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Native Vegetation Plan of Management Portion 75 Lanyon Drive

Queanbeyan City Council

Reference / 1030 01GM 2007 version

Appendix B
Flora Species List

Appendix C
Regionally Significant Flora on Portion 75

Appendix D
Maintenance Manual

Executive Summary

Background
This Vegetation Management Plan has been prepared to support a proposal for the rezoning of Portion 75 to enable the operation of a bush cemetery. The proposal of a bush cemetery was put forward as a means of safeguarding the recognised conservation values of the site whilst generating revenue to implement ongoing maintenance. The Plan has been prepared in consultation with NPWS and with reference to a number of earlier background studies. In order for the proposed operation to be viable it was necessary to accommodate 8000 graves without compromising the quality of the vegetation within the area designated for development.

Methodology
A survey of the site's ecological values including the occurrence of the Golden Sun Moth, a range of regionally significant plants and the area's plant communities was undertaken to define constraints and opportunities for consideration in the development of the plan. The future layout of the cemetery has been restricted to a central more disturbed developable area that is surrounded by a bushland buffer.

Existing Environment
The woodland and forest of the study area represents habitat for a wide range of plants and animals including at least twelve regionally significant plants and 44 birds. The Golden Sun Moth has not been recorded on the site and is not expected given the current paucity of the habitat plant *Austrodanthonia*. The soils of the site have a very high erosion potential, particularly when denuded of vegetation. An archaeological survey did not record any sites of indigenous heritage significance on the site.

Proposed Cemetery Operations
The bush cemetery would cater for direct burials, ash interments and the scattering of ashes. The maintenance of the cemetery would be undertaken by a small staff in accordance with the directions laid out in the maintenance manual in Appendix D. The overall development of the site would be directed by Council officers. An opportunity exists for the establishment of a chapel within the developable area, however, the details of this facility are not addressed in this investigation.

Management Issues

Vegetation Conservation

The layout of the areas proposed for cemetery operations and the conservation buffer takes into consideration the sensitivities of the plant associations and a number of rare plants on

site, in particular *Grevillea ramosissima.* Given the disturbances associated with a cemetery such as slashing, compaction and changes to water regime, the developable compartments were sited to enable a working cemetery with minimal disturbance to the existing native vegetation.

Conservation of Bird Habitat
In recognition of the value of the site to small birds, the treatment of the grave areas was developed with the objective of maintaining a shrub cover of greater than 20%. A number of stands of *Kunzea ericoides* would also be retained to provide shelter for small birds across the site.

Calculation of Direct Burial Sites
Through a series of pilot plots, a desirable maximum of graves was calculated for within the areas of grassland, woodland and forest to be developed. This calculation was based on the exclusion of graves from beneath the drip line of trees and an approach involving a decreasing density of graves with an increase in structural density. The grasslands would have the most graves and the more heavily treed areas would have the least. Using this formula it was established that approximately 9600 direct burials could be sequentially accommodated within Portion 75. The post-burial maintenance approach would have a decreasing level of intensity from the grasslands to the more "hands off" forested areas.

Weeds
Weed management across the site would focus on *Kunzea ericoide,* Patersons Curse and St Johns Wort using a combination of physical and chemical techniques. The timing and procedures for the treatment of these and other weeds is included in the Maintenance Manual.

Revegetation
The revegetation of the buffer zones would be undertaken immediately subsequent to the weed management process with the objective of restoring the structural integrity of the bushland and its screening role. Within the developable area, there would be an opportunity for replanting understorey species on to completed graves either using propagated plants or plants set aside from the grave preparation. A range of suitable species is offered in the Flora Species List.

Landscape and Cemetery Viability
In order to uphold some of the conservation objectives of the buffer such as disturbance minimisation, pedestrian access would be limited with certain areas designated " No Access". An increasing trend towards cremation and either ash interment or ash scattering is favourable in terms of upholding the long term goals of Portion 75 and would enable a less intensive development of the site.

Fire / Access/ Fencing
The site has been assessed as presenting a low hazard and in the event of fire crews would utilise the proposed internal road network. The same road would serve as the thoroughfare for funeral vehicles and parking would be in the adjacent lawn cemetery car park. A network of paths would filter into the discreet grave compartments. The site would be contained by cyclone fencing to the south and agricultural fencing to the east.

Drainage
The site is traversed by two main drainage lines with a broad sheet flow entering the site from the east. The development of land to the east of the site will lead to an increase in the volumes of overland flow. At this stage the developer's proposal is to dissipate the flow from the development area over Portion 75 by means of a level spreader. An opportunity exists for conveying this water to one of the site's drainage lines by pipe or a shallow open drain. The exact alignment and timing of this connection would bear on the sequence and direction of

grave establishment. Run off from the access road within the cemetery would be dispersed by means of drainage flumes.

Management Recommendations

The treatments for the maintenance and revegetation of the buffer zone and the different plant associations decrease in intensity with an increase in the degree of structural development and freedom from disturbance. A readily interpreted Maintenance Manual is provided for grounds staff to direct the timing and details of the maintenance and revegetation procedures.

Further Investigations

In preparing the Vegetation Management Plan for Portion 75 it was identified that a number of further investigations were necessary before proceeding with the operation.

- A flood study to determine the water flows in times peak rainfall.
- A test of the subsoil to further refine areas for burial.
- Preparation of a detailed landscaping plan.
- Preparation of site by site grave compartment layouts on an as needs basis.

Introduction

Background

Connell Wagner was commissioned by Queanbeyan City Council to prepare a "Native Vegetation Management Plan" for a proposed cemetery on Portion 75, Parish of Queanbeyan, County of Murray.

The Site

The land (Portion 75) is currently zoned 1(a) Rural and 1(b) Rural Scenic Protection and must be rezoned to 5(a) Special Uses Cemetery and 5(b) Special Uses 'Cemetery' Scenic Protection to enable Portion 75 to be used as a cemetery.

Portion 75 has a total area of approximately 17.6 hectares and occupies a parcel of sloping land on the north west flank of Mt. Jerrabomberra. The site is bounded by Lanyon Drive (formerly Tharwa Road) to the north, the Queanbeyan Cemetery to the west, an existing housing estate Jerrabomberra Heights subdivision to the south and North Terrace residential subdivision (under construction) to the east (Figure 1).

The Plan

This objective of this Vegetation Management Plan is:

" to provide management policies and maintenance procedures that would conserve the native vegetation of the site and safeguard its value as fauna habitat while enabling it to operate as a cemetery."

One of the main considerations in the preparation of this Plan was the locally recorded Golden Sun Moth which is listed as Endangered on Schedule 1 of the *Threatened Species Conservation Act 1995*. A detailed survey of the site was undertaken by a specialist entomologist and specific guidelines have been incorporated into the management of the site with regard for the life history and habitat requirements of this species.

The primary operational tool derived from this plan is the 'Maintenance Manual' which will direct day to day operations of the proposed cemetery within Portion 75.

Consultation with NPWS

In developing the concept for a cemetery in Portion 75, Queanbeyan City Council sought the advice of the NSW National Parks and Wildlife Service (NPWS). NPWS support in principle the development of Portion 75 for a cemetery and have contributed a range of suggested management guidelines for Council's consideration and inclusion in the Plan. Their recommendations focus on minimising the disturbance to the natural environment and have been listed as:

- Retention of all mature native trees
- No parking within Portion 75
- Use of existing and regenerating native vegetation as a buffer strip between the cemetery and adjoining houses
- Use of narrow (1.5 m wide) paths and minimal disturbance during construction

Additional management measures suggested are:

- Initial and on going weed control and removal of exotic species
- Introduction of new plants to disturbed areas only, and only endemic species
- Monitoring and control of the invasive *Kunzea ericoides*
- Limited use of water and fertiliser
- Limited soil disturbance
- No mowing (as opposed to slashing)

In conjunction with the specific requirements of Council's brief, the recommendations of NPWS were central to the preparation of this plan and have been addressed accordingly.

Operational Goals

This Plan was tailored to meet Council's capacity requirements for a viable cemetery with a desirable 8000 direct burial sites and additional interments by other means such as the scattering of ashes. An earlier proposal for a crematorium on the site will not be pursued at this time.

Earlier work undertaken by Council identified the need for two divisions for land management:

- Buffer Zone and Native Vegetation Areas
- Burial and Cremation Memorial Areas

With consideration for this earlier work and in keeping with Council's current operational requirements, this Plan identifies areas that are suitable for:

- Intensive Development and Minor Land Shape Modification.
- Nature Conservation and Landscape Buffer

Methodology

Field Survey

In order to establish an inventory of the assets of the site the following survey techniques were employed.

Significant Plant Species

The vegetation mapping conducted by Scott and Furphy (1992) was ground truthed by Connell Wagner in order to confirm vegetation community boundaries and the distribution of regionally significant plant species.

Golden Sun Moth Synemon plana

The surveys for the Golden Sun Moth were undertaken by Geoff Clarke from the Entomology Division of the CSIRO, Canberra. The site was visited during favourable flying conditions in Spring / Summer to survey for the presence of the Golden Sun Moth. The surveys were undertaken during the warmest part of the day between 12.00pm and 2.00pm, as this is peak flight time for the male Golden Sun Moth. Hand nets were used to capture the moths to confirm identification.

A report detailing this study is attached as Appendix A, and the findings have been fundamental to the development of the management approach.

Opportunities and Constraints

Having confirmed the site's natural assets through field survey, a constraints map of the subject site was produced by GIS and is presented as Figure 2 - Vegetation Features. This task involved overlaying various parameters onto an aerial photograph of the subject site including boundaries, findings of the field surveys and recommendations from previous reports ie. areas of regionally significant plant species.

Through analysis of the site's constraints, opportunities for the development of the site were advanced as depicted on the Proposed Opportunities Plan - Figure 3. This figure indicates the areas best suited for development and those areas to be maintained as a conservation area and buffer zone. The Opportunities Plan is the basis for the vegetation management recommendations.

Existing Environment

Vegetation of Portion 75

The vegetation across Portion 75 comprises dry sclerophyll forest transitioning to open woodland, and is indicated by the Eucalypt associations namely *Eucalyptus macrorhyncha* / *Eucalyptus rossii* and Eucalyptus *polyanthemos / Eucalyptus melliodora* (Figure 2). These two associations have been modified by past clearing and grazing of the site. Understorey vegetation is dense, diverse and representative except in areas of higher disturbance associated with the former grazing use. There are many patches containing the locally rare *Grevillea ramossissima* with plants of varying age.

Dense patches of *Kunzea ericoides* and *Bursaria lasiophylla* are widespread and continuing to colonise throughout the site. The *Kunzea* has reached undesirable densities. Introduced weed (exotic) species are also present throughout, particularly St John's Wort (refer to Photo 30). The management measures for weed control are discussed in Section 5.2.

The varying condition of the vegetation across Portion 75 defines the site with a range of landscape character from undisturbed open woodland through to closed stands of *Kunzea*, to open grassed areas traversed by tracks. From within the site, the proximity of the adjacent residential developments is emphasised through those areas of open woodland.

Regionally Significant Flora Species

At least 12 significant or regionally uncommon plant species have been identified on the subject site by the NSW National Parks and Wildlife Service (Table 3.1). Photographs of these species are included as Appendix C and can be used in the field to assist grounds staff in identifying these species as works progress into new development areas of Portion 75.

Table 3.1 Habitat and Flowering Period of Regionally Significant Species Recorded on Portion 75

Plant Name	Habitat	Flowering Period
Bulbine bulbosa Native Leek	Found in rocky places (Eddy *et al* 1998)	October to December *(*Eddy *et al* 1998*)*
Grevillea ramosissima Fan Grevillea	Dry sclerophyll woodland on acidic substrates (Harden 1991)	Mainly spring (Harden 1991)
Wurmbea dioica Early Nancy		Late winter and early spring
Thelymitra spp		Spring
Caladenia spp		Spring
Thysanotus patersonii Twining Fringe Lily		Spring
Dianella longifolia Native Flax Lily		Late spring to early summer
Sturtina muelleri Native Spoon Cudweed		In spring
Micoseris lanceolata Native Yam Daisy		In spring and summer
Craspedia sp. Billy Buttons Daisy	Found in damp or low lying areas (Eddy *et al* 1998)	Early spring to early summer (Eddy *et al* 1998)
Diuris sulphurea	Moist grassy sites (Eddy *et al* 1998)	Flowers from September to December
Leucochrysum albicans Daisy		In spring and summer

An additional regionally significant plant species was recorded by Connell Wagner during field surveys. *Diuris sulphurea* was recorded in 4 discrete localities of the sites. The plant species list is attached as Appendix B.

Fauna

Previous fauna studies of Portion 75 were conducted by Scott and Furphy (1992) and Kevin Mills (1993). Fauna species recorded through these studies are discussed below.

Birds

Kevin Mills (1993) recorded a total of 44 bird species on Portion 75. These species are relatively common species of woodland areas and include the Australian Raven, Black-faced Cuckoo-shrike and White-throated Treecreeper. Scott and Furphy (1992) recorded a total of 27 bird species on Portion 75, including the Speckled Warbler. The Speckled Warbler is an uncommon species in the ACT/Queanbeyan Region, being a bird of warmer, drier inland areas. The Speckled Warbler was also heard calling on Portion 75 by NPWS officers during a site inspection. The Grey Currawong and the Sitella were also recorded on Portion 75. Although they are fairly widespread in the region, they are only occasionally recorded.

Reptiles and Amphibians

One amphibian, the Common Eastern Froglet *Crinia signifera*, and one reptile, the Striped Skink *Ctenotus robustus* were recorded on Portion 75 by Kevin Mills (1993). A fauna study conducted by Scott and Furphy (1992) recorded one amphibian the Common Eastern Froglet *Crinia signifera*. No threatened reptile or amphibian species have been recorded on Portion 75. However, the threatened species Rosenberg's Monitor *Varanus rosenbergi* has been recorded in the Queanbeyan area and the Striped Legless Lizard *Delmar impar* has been recorded previously in the ACT.

Mammals

Kevin Mills (1993) recorded 3 mammal species on Portion 75 during fauna surveys. They are the Common Brush-tail Possum *Trichosurus vulpecula*, the Eastern Grey Kangaroo *Macropus giganteus* and the Short-beaked Echidna *Tachyglossus aculeatus*. Two introduced species the rabbit and fox were also recorded on the subject site by Kevin Mills (1993). Scott and Furphy (1992) recorded two introduced species the Hare and the Rabbit on Portion 75 during fauna surveys.

Golden Sun Moth Synemon plana

The Golden Sun Moth *Synemon plana* is listed as an endangered species on Schedule 1 of the *Threatened Species Conservation Act 1995* and is a conspicuous day flying moth, of which the larvae are thought to feed exclusively on the native grasses within the genus *Austrodanthonia* (Clarke and Dear 1998). Male moths will only fly in bright sunshine, with a typically short flight period lasting 6 to 8 weeks from November to December. Female moths have reduced hindwings and are reluctant to fly (Clarke and Dear 1998).

The moth was once widespread in south-eastern Australia, which corresponded to the distribution of native grasslands. Less than 1% of native temperate grasslands remains. Temperate native grasslands are the most endangered of all vegetation types in Australia due to clearing for urban development and agriculture (Clarke and Dear 1998). As a result, the Golden Sun Moth is now known to exist from 30 sites throughout south-eastern Australia.

Locally the Golden Sun Moth has been recorded at the Letchworth site (on the western side of Lanyon Drive, Queanbeyan). This site has a very large population of the Golden Sun Moth, high floristic diversity and is also close to a major urban centre.

Survey Results for Portion 75

A survey for the Golden Sun Moth on Portion 75 by Dr Geoff Clarke (CSIRO, Entomology) over a 2 day period revealed that no individuals were present. However, large numbers of the adults male Golden Sun Moth were recorded nearby in December 1999 on the western side of Lanyon Drive at Letchworth (approximately 750m SW of Portion 75), a Department of Housing site. During the current survey the a single male Golden Sun Moth was also observed along the fence line within the Queanbeyan Lawn Cemetery immediately adjacent to Portion 75.

Given the woodland nature of Portion 75 and the lack of high quality *Austrodanthonia* present, the site is highly unlikely to provide suitable habitat for the Golden Sun Moth in its present condition (refer to Appendix A for report details).

Geology and Soils

A comprehensive study of the soils of the local area including the site was undertaken in August 1976, as part of the "Urban Capability Study: Mount Jerrabomberra & Barracks Flat, Queanbeyan", by the then named Soil Conservation Service of NSW. This information has been utilised in the preparation of this report and direct quotations are included where relevant.

The generic descriptions of the two soil types identified and mapped on Portion 75, indicate that there is 400 mm or less of "topsoil" or A horizon, overlying clay and stony layers in the B horizon. The underlying rock is sandstone and shale.

The report indicates that "Sixty sites were examined using a 10 centimetre auger. However, due to the stony character of most of the study area, depth of sampling by this method was often restricted (refer Photo 12). To provide further information on deeper layers on the southern slopes of Mt. Jerrabomberra, the Queanbeyan City Council made a backhoe available for the digging of a further 17 test pits in this area. These were dug to weathering rock, or to a maximum depth of about 2 meters."

Recent roadway earthworks, associated with the North Terrace subdivision on the adjacent block, are currently revealing the average 1 metre thick red clays of the B horizon.

The presence of 'water loving' plants, such as *Kunzea*, is remarked upon in the report, and identified as being in response to a cemented layer 10 - 15 centimetres thick within the A horizon, at 25 - 30 centimetres below the surface. This layer contains gravel and rock and impedes drainage through the soil.

The report states that the soils are stable when vegetated, but a high to very high erosion hazard would exist if disturbed.

Heritage
An archaeological investigation of Portion 75 was undertaken by Access Archaeology in 1989. The results of the survey found that the site contained no prehistoric material. However, with regard to non-indigenous heritage, Portion 75 is of interest due to the former use of the site for eucalyptus oil distillation.

Landscape Character of Existing Cemetery
The existing Cemetery consists of distinct landscape character areas within the site boundaries. Portion 75 acts as a bushland backdrop along the eastern boundary. This description of the existing cemetery emphasises the difference between typical cemeteries and the proposed bushland operation.

Area 1- Historic Sections

There are two older sections to the cemetery, dating from the mid 1800s. The areas are segregated by denomination, however, they share common features such as the distinctive headstones, remnant exotic trees and shrubs dominated by dark foliaged conifers, remnant native grasses and a fence to each place. These are significant places under a number of categories of the NSW Heritage legislation, though not listed currently on any register.

Area 2- Remnant Woodland

Remnant open woodland amidst the two historic burial areas extends to Lanyon Drive along the long northern frontage of the Cemetery. The predominant upper canopy trees are Apple Box, *Eucalyptus bridgesiana*, while the grassland understorey contains mainly *Microlaena* and *Danthonia*.

Area 3 - Entry

The northernmost part of the site adjoining Area 2, is a more heavily wooded entry area that screens the Cemetery from Lanyon Drive. This woodland determines the character of the Entry, which features high stone walls and gates. Exotic annuals such as Petunias are planted at the base of the walls. The entry leads into the straight driveway / spine road which is characterised by very short grass / exposed soil under native plants on the eastern (Portion 75) side, and the greener exotic grasses and trees of the Cemetery side.

Area 4 - Perimeter

There is a perimeter buffer strip surrounding the Cemetery that has been planted with native trees and shrubs in the exposed stony soil, on the southern side of the site.

Area 5 - Burial Platforms

Two grassed platforms have been created for the direct burial of the majority of the graves within the cemetery. The larger upper area is currently in use, with the lower level to be used for future burial demands. The graves are uniform in size and layout, and have consistent style headstones. The area is irrigated.

Area 6 - Open Space

The front section of the Cemetery is open grassland with exotic trees associated with the dam. This area is currently not used for burials but serves as open space bounded by the Works Depot, the Memorial Walls, the dam and the infant burial section.

These distinctly different landscape zones are drawn into unity and sense of place by the enclosure given by both the surrounding landform and the native upper canopy.

Proposed Cemetery Operations

Proposed Management and Maintenance Framework

Staff

Two members of Council staff would be required for the preparation of grave sites and three staff members would be required for maintaining the grounds.

The teams would be as follows:

- Grave site preparation/ 1 truck driver, 1 backhoe operator - Operations would involve soil removal for the grave by backhoe, and soil replacement.
- Grounds maintenance: 3 personnel. Operations would involve slashing, whipper snipping and removing floral tributes. Ideally one of the grounds maintenance staff would have some experience in bushland regeneration.

Council officers would supervise the layout of the separate grave compartments and the implementation of the different regeneration treatments.

Flower Policy

Flowers would be permitted at individual memorials and graves, with the following conditions for placement:

- Only 32mm open ended PVC pipe containers supplied by the Council upon request are permitted. Other vases, ornaments, statues are not part of the environment of the proposed Queanbeyan Cemetery and as such would not be permitted (Vases and headstones would be as per Council Regulations).
- All floral tributes from funerals of the preceding week, whether artificial or fresh, would be removed from the grounds on the last day of each working week or when slashing or other maintenance take place. The flowers would be placed at temporary storage facility and the flowers would be available for collection.
- Picking of any native flowers is strictly prohibited.

Maintenance Regime

The maintenance regime would include the following work areas. Details of the scheduling, frequency and staffing of these activities are tabulated in Appendix D:

- Slashing of vegetation in direct burial areas
- Floral arrangement removal
- Removal of rubbish
- Watering and use of fertilisers
- Fuel reduction management
- Weed Removal Treatments
- Revegetation Treatments based on Vegetation Type

Burial Types and Requirements

Direct Burials

The size of each plot for direct burials (coffins placed in the ground) would be 2500mm length by 1250mm width with 300mm separation side to side and top to bottom, giving a total area of 4.3m^2 per plot. The depth of the hole may vary, however, NSW Health Regulations stipulate a minimum of 900mm cover. This means that direct burial holes would need to be a minimum of 1300mm deep in total. This has been confirmed as the current practice at Queanbeyan Cemetery. It is the practice at Queanbeyan Cemetery for soil and sand to be stockpiled in an area in the south west of the Cemetery. For operations within Portion 75, it is proposed that a small temporary stockpile be stored in an area adjacent to the grave site for the day of the burial only. Rocky overburden and or/topsoil, depending on geological conditions can be stored can be stockpiled on the existing cemetery site. Topsoil can retained for spreading after burial.

Ash Interments

Ash interments could be placed into the ground - with provision for a plaque over or ashes on top of the ground (scattering) - with provision for a plaque nearby. In terms of the capacity of the cemetery, ash interments represent a saving of space per burial as well as (potentially) less disturbance of the ground surface. It is therefore a desirable method of burial. The nearest crematorium is Gungahlin, ACT, or Nowra, NSW.

As the ash internments would require the least disturbance to the bushland of the site it is proposed that they would be carried out within the development area amidst the vegetation classified as forest. This is consistent with the low impact management approach to these areas which recognises the greater development of the understorey and the value of the habitat it represents.

Associated Facilities

As there is neither a crematorium nor a chapel as part of the existing Cemetery, residents of Queanbeyan, and the surrounding region of NSW which this cemetery services, are obliged to use off site facilities for commemoration and religious services. The cemetery is therefore limited to burial, and consequently, generally only visited by small groups of people at any one time.

The possible development of the site to include a chapel would be a decision based on demand for such a facility. Any such facility would necessitate vehicular access to the building frontage for hearses and as a set down / drop off location. Parking for the congregation would be accommodated within the existing 52 space car park.

Management Issues

Vegetation Conservation

This section addresses the approach to the conservation of existing vegetation and the introduction of plants into Portion 75.

The use of Portion 75 for an active and deliberate land use such as a cemetery (as against the passive Scenic Protection land use) is arguably the best way to protect the areas of vegetation to be conserved, because the land will be maintained by dedicated staff.

The nominated areas are to be conserved for reasons of biological heritage and the landscape amenity of both the cemetery and the surrounding residential areas. Consequently these aims dictate the size of the spaces and more importantly the management and maintenance regimes.

There are a number of understorey species of particular interest on this site. *Grevillea ramosissima*, is found on the site spread over a number of locations from the north east to the south east. *Diuris sulphurea* is in pockets to the south-west. The majority of the species of interest occur within the dry sclerophyll open woodland community.

The plants of highest conservation value will not tolerate significant compaction, disturbance (mowing or trampling), changes to the water regime or soil fertility. They are also highly susceptible to transfer of herbicide. The objective is to enable these plants to thrive, therefore it is critical that there are no substantial changes resulting from the change of land use. This can be achieved with creation of 'no go areas' - areas that are not regularly entered by cemetery staff or the visiting public. These would be enclosed within buffer areas that have minimal regular pedestrian entry. These plant conservation buffer areas can coincide with the areas dedicated as buffers for reasons of landscape amenity.

However, the viability of any species is determined by the gene pool. Without sufficient numbers of plants or interaction with its geographic territory to ensure diversity of the gene pool the particular species is endangered. Discussions with officers of both NPWS and CSIRO have indicated that the current population of Grevillea, as part of the Mt. Jerrabomberra gene pool, within the proposed exclusion areas plus the buffer zones would provide sufficient land area for species viability.

Anecdotal evidence suggests that Portion 75 was grazed very heavily prior to ten years ago. The grazing pressure was most likely concentrated within the Open Woodland association, as this is where the grasses were likely to have occurred. This community is currently being invaded by 'weeds' both native - *Kunzea ericoides* and exotic - St. John's Wort, *Hypericum perforatum*.

Of the native communities on site, it is the area occupied by the *E. melliodora / E. polyanthemos* community which is declared as an Endangered community in the ACT. Portion 75 contains one of the most intact understoreys of this community type relative to others in the wider region.

Conservation of Bird Habitat

Bird habitat would be primarily conserved within the conservation zone. *Kunzea ericoides* provides good habitat for small birds, however, this plant is currently disproportionately represented across the site and would be controlled under this plan. Some areas of *Kunzea* in the north of the site (within the developable area) would be retained for use as low density grave sites, enabling the provision of a refuge for birds species.

A study by the Freudenberger (1999) in relation to bird and grassy woodlands found that many birds species were more likely to be found in small patches of remnant vegetation of about 10ha, with at least a 20% shrub cover. It is considered that under the proposed scheme, a shrub cover of greater than 20% would be retained on site.

Calculation of Direct Burial Sites

In order to calculate the number of direct burials that could be reasonable accommodated with the developable area, pilot plans of burial plot configurations were determined for each of the vegetation types. The density of burials adopted in these plans has been proffered in response to a range of management approaches which are sympathetic to the structural attributes of the distinct vegetation types, the extent of understorey development or disturbance and recognised habitat values.

For the purposes of this exercise the vegetation of the developable area was classified as either grassland, woodland or forest depending on the projective foliage cover. The distribution of the three vegetation types within the developable area is illustrated in Figure 3. Under this Vegetation Management Plan direct burials are not permitted beneath the drip line of a tree. As such, the grassland community on site, having the least tree canopy, will permit the highest density of graves. The grassland areas are also recognised as having the most disturbed understorey and as such have a lower value as habitat than the more developed areas of bushland. The denser stands of trees across the site have been classified as forest. These areas generally have a more advanced shrub layer and are regarded as an important resource for avifauna. Given the greater extent of canopy and the development of the understorey, the number of graves feasible within the forested areas would be less than for the grassland areas. In recognition of the higher habitat value of the forest, its management would follow a more hands off approach than the more intensive treatment of the grassland. The woodland classification has been assigned to those areas of vegetation with a structure and understorey between that of the grassland and forest. In accordance with the other vegetation types, the density of burials would be proportionate to the extent of cover.

It is noted that in assigning one of the three classification to the stands of *Kunzea* on the site, some areas, where the *Kunzea* will be removed, were assigned a grassland category, whereas areas of dense *Kunzea* that have been proposed for retention as bird habitat were assigned a forest category.

Estimates of the numbers of burials achievable within each of the vegetation types were calculated using pilot plans of burial plots arranged within 30m x 30m squares overlaid on typical areas of each of the grassland, woodland and forest classes. Allowing 4.3m^2 for each grave (grave size 2.5m x 1.25m=3.25m^2 and 30cm spacing between graves-top and side), examples were worked to provide the grave density estimates.

Vegetation Type	Approx no. of burials in a 30m x 30m area
Grassland	150*
Woodland	80
Forest	62

* Although no paths have been shown through this sample area, it would be possible to configure a path within the excess space allowed between graves in the worked example.

Knowing the approximate density of burials permissible in each vegetation class, the total area of each vegetation class available for burial must be calculated before the total number of graves on site can be determined.

Using GIS the area of each vegetation class in the developable zone was determined. The area required for roads, paths and drainage lines was deducted to leave the area of each vegetation type available for graves.

Vegetation Class	Total area (m^2)	Area deducted for roads, paths, drainage etc (m^2)	Area available for graves (m^2)
Grassland	33639.3	2226.0	31413.3
Woodland	35928.2	2670.6	33257.6
Forest	22555.1	2159.7	20395.4

By dividing the area available for graves by the 900m ^{2} plot the number of graves for each vegetation type was calculated.

Vegetation Class	Approximate Number of Graves
Grassland	5235
Woodland	2956
Forest	1405
Total no. of graves	9596

Based on the above calculation the total number of direct burial graves that can be reasonably accommodated within Portion 75 would be 9596.

Weeds
This section addresses the weed species threat and possible eradication methods. There are a number of invasive plants within the site, both native and exotic.

A number of deliberately introduced plants from nearby have successfully colonised 'over the fence', particularly *Acacia baileyana, Grevillea rosmarinifolia* and *Cupressus* species. Others have 'escaped' to this site as they have done elsewhere in the region, such as *Ulmus procera, Crataegus oxycantha* and *Malus sp*. These plants are visually obvious and are easily controlled. They present no serious threat at this time to the nature conservation values of the site, and should be removed at the earliest opportunity through physical removal and application of neat Glyphosate to the freshly cut stump
The more important and difficult to control weeds, are the exotic invaders of grazing pastures, such as Paterson's Curse and St John's Wort.

Currently the incidence of Paterson's Curse is limited and therefore can be more easily controlled. The majority of these plants are in the exposed soils of the road reserve, however, they may easily spread and should therefore be eradicated as soon as possible before becoming a major weed. The most effective method of control is spot herbicide application just prior to flowering in Spring.

Unfortunately the St John's Wort is now out of control within Portion 75. This is probably due in part to its effective use of numerous vectors for spreading seed as well as vegetative propagation. The extent of the problem is such that long term and planned applications of herbicide, as well as the introduction of the biological control (beetle), is desirable. This weed is not confined to the grasslands, but has invaded the areas of dry sclerophyll where the conservation of plant species is a priority. In such areas the method of application and chemical to be used may be different to the broad acre approach possible in the open woodland grasses. St John's Wort is most effectively sprayed in November, prior to seed set.

The other plant on Portion 75 requiring immediate attention is the endemic *Kunzea ericoides*. This plant is spreading and taking over large areas of former grassland. This phenomenon in well recorded in the region, however, the causes and therefore the optimum control measures are not well understood. As this plant occurs widely across the site, the removal of selected spreading individuals is of benefit to the other grassland species and community health. Control of *Kunzea ericoides* is best achieved through slashing (by hand in order to ensure that regenerating Eucalypts can be retained, where possible because their shading ultimately out competes the *Kunzea*) as necessary to generate fresh low height growth and subsequent spraying with woody weed herbicides such as "Brush-off" or "Grazon" in the peak six growing months. The selection of which plants to remove should be within the nominated development areas.

Revegetation

Revegetation would be undertaken within the buffer and conservation zones predominantly following weed removal and also within the burial area as a means of rehabilitating ground disturbed through the burial process.

Replacement plantings in the buffer and conservation zone would include eucalypts endemic to the site (eg *Eucalyptus rossii* and *E. macrorhyncha*). These plantings would eventually contribute to screening the developable area of Portion 75 from the road and neighbouring residential properties. Native understorey species that are endemic to the site and that are readily available from local native nurseries would be used in the revegetation program.

Existing groundcover/understorey plant species could be used to revegetate graves. The revegetation treatment would vary depending on the vegetation category and the concurrence of the bereaved. For example plants can be removed before the grave is excavated, stored in an adjacent holding area then be replanted as soon as practicable after the grave has been backfilled. A range of plant species would be used for revegetation of grave sites (Refer to Appendix B for detailed list of suitable plant species for revegetation). Plants would be propagated by Council staff from the seed material collected on site (where possible) or alternatively plants could be propagated from local native nurseries. The revegetation treatments would be developed with consideration for the ultimate landscape of each completed burial area and the maintenance required to sustain a manageable site.

The revegetation of graves sites with endemic species would enhance the viability of the grassy woodlands on the site and in the region generally.

Landscape and Cemetery Viability

This section addresses the landscape character directions desirable in the event of development of the site for a cemetery with chapel.

The use of the whole of the site for a direct burial Cemetery is in conflict with plant community conservation. However, if the areas for conservation are not used for intensive development, then the management of the site, afforded by an otherwise passive site usage, is highly desirable and complementary to the contemplative nature of this land use. The increased community popularity of burial of ashes, either in formal or informal sites, plus the scattering of ashes, would be sympathetic with the bushland character of this site.

Fire

The likely incidence of uncontrolled wild fire on the slopes of Mt. Jerrabomberra is much reduced with the advent of suburban development. Portion 75 being almost surrounded by development is unlikely to have other than localised low temperature fires, perhaps initiated from passing traffic on Lanyon Drive, or arson from within the site. Council's Fire Control Officer has indicated that the site is a low fire hazard.

The management of fuel levels on site would be reviewed annually on the advice of Council's Fire Control Officer, however, the retention of a good cover of understorey debris for ecological purposes is fundamental to upholding the conservation value of the site. Leaf litter would not be removed from anywhere within the site and any fallen timber would be placed beneath the drip lines of retained trees to provide foraging habitat for birds. The 'ring' access route would act as a fire break and allow access for bush fire fighting units (not the large urban tankers) to most parts of the site.

The dependence of any of the site's native plant species on cyclical fire for natural regeneration, will be disturbed under a regulated fire management regime. In the event that a hazard reduction burn is required, it is recommended that the advice of NPWS be sought regarding the preferred intensity and timing of the burn.

Vehicular and Pedestrian Access

The precise nature of the development of the site would determine the placement of paths, roadways and tracks, however, in principle the following guide is applicable. The existing network of unsealed routes through the site may provide a guide to suitable locations. Additional access pathways to the main body of the development area would follow existing cleared areas. The introduction of the function of a cemetery would preclude the existing unfettered uses of the site, and perimeter fencing and signage would be upgraded particularly given the concentrated residential development to the south and east.

Roadways would be sealed crowned asphalt pavements, or permeable pavers without gutters. The main access road for hearses is a linked road design (Figure 3). Stormwater, road pavement run off, is to be dispersed in grassed flume drains beside the road, with collection and culverts limited to existing drainage lines. Stormwater is to be directed into the existing dam on the Cemetery, through the existing network of drainage lines and culverts.

Pedestrian pathways are to be composed of mulched eucalypts, which can be used from fallen branches from Portion 75, where possible or alternatively local nurseries could supply the mulched eucalypts. Pavements are to average 1.5m width. Fire access routes are to either

exploit the proposed roadways or are to remain grassed with gravel reinforcement to provide all weather access.

Fencing

Two different types of fencing would be used for the perimeter of Portion 75. Cyclone fencing would be located at the southern end of Portion 75 and along the eastern boundary of Portion 75. The remaining area of fencing around the perimeter of Portion 75 would be agricultural fencing.

Drainage

A number of drainage solutions to manage run off on site have been identified for Portion 75 and include:

- Construction of grassed flume drains beside the road, with collection and culverts limited to existing drainage lines. This would reduce scouring and erosion from runoff from the road surface.
- Construction of a diversion channel and or/contour bank to prevent overland flow from entering the Portion 75 from the east (subdivision). This would need to be designed in conjunction with the developer of the residential land to the east.
- An upgrade of the cemetery access road drainage. A potential solution is to provide below ground drainage to the dam by means of a culvert.
- Construction of a sediment pond/ detention basin/ gross pollutant trap to control pollutants and sediments on all major water courses
- Subsoil drainage should be installed to prevent ground water from entering graves
- Major flow paths may need to be upgraded to ensure adequacy of trunk drainage channels to convey large ARI (Annual Recurrence Interval) flows.
- Diversion Channels should be placed upstream of potential grave sites.

It is recommended that a flood study be carried out so that grave sites can be positioned outside inundated areas.

The drainage from the adjacent subdivision would include the following:

- Water currently enters from the eastern side of the site as a broad overland flow. A proposal stands for the construction of a contour bank
- Flow entering from Lanyon Drive with have a disperser, generally overland flow.

Management Recommendations

The proposed land uses of Portion 75 have been divided into two zones: the intensive development zone and the conservation and buffer zone (Figure 3). The zones in practice would merge together, so there is no distinct boundary between buffer and development area. A maintenance manual has been produced (that can be incorporated into Councils Operations Manual) and is a workable document for management of the differing land uses and is included in Appendix D.

Intensive Development Zone

The uses of the intensive development area of Portion 75 would be primarily for direct burials, ash internments, built facilities such as a chapel, a major access road and minor walking paths. All

development should begin in spring so regionally significant plant species (Refer to Appendix C) can be located, as the position of the plants may change over time. The intensive development area has been divided into three management areas: Grassland, Woodland and Forest. The management of these areas is discussed in the maintenance manual (Appendix D). The approach to the general management of the site is addressed below.

General Management

Approximately 9600 direct burial plots would be achievable, provided soil depth is adequate (Refer Section 5.3). All mature trees would be retained within Portion 75 and burials plots would be positioned from the edge of the drip line of their canopy to ensure tree roots are not damaged by excavation for the burial plots. The use of headstones would be prohibited within Portion 75 as it would not suit the bush setting of the cemetery. Instead bronze plaques would be used as a replacement for headstones. The bronze plaques would be placed horizontally on the ground surface and aid maintenance operations as there would be no obstacles to the maintenance plant.

With respect to the sequence of land use across the site intensive development area, direct burials should start in the clearing in the centre east of Portion 75 and work progressively northward (Figure 3). Some areas with dense *Kunzea ericoides* within the north-eastern portion of the site would be progressively removed to limit erosion and be used for direct burial sites (this would not take place until areas were required for grave development). In the short term juvenile *Kunzea* can be sprayed to retard its spread. Areas of *Kunzea* in the northern portion would be retained as a bird refuge (ie a low density of graves would be placed in various areas of *Kunzea* (Figure 3). Ash internments would also be placed within this portion of the site.

Council's Fire Control Officer has determined that Portion 75 has a low fire hazard. However, broken branches should be removed from pathways to avoid people tripping and be replaced under tree canopies to ensure habitat for birds and reptiles is maintained. Broken branches should be relocated to under tree canopies on a weekly basis.

The removal of trees would require permission from Council under the Tree Preservation Order. Trees would only be removed if they were found to be diseased and may pose some danger to the public. There would be selective retention of regeneration of Eucalypt saplings.

Nature Conservation and Buffer Zone

This area would provide for conservation of native vegetation including regionally significant plant species as well as maintain habitat for native bird species. No graves, ash internments or ash scatterings would be allowed in this area, with the exception of ash scattering under tree canopies. Leaf litter and fallen logs would be retained in this zone to maintain habitat for native species. No fertiliser or watering would be permitted in this portion of the subject site. The width of the buffer zone would be 30m along the north, south, and western boundaries and 60m along the southern boundary of Portion 75, except for where *Grevillea ramosissima* occurs. Drainage lines would also be buffered by a 5m wide strip either side.

Kunzea ericoides would need to be sequentially removed to avoid erosion (refer Section 5.2 for removal techniques) within the conservation and buffer zones. Replacement plantings of Eucalypts endemic to the site (including *Eucalyptus rossii* and *E macrorhyncha*) would be appropriate to replant within the buffer zone as this would provide a screening from the road and residential areas. Native understorey and groundcover species that are endemic to the site would also be used to revegetate the buffer areas. Species to be used would include those that are readily propagated and readily available from local native nurseries.

Access to the nature conservation areas, particularly the *Grevillea rammossima* and the buffer zone areas would be restricted. The buffer and conservation zones on Portion 75 would also provide a

fauna habitat corridor by linking the vegetation in the south-eastern portion with the vegetation through to Mount Jerrabombera.

Further Investigations

It is recommended that further investigations be undertaken in order to refine the calculation of grave sites that may be accommodated within Portion 75. These include:

- A flood study to determine the water flows in times peak rainfall.
- A test of the subsoil to further refine areas for burial.
- Preparation of a detailed landscaping plan.
- Preparation of site by site grave plans on an as needs basis.

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Appendix A

Golden Sun Moth Report

Appendix B

Flora Species List

Appendix B Flora species recorded on Portion 75, Queanbeyan.

Scientific Name	Status
Eucalyptus bridgesiana	
Eucalyptus melliodora	
Eucalyptus blakleyi	
Eucalyptus rossii	+
Eucalyptus macroryncha	+
Eucalyptus polyanthemos	+
Stipa falcata	
Elymus scaber	
Hydrocotle laxifolia	
Oxalis sp	
Tricoryne elatoir	
Bothriochloa macra	+
Chionochloa pallida	
Cymbonotus lawsonianus	
Geranium solanderi	
Juncus sp	
Luza sp	
Poa meionectes	
Scutellaria humilis	
Stuartia muelleri	#
Triptilodiscus pygmaeus	
Amyena sp	
Cassinia sp	+
Exocarpus cupressiformis	
Kunzea ericoides	
Pultenaea sp	
Acacia gunni	
Leucopogon fletcheri	

Linaria peliseriana	
Danthonia sp	+
Bulbine bulbosa	#
Gonocarpus tetragynus	
Lomandra sp	+
Planatago varia	
Wahlenbergia sp 1	+
Wahlenbergia sp 2	+
Caladenia sp (cream)	#
Chrysocephalum apiculatum	+
Cynoglossum suaveolens	
Gnaphalium sp	
Lepidosperma laterale	
Micoseris lanceolata#	#
Poa sieberiana	
Senecio quadridentatus	
Thelymitra sp	
Wurmbea diocia	#
Astroloma humifusum	
Cryptandra amara	
Grevillea ramosissima	# +
Lissanthe strigosa	
Styphelia triflora	
Gomphiolobium huegelii	
Pimelea sp	

Appendix B cont Flora species recorded on Portion 75, Queanbeyan.

Scientific Name	Status
Acaena ovina	
Crassula sieberiana	
Goodenia pinnatifida	
Microlaana stipoides	+
Stipa densiflora	
Caladenia sp (bearded)	#
Craspedia sp	+
Dianella longifolia	# +
Hypericum gramineum	
Leucochrysum albicans	# +
Pimelea curviflora	
Rumex brownii	
Stackhousia monogyna	
Bursaria lasiophylla	
Acacia pycanthatha	+
Brachyloma daphnoides	
Hibbertia obtusifolia	+
Melichrus urceolatus	
Acacia diffusa	
Thysanotus patersonii	#
Diurus sulphurea	#
Hardenbergia violacea	+
Briza maxima	*
Arctotheca calendula	*
Hypochearis glabra	*
Vulpia sp	*
Cupresus sempervirens	*
Lepidium africanum	*
Rubiaceae sp	*

Trifolium sp	*
Hypocheris radicata	*
Centaurium erythraea	*
Petrorhagia nanteuilii	*
Carthamus lanatus	*
Chondrilla juncea	*
Acacia baileyana	*
Lolium perenne	*
Salvia verbenaca	*
Viola odor	*
Aira sp	*
Hypericum perforatum	*
Plantago lanceolata	*
Cerastinum glomeratum	*
Cupressus arizonica	*
Echium plantagineum	*
Phalaris aquatica	*
Taracaxum officinale	*

* = introduced species
# = regionally significant species
+ = species suitable for grave site revegetation

Appendix C

Regionally Significant Flora on Portion 75

Appendix D

Maintenance Manual

Grave Site Preparation						
Activity	**Personnel**	**Frequency**	**General Instructions**	**Grassland**	**Woodland**	**Forest**
Grave site preparation including digging of grave to a minimum coverage of 900mm of soil as required by the NSW Health Regulation.	1 truck driver 1 backhoe operator	The number of burials undertaken per day would be determined by demand and the handling capability of the facility	• Required to keep trucks to the access road and constructed tracks. • Dig out grave plot, 2.5m x1.25m in size by use of a small backhoe • **No graves would be dug within the drip line of the tree canopies, to ensure roots are not damaged.**	**Maximum density of approximately 150 graves per 900m^2. The grave configuration is to be developed by Council's landscape Architect with consideration for the characteristics of each site. Grassland areas are to be developed prior to woodland or forest areas , where possible**	**Maximum density of approximately 80 graves per 900m^2**. The grave configuration is to be developed by Council's landscape Architect with consideration for the characteristics of each site. Woodland areas are to be developed prior to forest areas , where possible	Maximum density of approximately 62 graves per 900m^2. The grave configuration is to be developed by Council's landscape Architect with consideration for the characteristics of each site. Forest areas are to be developed after other vegetation classes, where possible.
Stockpiling of soil		Less than 24 hours	• Soil should be stockpiled adjacent to the graves site and outside the drip lines of any trees • On windy and rainy days the stockpile should be covered. • Excess rocky overburden/soil should be removed and stockpiled off site, preferably at the existing cemetery site. • Temporary stockpiles are to be stored away from completed graves undergoing re-establishment.	General instructions are applicable for all vegetation classes.	General instructions are applicable for all vegetation classes.	General instructions are applicable for all vegetation classes.
Placement of Bronze plaques in pre-cast concrete surround..		As required	• Headstones are not permitted in the bush cemetery • Plaques to be flush with the ground surface. • Plaques to be kept visible through localised trimming of vegetation	Trimming around plaques to avoid exposing bare soil, through placement of mulch for 100 mm around perimeter. Any plants to be trimmed from overhanging with secateurs.	Trimming around plaques to avoid exposing bare soil, through placement of mulch for 100 mm around perimeter. Any plants to be trimmed from overhanging with secateurs.	Trimming around plaques to avoid exposing bare soil, through placement of mulch for 100 mm around perimeter. Any plants to be trimmed from overhanging with secateurs.
Scattering of ashes - no ground disturbance		The number of ash scatterings undertaken per day would be at he discretion of the cemetery manager, The privacy of the bereaved parties would be the main consideration in scheduling.	• Not permitted in conservation / buffer zone			

Ash interment site preparation		The number of ash interments undertaken per day would be at he discretion of the cemetery manager. The privacy of the bereaved parties would be the main consideration in scheduling.	▪ Not permitted in conservation / buffer zone The ground cover plants would be cut from the internment site as a sod, if possible, and replaced on completion of the ceremony. In the event that the ground is bare, a plant or plants from could be selected for planting. Mulch to be placed over all disturbed ground.	Ashes interments to be preferentially located in forest areas	Ashes interments to be preferentially located in forest areas	Forest areas which are not likely to be required for burials, regenerated sites could be used once established.

Grounds Maintenance						
Activity	Personnel	Frequency	General Instructions	Grassland	Woodland	Forest
Floral arrangement removal	3 x grounds staff	All floral tributes (whether artificial or fresh) from funerals from the preceding week will be removed from the grounds on the last day of each working week or when slashing or other maintenance takes place.	Disposal to appropriate waste facility.	General instructions are applicable for all vegetation classes.	General instructions are applicable for all vegetation classes.	General instructions are applicable for all vegetation classes.
Grass Mowing / Slashing	I x operator of equipment	Mowing of grassland to a height of 5 cm, around direct burials sites only, undertaken 1 x month from September to April, and 1 x mid winter. Perimeter area grasslands to be slashed 2 x year to 10 cm ht., at end November and end April.	During the flying season of the Golden Sun Moth (end November to December), slashing should not be undertaken in the middle of the day. The buffer / conservation zone of the site will be left in a natural state.	Mowing of grassland to a height of 5 cm around direct burials sites only	Mowing of grassland to a height of 5 cm around direct burials sites only	Mowing of grassland to a height of 5 cm around direct burials sites only

Grounds Maintenance						
Activity	Personnel	Frequency	General Instructions	Grassland	Woodland	Forest
Removal of rubbish		Rubbish should be removed weekly or when slashing is undertaken.	Initially all rubbish and debris should be removed from the site (ie car wrecks etc)	General instructions are applicable for all vegetation classes.	General instructions are applicable for all vegetation classes.	General instructions are applicable for all vegetation classes.
Watering		Watering would take place after planting at rates dependent on season and plants	No watering permitted in the buffer and conservation zone, except after re-planting	Irrigation of grassland areas surrounding graves is to be limited to establishment and emergency watering only, during dry times.	Irrigation of grassland areas surrounding graves is to be limited to establishment and emergency watering only, during dry times.	Irrigation of grassland areas surrounding graves is to be limited to establishment and emergency watering only, during dry times.
Use of fertilizer		Fertilizers are to be slow release, recommended for Native plants and low in Phosphorus	No fertilizing permitted in the buffer and conservation zone, except after re-planting	Fertilizing of grassland surrounding graves is to be limited to one application during establishment and as necessary thereafter in response to soil nutrient level monitoring.	Fertilizing of grass areas surrounding graves is to be limited to one application during establishment and as necessary thereafter in response to soil nutrient level monitoring.	Fertilizing of grass areas surrounding graves is to be limited to one application during establishment and as necessary thereafter in response to soil nutrient level monitoring.
Removal of debris and other material on walkways		1 x week relocate any fallen branches on pathways, to under tree canopies, to ensure public safety. To be undertaken at the same time floral tributes are removed. This activity is to be restricted to the working areas of the developable area. 6 x year blow leaves off paths onto surrounding areas.	Leaf litter and fallen branches in the conservation/buffer area would be left in place. Leaf litter on paths / roadways would be left until or unless it represents a public hazard, such as is large concentrations and wet with rain. Larger fallen timber that represents a hazard to pedestrians would be removed to beneath the nearest adjacent tree canopy, whenever required.	Grasslands between and immediately graves will have the natural leaf litter modified by mowing. Otherwise all leaf litter to remain undisturbed. Branches over 25mm diameter to be removed and relocated to under nearby trees.	Grasslands between and immediately graves will have the natural leaf litter modified by mowing. Otherwise all leaf litter to remain undisturbed. Branches over 25mm diameter lying on graves to be removed and relocated to under nearby trees.	Branches over 25mm diameter lying on graves to be removed and relocated to under nearby trees.

Weed Removal Treatments	1 x person with backpack spray unit, and / or 2 x persons with vehicle fitted out for herbicide spraying	St Johns Wort- spray in October / November with herbicide ie prior to seed set. *Kunzea ericoides*- -slashing to generate low height growth and subsequent spraying of woody weed herbicide such as "Brush-off" or "Grazon". Spraying should be undertaken before seed is set. The slashing of mature *Kunzea* in the northern portion of the site would be undertaken only when this area is opened up for grave site development. Juvenile *Kunzea* would be sprayed as soon as possible, Care should be taken to avoid spraying of regenerating Eucalypt species. Patersons Curse and Introduced grass species to be spot sprayed at appropriate times in Spring to avoid seed set.	Ensure that spraying is not undertaken on windy days, that spray guards are used as appropriate and that the chemical used does not interfere with regionally significant plant species. Individual large shrub and tree 'weed' species to be individually removed as the areas are developed for graves, through physical removal and use of herbicide to eliminate re growth.	St John's Wort to be priority for eradication to all areas for development. Prevention of weed seed germination can be assisted by placement of min. 50mm depth mulch over any bare soil not to be re grassed.	St John's Wort to be priority for eradication to all areas for development. Prevention of weed seed germination can be assisted by placement of min. 50mm depth mulch over any bare soil not to be re grassed.	St John's Wort to be priority for eradication to all areas for development. Prevention of weed seed germination can be assisted by placement of min. 50mm depth mulch over any bare soil not to be re grassed.
Tree Removal:.		Remove endemic trees only when diseased or at risk to public safety.	All mature endemic trees would remain on Portion 75. Requires permission from Council under the Tree Preservation Order.	Individual trees cleared of for grave development, are to be recycled as mulch	Individual trees cleared of for grave development, are to be recycled as mulch	Individual trees cleared of for grave development, are to be recycled as mulch
Revegetation:	2 x personnel with necessary equipment	Within 24 hours of burial hydro-mulch graves.	Revegetate with endemic species in any of the following ways. ▪ viro-cell, or ▪ re use existing plant species from grave site, or ▪ seed with native grasses Native grasses need to be re established in the buffer and conservation areas where removal of *Kunzea* and other weeds results in bare soil.	Sow with grass - *Microlaena stipoides* and other species available, to disturbed areas	Sow with grass - *Microlaena stipoides* and other species available, to disturbed areas	Sow with grass - *Microlaena stipoides* and other species available, to disturbed areas