

2017

# Natural burials vegetation guide for the Upper Yarra Public Cemetery



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## Natural Burials - Wesburn

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Implementation brief for Natural burials at the Upper Yarra Public Cemetery, 2705 Warburton Highway, Wesburn, Victoria 3799.

### Introduction

Nestled in the foothills of the Upper Yarra Valley, the Upper Yarra Public Cemetery in Wesburn has a unique opportunity to incorporate the concept of “Natural burials” or “Green burials” on to the site.

The purpose of this document it is to assist the Trustees in their intention to implement a Natural burials area into an area of the cemetery that already has significant natural values. What is meant by the term Natural burials in this document, a burial with a low environmental impact, set in a natural bushland environment that still meets the regulatory requirements of the Cemeteries & Crematoria Act (2003) and the associated Regulations (2005).

### The Site – Little Yarra

The Little Yarra Natural burials site is part of the existing Upper Yarra Public Cemetery located in Wesburn, close to Yarra Junction. This picturesque country cemetery is situated on the corner of Settlement Road and the Warburton Hwy and has serviced the local community since 1893. The site is situated within the local governance authority of the Yarra Ranges Shire. At present the 7.0 hectare site accommodates burials and cremated remains with internments in a monumental section, a lawn section, a children’s lawn, and a memorial garden. The Cemetery is administered by a trust of seven members and operates under the direction of the Victorian Department of Health.

The existing monumental and lawn sections are located in a large rectangular site with a central drive. The grid pattern is laid out and divided into the distinct denominations.

There are relatively few tree plantings within the monumental and lawn sections of the site, although the cemetery is enclosed by a tall hedge along the Warburton Highway and eucalypts along the edge dividing of the older section from the car park and lawn cemetery. Ornamental shrubs and plants of roses, agapanthus, and conifers line the driveway and mark the memorial gardens. There is significant remnant native vegetation at the northern end and the south western end of the cemetery, ideally suited for the proposed natural burials and internment of ashes.

The general rule of thumb law for planning of cemeteries recommends that between 800 to 1200 plots to an acre (approximately 1,100 - 2000 per Hectare), although topography, infrastructure, access and landscaping need to be taken into account (Capels & Senville 2006).

It is proposed that a total area of 2.0 hectares could be utilised for the natural burial site with an additional area of 6,700 sq. meters for internment of ashes in a natural setting.



## Site description

The site, for the purpose of natural burials, is located in the Ecological Vegetation Class (EVC) of Damp Heathy woodland EVC No. 793, which is an open forest and is generally associated with Manna Gum, River Red gum with swamp paperbark in damp places. The species on the site are consistent with this EVC. The annual long term average for annual precipitation is between 750 - 1200 mm.

The area has an elevation of 150 metres, is regarded as Low hills with a Palaeozoic Lithology of sedimentary rock of either sandstone or mudstone. The Soils found in this area are predominately alluvial loamy sediments, which are reddish-brown gradational, or yellow-brown, mottled duplex soils subject to moderate leaching, leaving them susceptible to a high compaction rate. These Soils are slightly acidic with a pH of between 5.5 and 6.5. It should be noted that the addition of cremated remains, which contains high amount of calcium may raise the pH, which could affect plant growth. If this becomes a concern it could be remediated by adding urea.

Natural bushland settings, by their nature, have a random structure and a mosaic layout, with large existing trees randomly spread across the area, this means the specific number of plots cannot readily be determined within the natural burial and ashes internment sites. A full site survey and mapping of large trees and vegetation cover would provide a better indication of layout and numbers of graves that could be accommodated.

## Bushland Cremated Ashes area – Donna Buang

A remnant section of bushland is located at the rear of the cemetery along Settlement road. This natural area is utilised as a memorial bushland for cremated remains. A small gathering area with seating for contemplation and remembrance is to be constructed together with an informal track of mulch or gravel.

The internment of ashes in this setting may be marked with natural or artificial rocks or a memorial plaque placed at the base of a mature tree.

This area has a healthy mix of natural remnant vegetation and does not require enhancement planting. However, screening plantings of Tea-tree for privacy could benefit the works depot and a recommendation that the pH of the soil be monitored.



Entry to cremated ashes area

## Natural Burials area – Little Yarra

A component of this proposal is to create a 3 metre border using indigenous tea tree and existing eucalypts and acacias along the post and wire fence. This will create an exclusion zone separating the traditional cemetery from the natural burials site. The line of indigenous vegetation to be planted will create a barrier against the incursion of artificial memorial keepsakes and weeds. At present there is an existing row of tea tree which effectively conceals the backyard fences of the neighbouring properties. This should be replicated along the post and wire fence.

As trees are naturally scattered throughout the bush area, so too could the graves. The plot dimensions in the natural burials section of the Cemetery would be the same as standard burial plots, being 1.2m wide by 2.4m long. To mimic and create an aesthetically pleasing natural setting, the burial plots could be scattered throughout the location in a mosaic, which would be dictated by the natural environment. However, careful measures should be taken to ensure that the location of burials does not interfere with the root structure of trees, with a clearance distance of at least 2 metres being maintained around the mature trees, so as not to disturb their roots in the excavation

To avoid creating the impression of formal garden beds, the plantings on the graves should spill over onto the surrounding area, with a mix of various indigenous shrubs, herbs and grasses. The overall effect should be of a native wildflower meadow.

Graves could be marked with a natural or artificial rock (created from concrete), or a timber post, with an option to attach plaques, a similar approach could be used for cremated remains in the Memorial Bushland. In addition to this, a Global Positioning System (GPS) technology could be utilised to provide the exact latitude and longitude coordinates of a grave site within the cemetery. The 6-point coordinate of the plot could then be provided to families with various technologies available, such as QR codes or downloadable from the cemetery website. Family members would be able to use their own smart phones or hand-held GPS device to locate the grave. This also gives the potential for the Trust to develop a smart phone application that could provide information on the history of the cemetery and some of the historical figures buried within.



Entry to natural burials area

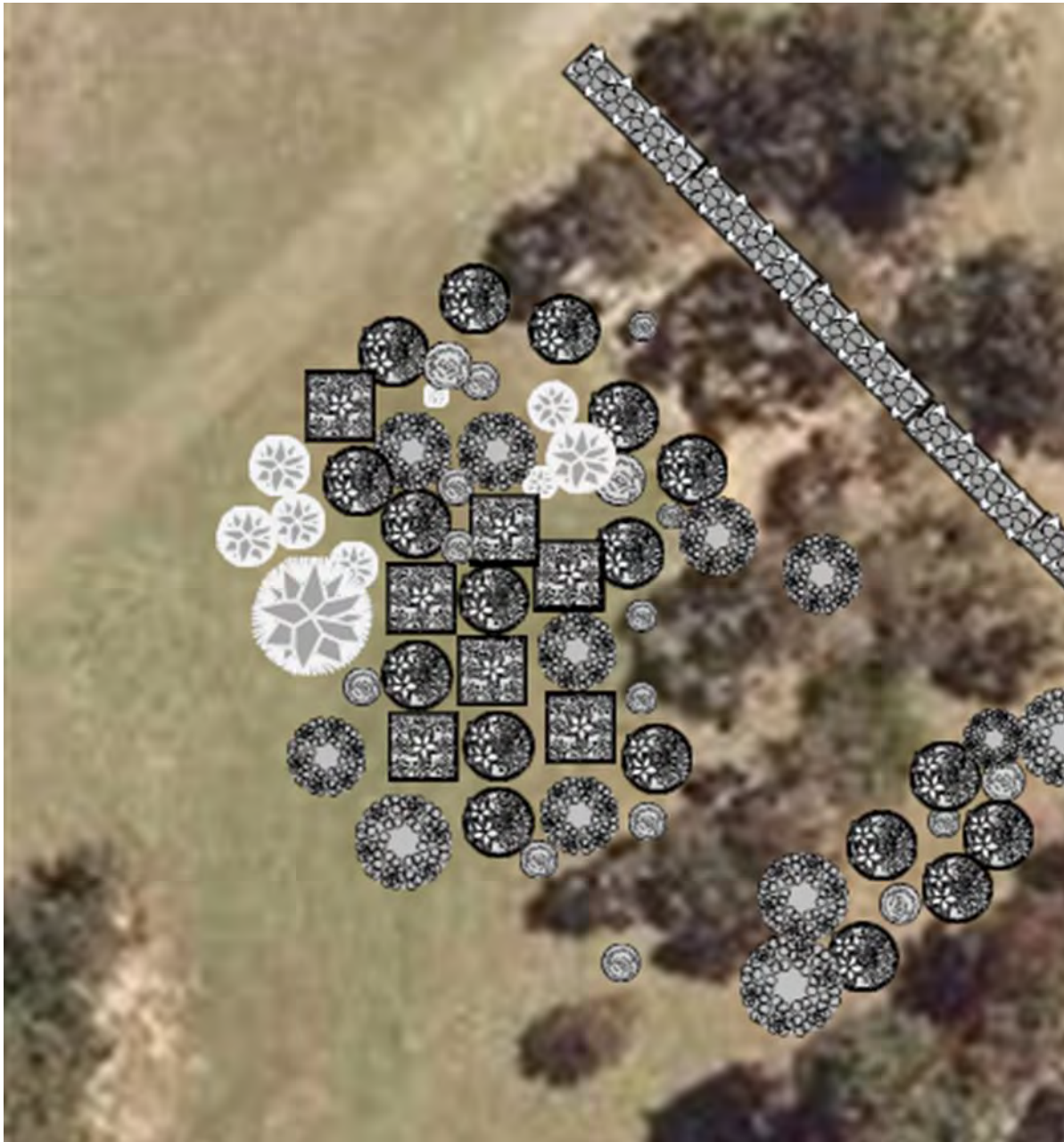
Aerial view of Natural Burials area

Aerial view with grave sites marked










Infilling of ground cover between the native flowering species would be achieved with low grasses, such as *Poa* species (small tussock grasses), *Austrodanthonia* species (wallaby grasses) and *Microlaena stipoides* (weeping grass). These grasses can grow in the shade and also enjoy the full sun. Another benefit of these grasses is that they do not require fertiliser and can be sown with seed. If left to their natural processes they will flower in spring and autumn and set further seed.

## Aerial view with suggested plant species layout



This would be a mosaic of plantings spread across the area, giving a natural native meadow appearance and is not meant to be prescriptive. See legend below for suggested plant species.



	Tree's -	<u><i>Eucalyptus viminalis</i></u> <u><i>Eucalyptus ovata</i></u> <u><i>Acacia mearnsii</i></u> <u><i>Acacia melanoxylon</i></u> <u><i>Bursaria spinosa</i></u> <u><i>Allocasuarina littoralis</i></u>	Manna Gum Swamp Gum Black Wattle Blackwood Sweet Bursaria Black Sheoak
	Medium Shrubs	<u><i>Epacris impressa</i></u> <u><i>Banksia marginata</i></u> <u><i>Kunzea ericoides</i></u>	Common Heath Silver Banksia Burgan
	Small Shrubs	<u><i>Hibbertia riparia</i></u> <u><i>Hovea heterophylla</i></u> <u><i>Hibbertia sericea s.l.</i></u> <u><i>Platylobium obtusangulum</i></u> <u><i>Pimelea humilis</i></u> <u><i>Dillwynia glaberrima</i></u> <u><i>Acrotriche serrulata</i></u>	Erect Guinea-flower Common Hovea Silky Guinea-flower Common Flat-pea Common Rice-flower Smooth Parrot-pea Honey-pots
	Medium shrub	<u><i>Leptospermum continentale</i></u> <u><i>Leptospermum lanigerum</i></u>	Prickly Tea-tree Woolly Tea-tree
	Graminoids	<u><i>Austrodanthonia caespitosa</i></u> <u><i>Austrodanthonia eriantha</i></u> <u><i>Austrodanthonia laevis</i></u> <u><i>Austrodanthonia penicillata</i></u> <u><i>Graminoid Microlaena stipoides</i></u> <u><i>Graminoid Poa tenera</i></u>	Common Wallaby-grass Hill Wallaby-grass Wallaby-grass Slender Wallaby-grass Weeping Grass Slender Tussock-grass
	Graminoids	<u><i>Xanthorrhoea minor ssp. lutea</i></u> <u><i>Dianella admixta</i></u> <u><i>Dianella tasmanica</i></u> <u><i>Lepidosperma filiforme</i></u> <u><i>Arthropodium strictum</i></u> <u><i>Burchardia umbellata</i></u>	Small Grass-tree Black-anther Flax-lily Tasman Flax-lily Common Rapier-sedge Chocolate Lily Milkmaids
	Herbs	<u><i>Xerochrysum bracteatum</i></u> <u><i>Xerochrysum viscosum</i></u> <u><i>Wahlenbergia communis s.l.</i></u> <u><i>Gonocarpus tetragynus</i></u> <u><i>Wahlenbergia stricta</i></u> <u><i>Wahlenbergia communis</i></u> <u><i>Wahlenbergia gracilis</i></u> <u><i>Wahlenbergia multicaulis</i></u> <u><i>Drosera whittakeri ssp. aberrans</i></u>	Golden Everlasting Sticky Everlasting Tufted Bluebell Common Raspwort Tall Bluebell Tufted Bluebell Sprawling Bluebell Branching Bluebell Scented Sundew

## Planting regime, spacing & timing

We suggest the trees, shrubs, herbs and most of the graminoids be planted with tube stock and plugs. Some grasses, such as *Austrodanthonia* spp. can be sown directly with seed, but we suggest planting all other species with tube stock as they are easy to individually place over a site prior to planting, they can be obtained over most of the year and give the instant satisfaction of a tree being planted. Planting would be gradual, carried out over a number of year, and would involve a combination of targeted planting and natural regeneration from the seed stock provided by the plants that you have previously sown.

The average cost for native tube stock can range between \$2.00 and \$2.50 per stem.

We recommend that you plant healthy, quality grown plants when climatic conditions are favourable. Planting is best undertaken when soils are moist and warm. This will vary and depends on current climatic and seasonal rainfall, but for the Wesburn area, it is best to plant in spring, summer and early autumn when there is minimal frost and an optimum growing condition.

Plant layer	Over the 2 Hectare site	Per Square Metre for grave site	Benchmark
Overstory	20 plants	NA	2 hectares of woodlands Assume 10 plants / ha where Tree canopy cover 15%
Understorey Tree or Large Shrub > 5 m tall (T)	20 plants	Between 0 and 3 plants depending on species selection and availability at time of planting	Assume 10 plants / ha where benchmark cover is 5%
Medium Shrub 1-5 m tall (MS)	80 plants	Between 0 and 3 plants depending on species selection and availability at time of planting	Assume 40 plants / ha where benchmark cover is 30%
Small Shrub < 1 m tall (SS)	600 plants	Between 5 and 15 plants depending on species selection and availability at time of planting	Assume 300 plants / ha where benchmark cover is 5%
Large Tufted Graminoid (LTG)+ (grasses and grass-like tussocks > 1 m tall)	600 plants	Between 5 and 15 plants depending on species selection and availability at time of planting	Apply only where benchmark cover for LTG life form is 30% or greater

\*Benchmark ground cover for EVC 793 Damp Heathy Woodland

## Weed control

Weed control around plants maximises plant growth. Hand weeding around young plants allowing them a weed-free circle for the first six months maximises survival rates and ideally for 18 months for larger trees ensures continued survival and enhanced growth rates.

## Mulching

Mulching with locally sourced material is valuable, but could increase the initial cost of the project. Mulching reduces the maintenance and labour costs, protects the soil from summer heat and winter frosts, assists in soil moisture retention and generally improves plant growth by providing humus.

## Watering

Water if the plants are showing signs of stress during the first few weeks after planting. Ensure watering is sufficient to moisten down to the subsoil i.e. deep watering.

## Pest control

Protect plants from rabbits and other pests utilising effective measures as outlined below. Wildlife (rabbits, hares, ducks etc.) can cause severe damage and death to plants, especially when newly planted.

Effective rabbit control is achieved by using a combination of control measures, not just one. There is no one quick-fix solution that would apply.

Assess whether the risk and infestation of pests warrants the control measures being applied.

Identify and map the rabbit feeding and activity areas for future reference in and around the cemetery. Rabbits are often found around rocky outcrops, buildings, wood heaps, fence lines, waterways and weedy areas. Rabbit control is most cost-effective in late summer and early autumn as breeding has generally ceased in the rabbit population, therefore the likelihood of achieving long-term control can be improved by reducing next season's breeding stock.

Effective known methods of control

- Fencing and guarding,
- Biological - Myxomatosis and Rabbit Haemorrhagic Disease (RHD)
- Poison Baiting - 1080 and Pindone. If you are planning to use chemicals to treat rabbits, all applicable requirements of the Agricultural and Veterinary Chemicals (Control of Use) Act 1992 and Agricultural and Veterinary Chemicals (Control of Use) Regulations 2007 must be met.
- Confinement Traps - Any trapping of rabbits **MUST** be carried out in accordance with the requirements of the Prevention of Cruelty to Animals Act 1986 (POCTA) and associated regulations.
- Fumigation
- Warren ripping, generally used for larger sites.

Undertaking the advice contained in this document should achieve survival rates in excess of 90% and increase growth rates by up to 300%, when compared to poorly maintained plants, for example inappropriate mowing, not eradicating weeds, or allowing herbivory by rabbits.

## Suggested species list

### Species list of Trees

Tree	<i>Eucalyptus viminalis</i>	Manna Gum
Tree	<i>Eucalyptus ovata</i>	Swamp Gum
Tree	<i>Acacia mearnsii</i>	Black Wattle
Tree	<i>Acacia melanoxylon</i>	Blackwood
Tree	<i>Bursaria spinosa</i>	Sweet Bursaria
Tree	<i>Allocasuarina littoralis</i>	Black Sheoak

### Species list of low shrubs and ground covers

Medium Shrub	<i>Leptospermum continentale</i>	Prickly Tea-tree
Medium Shrub	<i>Leptospermum lanigerum</i>	Woolly Tea-tree
Medium Shrub	<i>Epacris impressa</i>	Common Heath
Medium Shrub	<i>Banksia marginata</i>	Silver Banksia
Medium Shrub	<i>Kunzea ericoides</i>	Burgan
Small Shrub	<i>Hibbertia riparia</i>	Erect Guinea-flower
Small Shrub	<i>Hovea heterophylla</i>	Common Hovea
Small Shrub	<i>Hibbertia sericea s.l.</i>	Silky Guinea-flower
Small Shrub	<i>Platylobium obtusangulum</i>	Common Flat-pea
Small Shrub	<i>Pimelea humilis</i>	Common Rice-flower
Small Shrub	<i>Dillwynia glaberrima</i>	Smooth Parrot-pea
Prostrate Shrub	<i>Acrotriche serrulata</i>	Honey-pots
Large Herb	<i>Xerochrysum bracteatum</i>	Golden Everlasting
Large Herb	<i>Xerochrysum viscosum</i>	Sticky Everlasting
Large Herb	<i>Wahlenbergia communis s.l.</i>	Tufted Bluebell
Medium Herb	<i>Gonocarpus tetragynus</i>	Common Raspwort
Small Herb	<i>Wahlenbergia stricta</i>	Tall Bluebell
Small Herb	<i>Wahlenbergia communis</i>	Tufted Bluebell
Small Herb	<i>Wahlenbergia gracilis</i>	Sprawling Bluebell
Small Herb	<i>Wahlenbergia multicaulis</i>	Branching Bluebell
Small Herb	<i>Drosera whittakeri ssp. aberrans</i>	Scented Sundew

### Species list of graminoids and grasses

Large Tufted Graminoid	<i>Xanthorrhoea minor ssp. lutea</i>	Small Grass-tree
Large Tufted Graminoid	<i>Dianella admixta</i>	Black-anther Flax-lily
Large Tufted Graminoid	<i>Dianella tasmanica</i>	Tasman Flax-lily
Medium Tufted Graminoid	<i>Themeda triandra</i>	Kangaroo Grass
Medium Tufted Graminoid	<i>Poa morrisii</i>	Soft Tussock-grass
Medium Tufted Graminoid	<i>Lepidosperma filiforme</i>	Common Rapier-sedge
Medium Tufted Graminoid	<i>Arthropodium strictum</i>	Chocolate Lily
Medium Tufted Graminoid	<i>Bulbine bulbosa</i>	Bulbine lily
Medium Tufted Graminoid	<i>Wurmbea dioica ssp. dioica</i>	Early Nancy
Medium Tufted Graminoid	<i>Burchardia umbellata</i>	Milkmaids
Small Tufted Graminoid	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
Small Tufted Graminoid	<i>Austrodanthonia eriantha</i>	Hill Wallaby-grass
Small Tufted Graminoid	<i>Austrodanthonia laevis</i>	Wallaby-grass
Small Tufted Graminoid	<i>Austrodanthonia penicillata</i>	Slender Wallaby-grass
Medium Non-tufted Graminoid	<i>Microlaena stipoides var. stipoides</i>	Weeping Grass
Medium Non-tufted Graminoid	<i>Poa tenera</i>	Slender Tussock-grass
Scrambler or Climber	<i>Thysanotus tuberosus ssp. tuberosus</i>	Common Fringe-lily
Scrambler or Climber	<i>Convolvulus erubescens spp. agg.</i>	Pink Bindweed

**Please note**, this is not a complete species list of indigenous plants for this area. Other local species may be substituted based on local availability or time of the year. These plants have all been selected as they are found within this Ecological Vegetation Class and will grow well under the sites conditions.



## List of Nurseries

### Yarra Valley ECOSS,

711 Old Warburton Road Wesburn 3799

PO Box 340, Yarra Junction 3797

Phone: 03 5967 2416 Email [info@ecoss.org.au](mailto:info@ecoss.org.au)

### Plant Local

600 Woods Point Road, East Warburton 3799

Phone: 03 5966 9507

### Candlebark Community Nursery (WHOLESALE/RETAIL)

5 Taylor Road, Croydon North 3136

P O Box 6064 Croydon North 3136

Phone: 03 97270594

Mobile: 0448 011 604

Email [info@candlebark.org.au](mailto:info@candlebark.org.au)

### Friends of the Helmeted Honey Eater Indigenous Plant Nursery

1217 Macclesfield Road, Yellingbo 3139

Phone: 03 5964 8341

Email [heho1@optusnet.com.au](mailto:heho1@optusnet.com.au)

Web [www.helmetedhoneyeater.org.au](http://www.helmetedhoneyeater.org.au)

### Kuranga Native Plant Nursery

118 York Road, Mt Evelyn 3796

Phone: 03 9760 8100

Email: [info@kuranga.com.au](mailto:info@kuranga.com.au)

Web [www.kuranga.com.au](http://www.kuranga.com.au)

## References:

Cemeteries & Crematoria Act of 2003 and Regulations of 2005

DELWP (2016), Highlands - Southern Fall bioregion, EVC 793: Damp Heathy Woodland, List of EVC's, available at URL:

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Valerie Capels and Wayne Senville (2006) Planning for cemeteries, PLANNING COMMISSIONERS JOURNAL / NUMBER 64 / FALL 2006 available at URL:

<http://plannersweb.com/wp-content/uploads/2006/10/230.pdf>

[http://www.dse.vic.gov.au/\\_data/assets/pdf\\_file/0005/97349/NativeVeg\\_Reveg.pdf](http://www.dse.vic.gov.au/_data/assets/pdf_file/0005/97349/NativeVeg_Reveg.pdf)

[http://fe.yarraranges.vic.gov.au/Residents/Trees\\_Vegetation/Yarra\\_Ranges\\_Plant\\_Directory](http://fe.yarraranges.vic.gov.au/Residents/Trees_Vegetation/Yarra_Ranges_Plant_Directory)

<http://www.vicveg.net.au/vvToolsTechniques.aspx#h1222>

## Appendix 1: Little Yarra Natural Burials- Grave Rehabilitation Plan

1. Graves will be backfilled with earth and topsoil from the site.
2. Backfilled graves will be covered with an approved mulch to a thickness of approximately 100mm.
3. Vegetation rehabilitation will be carried out utilising indigenous species from the approved species list as shown above. Grave top planting will consist of species selected from the list of graminoids, grasses, ground covers and low shrubs.
4. Planting should be carried out during the period from early Autumn to late Spring, depending on seasonal conditions.
5. Planting should be carried out no sooner than four months after the burial;
  - a. To allow time for the settling of the grave and to allow for top soil to be added if required.
  - b. To allow for the decomposition of mulch, as this encourages improved plant growth.



## Appendix 2: Site Maintenance

### Maintenance - Little Yarra

1. No broadacre mowing will take place within this section of the cemetery.
2. Hand slashing will be undertaken on a quarterly basis, or as otherwise determined by the Trust, to assist in the management of vegetation.
3. Slashing will be timed to reduce seeding from introduced grasses and to prevent damage to indigenous ground covers and low shrubs.
4. Selective weeding will include the use of hand weeding and herbicides where necessary.
5. Replanting of indigenous species from the approved planting list as shown above, will be undertaken periodically by the Trust to assist in maintaining diversity.

### Maintenance - Donna Buang

1. No broadacre slashing will take place within this section of the cemetery.
2. Hand slashing and limb trimming will be undertaken on a quarterly basis, or as otherwise determined by the Trust, to trim around and over paths as required for safety.
3. Selective weeding will include the use of hand weeding and herbicides where necessary.
4. Paths will be maintained to ensure safe access to the site. Mowing will be undertaken at the entrance to the site as required.
5. Tree limbs may be trimmed or removed as necessary in the interest of public safety.
6. Replanting of indigenous species from the approved planting list as shown above, will be undertaken periodically by the Trust to assist in maintaining diversity.

## Appendix 3: Additional Understory Plant List –Donna Buang

Species list, for additional understory planting in “Donna Buang”

### ***Clematis aristate*: Mountain or Austral Clematis, Old Man's Beard**

Description: Woody climber, suckering to form new plants. Ascends to upper storey canopy. Flowering: Creamy white - August to March

### ***Cyathea australis*: Rough Tree-fern**

Description: Upright tree fern, Fibrous trunk.

Flowering: Non-flowering. Round clusters of spores with small scales at the base.

### ***Almaleea (Pultenaea) subumbellata*: Wiry Bush-pea**

Description: Slender trailing to erect sub-shrub.

Flowering: Red and yellow, October to December

### ***Daviesia leptophylla* (virgate): Narrow-leaf or Slender Bitter-pea**

Description: Open erect shrub

Flowering: Yellow and red, September to January

### ***Correa reflexa* var. *reflexa*: Common Correa, Native Fuchsia**

Description: Open, upright to spreading shrub.

Flowering: Red/Light green, March to September

### ***Tetradthea ciliate*: Pink-bells**

Description: Upright or spreading clumping shrub.

Flowering: Mauve-pink, occasionally white, July to December

### ***Pimelea axiflora* ssp. *Axiflora*: Bootlace Bush**

Description: Open erect or arching shrub

Flowering: Creamy-white, September to November

### ***Callistemon sieberi*: River Bottlebrush**

Description: Open to dense weeping shrub

Flowering: Cream, occasionally pink, November to March

### ***Dianella admixta*: Black-anther or Spreading Flax-lily**

Description: Dense to open tufting perennial

Flowering: Blue to violet. Anther brown to black, stalk swellings yellow, August to May