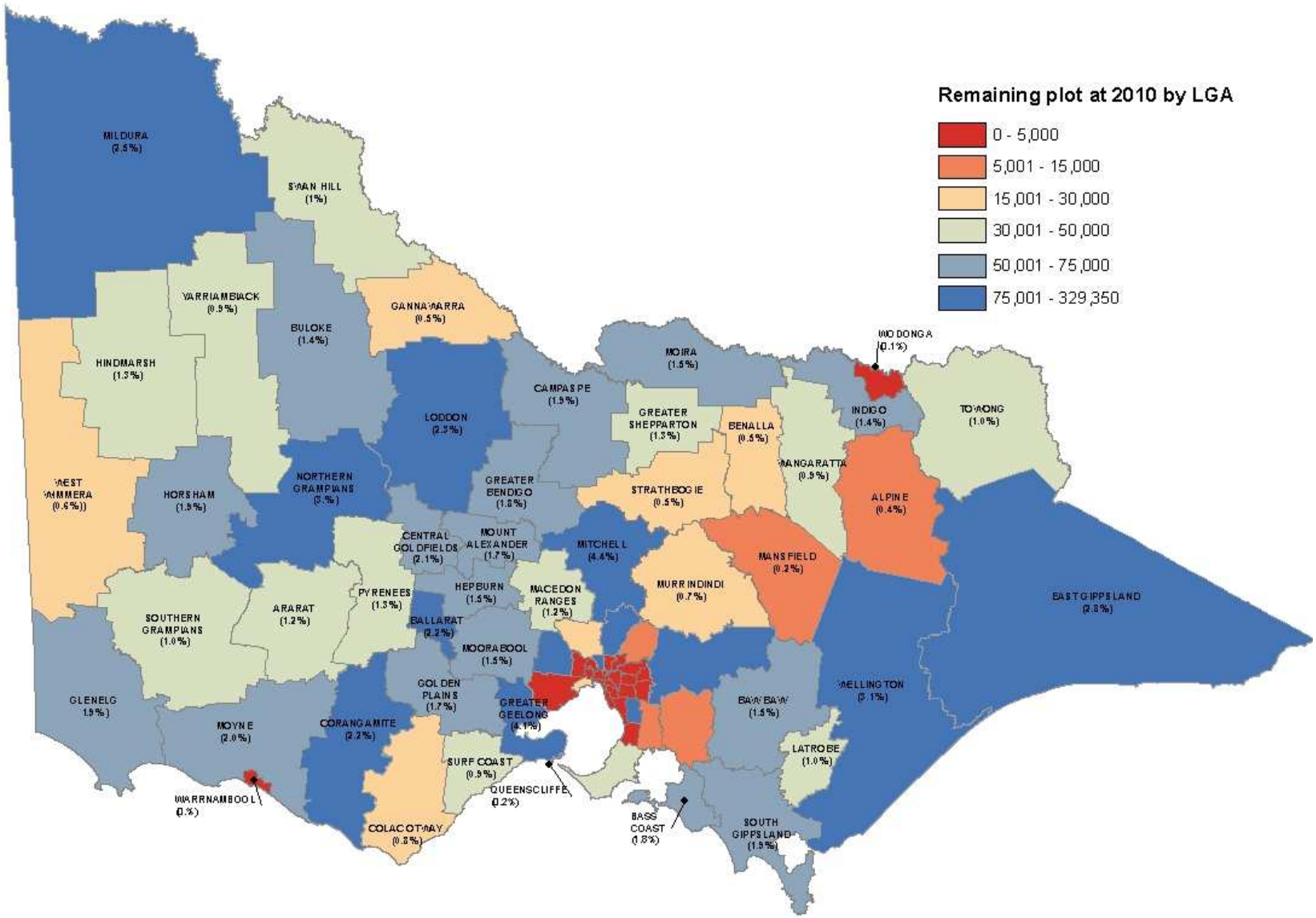
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	LGA total
Victoria total	20137	21249	21906	22559	23205	23876	24535	25170	25833	26528	27247	28032	28858	29722	30636	31591	32582	33641	34709	35875	37067	38304	39708	40997	42205	43408	789578
Per day	55.2	58.2	60.0	61.8	63.6	65.4	67.2	69.0	70.8	72.7	74.6	76.8	79.1	81.4	83.9	86.5	89.3	92.2	95.1	98.3	101.6	104.9	108.8	112.3	115.6	118.9	

Appendix 4 Estimated remaining plots (at end 2010) by region and LGA

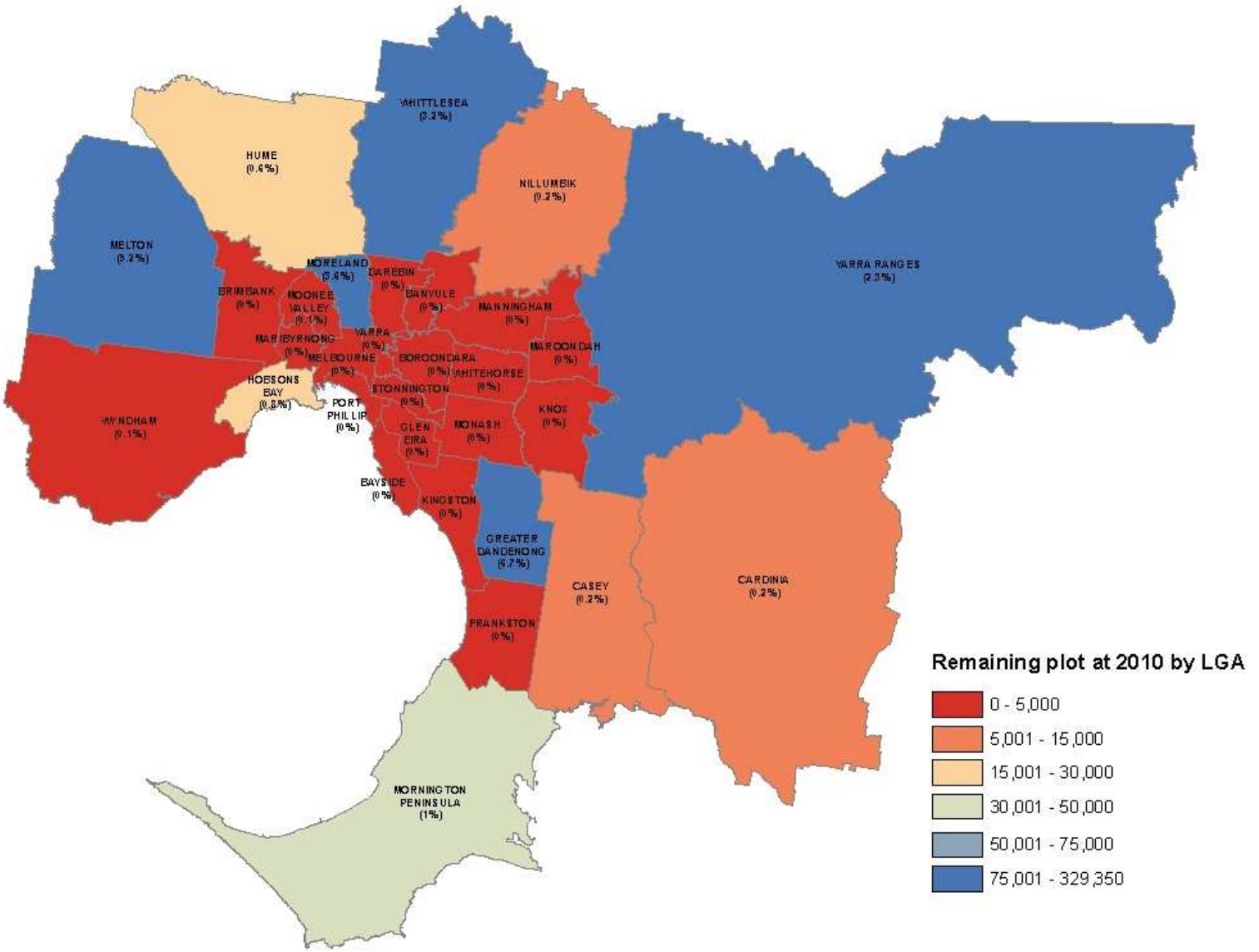
Department of Health region	LGA name	Remaining plots at end 2010	Percentage of all plots
Barwon-South Western	Colac-Otway	27,567	0.77
Barwon-South Western	Corangamite	77,833	2.17
Barwon-South Western	Glenelg	69,308	1.94
Barwon-South Western	Greater Geelong	148,143	4.14
Barwon-South Western	Moyne	72,093	2.01
Barwon-South Western	Queenscliffe	5,994	0.17
Barwon-South Western	Southern Grampians	37,024	1.03
Barwon-South Western	Surf Coast	33,846	0.95
Barwon-South Western	Warrnambool	380	0.01
Eastern	Boroondara	0	0
Eastern	Knox	1,247	0.03
Eastern	Manningham	488	0.01
Eastern	Maroondah	0	0
Eastern	Monash	0	0
Eastern	Whitehorse	0	0
Eastern	Yarra Ranges	82,259	2.30
Gippsland	Bass Coast	64,486	1.80
Gippsland	Baw Baw	52,347	1.46
Gippsland	East Gippsland	99,818	2.79
Gippsland	Latrobe	35,367	0.99
Gippsland	South Gippsland	69,344	1.94
Gippsland	Wellington	109,739	3.07
Grampians	Ararat	42,917	1.20
Grampians	Ballarat	79,540	2.22
Grampians	Golden Plains	58,972	1.65
Grampians	Hepburn	53,961	1.51
Grampians	Hindmarsh	45,372	1.27
Grampians	Horsham	68,818	1.92
Grampians	Moorabool	52,775	1.47
Grampians	Northern Grampians	108,561	3.03
Grampians	Pyrenees	46,038	1.29
Grampians	West Wimmera	20,438	0.57
Grampians	Yarriambiack	32,549	0.91
Hume	Alpine	13,397	0.37
Hume	Benalla	18,696	0.52
Hume	Greater Shepparton	44,779	1.25
Hume	Indigo	51,240	1.43
Hume	Mansfield	7,407	0.21
Hume	Mitchell	158,255	4.42
Hume	Moira	54,902	1.53
Hume	Murrindindi	26,225	0.73
Hume	Strathbogie	15,994	0.45

Department of Health region	LGA name	Remaining plots at end 2010	Percentage of all plots
Hume	Towong	35,282	0.99
Hume	Wangaratta	31,130	0.87
Hume	Wodonga	2,344	0.07
Loddon Mallee	Buloke	51,199	1.43
Loddon Mallee	Campaspe	69,667	1.95
Loddon Mallee	Central Goldfields	74,361	2.08
Loddon Mallee	Gannawarra	19,210	0.54
Loddon Mallee	Greater Bendigo	65,304	1.82
Loddon Mallee	Loddon	84,094	2.35
Loddon Mallee	Macedon Ranges	44,315	1.24
Loddon Mallee	Mildura	90,750	2.54
Loddon Mallee	Mount Alexander	62,329	1.74
Loddon Mallee	Swan Hill	34,961	0.98
North and West	Banyule	0	0
North and West	Brimbank	0	0
North and West	Darebin	0	0
North and West	Hobsons Bay	29,318	0.82
North and West	Hume	20,771	0.58
North and West	Maribyrnong	0	0
North and West	Melbourne	1,499	0.04
North and West	Melton	329,350	9.20
North and West	Moonee Valley	2,418	0.07
North and West	Moreland	128,531	3.59
North and West	Nillumbik	7,573	0.21
North and West	Whittlesea	113,116	3.16
North and West	Wyndham	2,439	0.07
North and West	Yarra	0	0
Southern	Bayside	314	0.01
Southern	Cardinia	5,780	0.16
Southern	Casey	8,692	0.24
Southern	Frankston	0	0
Southern	Glen Eira	0	0
Southern	Greater Dandenong	240,951	6.73
Southern	Kingston	0	0
Southern	Mornington Peninsula	34,872	0.99
Southern	Port Phillip	0	0
Southern	Stonnington	0	0
Victoria		**3,578,690**	**100**

Appendix 5 Estimated remaining plots (including percentage of total remaining plots) by LGA (rural) at end 2010



Appendix 6 Estimated remaining plots (including percentage of total remaining plots) by LGA (metropolitan) at end 2010



Appendix 7 Plots and estimated deaths-requiring-burial by LGA

The table shows the available plots at the end of 2010, the estimated number of deaths-requiring-burial by the end of 2035, and the difference between the two.

LGA name	Location	Available plots at end 2010 (A)	Estimated deaths-requiring-burial by end 2035 (B)	Plots less deaths-requiring-burial (A−B)
Alpine	rural	13,397	3,314	10,083
Ararat	rural	42,917	2,547	40,370
Ballarat	rural	79,540	18,937	60,603
Banyule	metropolitan	0	15,544	-15,544
Bass Coast	rural	64,486	8,627	55,859
Baw Baw	rural	52,347	9,230	43,117
Bayside	metropolitan	314	13,031	-12,717
Benalla	rural	18,696	3,546	15,150
Boroondara	metropolitan	0	18,405	-18,405
Brimbank	metropolitan	0	20,505	-20,505
Buloke	rural	51,199	1,789	49,410
Campaspe	rural	69,667	8,177	61,490
Cardinia	metropolitan	5,780	9,102	-3,322
Casey	metropolitan	8,692	25,156	-16,465
Central Goldfields	rural	74,361	3,559	70,801
Colac-Otway	rural	27,567	4,794	22,773
Corangamite	rural	77,833	3,660	74,173
Darebin	metropolitan	0	15,276	-15,276
East Gippsland	rural	99,818	11,514	88,304
Frankston	metropolitan	0	15,022	-15,022
Gannawarra	rural	19,210	2,509	16,701
Glen Eira	metropolitan	0	16,044	-16,044
Glenelg	rural	69,308	4,416	64,892
Golden Plains	rural	58,972	2,823	56,149
Greater Bendigo	rural	65,304	19,683	45,621
Greater Dandenong	metropolitan	240,951	16,831	224,120
Greater Geelong	rural	148,143	45,491	102,652
Greater Shepparton	rural	44,779	11,604	33,175
Hepburn	rural	53,961	3,324	50,637
Hindmarsh	rural	45,372	1,560	43,812
Hobsons Bay	metropolitan	29,318	9,757	19,561
Horsham	rural	68,818	3,937	64,881
Hume	metropolitan	20,771	16,781	3,990
Indigo	rural	51,240	3,140	48,100
Kingston	metropolitan	0	19,423	-19,423
Knox	metropolitan	1,247	19,340	-18,094
Latrobe	rural	35,367	14,055	21,312
Loddon	rural	84,094	1,830	82,264
Macedon Ranges	rural	44,315	7,491	36,824

LGA name	Location	Available plots at end 2010 (A)	Estimated deaths-requiring-burial by end 2035 (B)	Plots less deaths-requiring-burial (A−B)
Manningham	metropolitan	488	18,010	-17,523
Mansfield	rural	7,407	1,760	5,647
Maribyrnong	metropolitan	0	5,360	-5,360
Maroondah	metropolitan	0	14,925	-14,925
Melbourne	metropolitan	1,499	6,388	-4,889
Melton	metropolitan	329,350	14,278	315,072
Mildura	rural	90,750	9,820	80,930
Mitchell	rural	158,255	6,819	151,437
Moira	rural	54,902	6,999	47,904
Monash	metropolitan	0	21,417	-21,417
Moonee Valley	metropolitan	2,418	13,459	-11,041
Moorabool	rural	52,775	5,354	47,421
Moreland	metropolitan	128,531	15,770	112,761
Mornington Peninsula	metropolitan	34,872	25,782	9,090
Mount Alexander	rural	62,329	4,397	57,932
Moyne	rural	72,093	2,949	69,144
Murrindindi	rural	26,225	3,101	23,124
Nillumbik	metropolitan	7,573	6,099	1,475
Northern Grampians	rural	108,561	2,659	105,902
Port Phillip	metropolitan	0	7,644	-7,644
Pyrenees	rural	46,038	1,680	44,358
Queenscliffe	rural	5,994	1,115	4,878
South Gippsland	rural	69,344	6,633	62,712
Southern Grampians	rural	37,024	3,694	33,330
Stonnington	metropolitan	0	11,346	-11,346
Strathbogie	rural	15,994	2,720	13,274
Surf Coast	rural	33,846	4,779	29,068
Swan Hill	rural	34,961	4,047	30,914
Towong	rural	35,282	1,663	33,619
Wangaratta	rural	31,130	5,909	25,221
Warrnambool	rural	380	6,286	-5,906
Wellington	rural	109,739	9,084	100,655
West Wimmera	rural	20,438	903	19,535
Whitehorse	metropolitan	0	20,402	-20,402
Whittlesea	metropolitan	113,116	18,456	94,660
Wodonga	rural	2,344	5,770	-3,427
Wyndham	metropolitan	2,439	15,731	-13,292
Yarra	metropolitan	0	6,356	-6,356
Yarra Ranges	metropolitan	82,259	16,281	65,978
Yarriambiack	rural	32,549	1,819	30,729
Total		**3,578,690**	**769,441**	**2,809,249**

Appendix 8 Remaining plots at end of 2035 by region and LGA

Only LGAs with remaining plots at the end of 2035 are included in the table.

Department of Health region	Local government area	Remaining plots at end of 2035
Barwon-South Western	Colac-Otway	22,773
Barwon-South Western	Corangamite	74,173
Barwon-South Western	Glenelg	64,892
Barwon-South Western	Greater Geelong	102,652
Barwon-South Western	Moyne	63,238
Barwon-South Western	Queenscliffe	4,878
Barwon-South Western	Southern Grampians	33,330
Barwon-South Western	Surf Coast	29,067
Gippsland	Bass Coast	55,859
Gippsland	Baw Baw	43,117
Gippsland	East Gippsland	88,304
Gippsland	Latrobe	21,312
Gippsland	South Gippsland	62,712
Gippsland	Wellington	100,655
Grampians	Ararat	40,370
Grampians	Ballarat	60,603
Grampians	Golden Plains	56,149
Grampians	Hepburn	50,637
Grampians	Hindmarsh	43,812
Grampians	Horsham	64,881
Grampians	Moorabool	47,421
Grampians	Northern Grampians	105,902
Grampians	Pyrenees	44,358
Grampians	West Wimmera	19,535
Grampians	Yarriambiack	30,729
Hume	Alpine	10,083
Hume	Benalla	15,150
Hume	Greater Shepparton	33,175
Hume	Indigo	48,100
Hume	Mansfield	5,647
Hume	Mitchell	151,437
Hume	Moira	47,904
Hume	Murrindindi	23,124
Hume	Strathbogie	13,274
Hume	Towong	30,193
Hume	Wangaratta	25,221
Loddon Mallee	Buloke	49,410
Loddon Mallee	Campaspe	61,490
Loddon Mallee	Central Goldfields	70,801
Loddon Mallee	Gannawarra	16,701
Loddon Mallee	Greater Bendigo	45,621
Loddon Mallee	Loddon	82,264

Department of Health region	Local government area	Remaining plots at end of 2035
Loddon Mallee	Macedon Ranges	36,824
Loddon Mallee	Mildura	80,930
Loddon Mallee	Mount Alexander	57,932
Loddon Mallee	Swan Hill	30,914
North & West Metropolitan	Hobsons Bay	16,881
North & West Metropolitan	Hume	3,990
North & West Metropolitan	Melton	259,911
North & West Metropolitan	Moreland	98,767
North & West Metropolitan	Nillumbik	1,475
North & West Metropolitan	Whittlesea	21,801
Southern Metropolitan	Greater Dandenong	129,781
Southern Metropolitan	Mornington Peninsula	9,090
Victoria total		**2,809,249**