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Nature Conservation Saves for Tomorrow

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Dear Dr Dillon

Draft Strategic Plan for BMCC Cemeteries

The Blue Mountains Conservation Society is a community-based volunteer organisation with over 850 members. The goal of the Society is to promote the conservation of the environment in the Greater Blue Mountains region. The Society would like to make a submission in relation to the draft Strategic Plan for BMCC Cemeteries currently on public exhibition.

Strategic Context (p9)

The Society supports the stated sustainability context of the Plan; however, there is a lack of mechanisms or guiding principles to ensure that this Plan will "minimise the impact of our urban footprint on the natural environment" (p9 / Community Strategic Plan p28). For example:

- There is no consideration of "buffers" to serve an ecological function, only visual/aesthetic. For buffers to provide protection to adjacent bushland, minimum widths need to be established.
- No definition or guiding principle has been stated for what constitutes "native" vegetation. It should be clearly stated that this means indigenous vegetation of local provenance.
- There is no mention of the need for mowing regimes to be developed to ensure protection of native groundcover

Whilst it is appreciated that this Plan is not a detailed Plan of Management or works program, there are some important management principles which need to be included to guide the strategic direction in a way that ensures "minimal impact … on the natural environment."

World Heritage Setting (p13)

It is important that this Plan takes account of all the factors for which World Heritage status has been given and that all these are protected and promoted.

It was not just eucalypts that have been recognised. Eco system interaction is recognised in Criteria (ix) and (x) in the UNESCO listing of the GBMWHA.

- Criteria (ix): ...Representative examples of the dynamic processes in its eucalypt-dominated ecosystems cover the **full range of interactions between eucalypts, understorey, fauna, environment and fire**...
- Criteria (x): ... The diverse plant communities and habitats support more than 400 vertebrate taxa (of which 40 are threatened), comprising some 52 mammal, 63 reptile, over 30 frog and about one third (265 species) of Australia's bird species …

Natural Burial Options (p17)

The dismissive treatment of the natural burial option is disappointing, if Council's role is to "be responsive to its community, demand and change" (underlying principle p18). This option should be explored more thoroughly for community interest and environmental considerations.

On p17 it is stated:

> "Green or natural burials (organic or green) represent a minor proportion of the greater burial number of less than 2% (approx.)……..due to the minor take up of these internment methods, these are not considered in the future planning of these Cemeteries"

The minor take-up of this option we believe is directly related to the lack of opportunity. There are no sites in the Blue Mountains for natural burials. This should be considered as one response to addressing the problem of limited capacity in cemeteries.

Even though the number is low, we contend that the popularity and feasibility of natural burials has increased in Australia over the past decade. We suggest that the Cemeteries Strategic Plan provides an opportunity to consider how Blue Mountains City Council can facilitate this option for residents in the future.

This is not normally an option to be incorporated into an existing cemetery, as the concept behind it is to leave no trace and restore degraded land. A suitable site for this option would be degraded land requiring revegetation, where the soil has a high content of clay and be located in a place where the groundwater is very deep.

Recommendation:

That a thorough assessment of the feasibility of the natural burial option be undertaken.

Preserve Environmental Values [sec 4.3 p26]

There are 3 critical strategic issues / risks which have not been addressed in this Plan:

1. Degradation of adjacent native vegetation

2. Groundwater pollution and subsequent impact on Blue Mountains swamps
3. Impact of lawn burial areas

Two other important issues not addressed adequately are:

1. Retention of native groundlayer vegetation
2. Ash walks in bushland

1. Degradation of adjacent native vegetation

Native vegetation buffers can mitigate this risk. However, the report fails to understand buffers as fulfilling any ecological purpose. In order for this to be achieved the scientifically established thresholds need to be clearly stated as policy.

The Society supports the recommendations for buffers retaining vegetation around cemetery perimeters. We recommend that the strategy include that the retention of existing bushland is a high priority and if this cannot be achieved then buffers would be established by planting the local indigenous species of the relevant community in that area (of local provenance).

For buffers to serve to protect the bushland surrounding the modified landscape of the cemetery, there are minimum widths demonstrated as necessary to mitigate against degradation. Regular maintenance is also necessary (i.e. bush regeneration by skilled people).

A Blue Mountains study undertaken by Smith, P & Smith, J. in 1998 established that a minimum buffer width of 60m was necessary to protect bushland in the sandstone communities (Smith, P & Smith, J). Whilst some of the impacts to be protected against was the behaviour of adjacent residents, others were the “edge effects from cleared areas”. They cite other research undertaken elsewhere and it could be deduced from this paper that the minimum distance for a buffer around the ‘edge’ of a cleared cemetery area should be 50m.

An alternative or complementary mechanism is demonstrated at the Lawson Cemetery. Earth Mounds/bunds along the downslope edges of the existing active cemetery serve to protect the bushland behind (these may or may not have been established with this intention). Whilst the mounds themselves are covered in weeds, primarily kikuyu, there was only minimal weed invasion behind these. In comparison the upslope (northern) boundary is severely weed infested (other factors are also relevant).

The source of weeds from the modified/used areas in most of the cemeteries is:

1. Invasive plants deliberately brought to the cemetery area as cut flowers or planted on graves, e.g. Formosan lily, watsonia, agapanthas
2. Weed seeds carried into the area from adjacent roads or houses in water runoff (via drainage lines, walking tracks etc)
3. Soil and mulch

It is not feasible to expect Council to use the existing bush regeneration team which is seriously under resourced for the huge task it currently has. Similarly, bushcare volunteers are already overcommitted dealing with high priority edge of World Heritage area sites. Therefore, the Cemetery budget needs to allocate resources to this task.

Recommendations

- Bushland management to be resourced as a high priority to address the significant degradation occurring from lack of stormwater, sediment and weed control on all sites.
- Buffers and/or earth mounds be established on the downslope edges of all sites to protect bushland below.
- Install separate bins at all the cemeteries for disposal of flowers and plant material bought into the site, to discourage the dumping of plant material in adjacent bushland. This will minimise the possibility of weeds being spread.
- Include interpretive signage in the Design Approach on the correct way to dispose plant material at each of the cemeteries, including signage at the entry and on the bins.

2. Groundwater (p26)

Only surface water is considered under the section of water quality (p26). The Plan does not address groundwater contamination which is a significant risk with cemeteries. For example, a study has found that "almost all cemeteries have some potential for pollution" (Dent 2002, Abstract)

Two of the cemeteries within the Blue Mountains have Blue Mountains swamps within or nearby, which is evidence of high groundwater. There is a potential risk that the products of decomposition will contaminate the groundwater system and have detrimental effects on the ecology of the swamps which are Endangered Ecological Communities.

Decomposition products likely to move into groundwater include both inorganic chemicals as well as pathogenic organisms (bacterial and viral materials).

The analysis by Dent showed that the most likely inorganic chemical of concern to leave the cemetery boundary is nitrogen (Dent 2002, Chapters Five and Six Table 6.1). Whilst the levels are small, both Nitrogen and Phosphate have the propensity to cause environmental degradation because they are plant nutrients.

Dent recommends buffer zones with default distances as an essential aid in the attenuation of any decomposition products leaving burial areas. He specifies some default distances (Dent 2002, Figure 7.4):

- 20m in sandy soil if the boundary is down hydraulic gradient or on a topographic low; otherwise 10m. This should be greater (to 25m) in sandy areas with high hydraulic gradients, of more than 0.05 (5 %)
- Where a cemetery on steep aeolian deposits borders a wetland there needs to be a geoscientific evaluation.
- The planting of deep-rooting, locally adapted, native vegetation is likely to provide the best type of planting.

Recommendations:

Relevant recommendations from Dent include:

- The invert of a grave and hence the deepest burial depth, must be at least 1m above any level to which a watertable fluctuates - more in clean coarse sandy or gravelly soils.

- The influences of perched and ephemeral watertables and springs need to be taken into account. Burials should be avoided near springlines and never in swampland.
- The best soils for cemeteries in order to favour decomposition and with good decay product attenuation are well drained clayey sands.
- New sites and extensions should be properly evaluated geoscientifically for groundwater.
- Develop cemeteries from the outside-in and around the perimeter first. Retain or plant adequate local native vegetated buffers of trees, shrubs and groundcovers, particularly on the downstream boundaries of cemeteries.
- Preserve and plant deep-rooting native trees and shrubs - particularly in buffer zones.
- Minimise watering.

3. Planting new lawn areas

New lawn areas are proposed in the Strategic Plan for many of the cemeteries, most of which also have adjacent bushland, whether National Park or adjacent crown reserves or on the site itself. In order to avoid degradation of these bushland areas it is critical that no invasive grasses be planted. Only grass species native to the local area or exotics scientifically proven to not be invasive should be used.

This will avoid creating an additional high maintenance task (see also comments on resources in bushland management above).

Species selected should also not require fertilising or no more than minimum watering (refer to discussion above about groundwater pollution and impacts of excess nitrogen).

Recommendation

That lawn species be selected on the basis of being non-stoloniferous and non- invasive, and if possible to be native to the area.

4. Retention of native groundlayer

Whilst there is reference to retaining native grasses and other native groundcover there are no clear recommendations to do this, or proposals of how this may be achieved. The Strategy should include the relevant principles for each cemetery where native groundlayer still exists.

The 2003 Conservation Management Plan for BMCC by Hubert Architects p43 suggests minimal mowing and no top dressing where the native ground cover is dominant e.g. Mount Victoria Cemetery

> *'The most appropriate approach to the care of the native grasses and plants is to cut the grass at very long intervals (if at all) and to monitor the presence of weeds'*

Recommendation

That mowing regimes be established for each cemetery that retains native grasses and other groundcover to ensure these plants survive and thrive, including minimal mowing.

5. Ash Walks in Bushland

It is not appropriate to locate "ash walks" in bushland unless there is some way to ensure invasive plants/flowers are not placed there. The ash walks at both Springwood and Blackheath have had invasive plants brought in and placed around some of the memorial plaques. In the case of Springwood there were a number of succulents and watsonia flowers observed along the walk in the midst of the critically endangered Shale Sandstone Transition Forest.

The material used for the surface of the pathways needs to be assessed for its impact. Bitumen paths can raise the pH levels from 5 to 8, which promotes weed growth and impedes the health of most local native plants (Buchanan 1989, p46-47). We understand more recent research has identified soil pH impacts from concrete surface runoff.

Recommendations

- That any 'walks' or 'paths' constructed in bushland avoid the use of materials that will alter the pH of the surrounding soil.
- That where ash walks traverse bushland, measures are taken to ensure that invasive plants/flowers are not introduced.

FURTHER RECOMMENDATIONS

6.1 SUCCESS INDICATORS (p94)

The Society challenges the statement made on p 10: "Appropriate bushland care and regeneration practices are in evidence at all cemeteries".

Inspections by experienced and AABR accredited bush regenerators who are Society members have concluded that there is very little evidence of any bushland management practices at any of the cemeteries.

Under the Design Principles for each cemetery is the statement:

'That the native bushland landscape margins to the existing and proposed burial areas are to be maintained as bushland with regard to asset protection zones and accepted bushland maintenance practices'.

The current "accepted bushland maintenance practices" have resulted in significant degradation of the bushland adjacent to most cemeteries (except Megalong and Mt Victoria; Mt Irvine not known). It is time for cemetery management in the Blue Mountains to adopt BEST bushland restoration and management practices.

Recommendations

- Amend # 1 and #2 to read:
    1. Retention and rehabilitation of existing Endangered Ecological Communities to a healthy condition at each cemetery.
    2. Retention and rehabilitation of existing Scheduled Vegetation Communities (identified under LEP 2015) to a healthy condition at each cemetery.

- Include additional Success Indicator

3. Retention and/or restoration of healthy indigenous bushland curtilage at each cemetery.

6.2 IMPLEMENTATION PLAN AND EVALUATION CRITERIA (p95)

Recommendations

That the following additions be prioritised and Actions taken in years 1-4:

- Assessment of groundwater quality and location, and assessments of soil pathogens and biohazards.
- Some of these aspects were mentioned in the report but there are no recommended strategic actions. (Refer to discussion in this submission of dieback (at Katoomba and Blackheath), groundwater impacts and recommended additional/amended success indicators).
- Implement comprehensive bush regeneration strategy including: ongoing weed control program, establishing adequate vegetated buffers, creating 'mounds' to impede the flow of weed seed, installation of bins for plant material with appropriate signage.
- The first 2 listed "success indicators" have no actions to achieve this. Weed control is essential to be undertaken whilst restoration is still possible in most areas. Specific actions to restore and protect all 3 categories of bushland (as identified above in success indicators) are required in order to avoid losing the "bushland setting" in the next 10 or 20 years.
- Amend the Cemeteries Policy (adopted 2020) to ensure inclusion of bushland management recommendations raised.
- Consult with the Bushland Management section of Council (this was missing from the Project Objectives p 8).

ISSUES SPECIFIC TO EACH CEMETERY

Mt Irvine Cemetery

Refer to general comments about proposed new lawn burial areas, and the need to protect the Endangered Ecological Community Moist Basalt Cap Forest.

Mt Victoria

Groundwater and Swamp
The depth and location of groundwater needs to be identified as a constraint. The close proximity of Blue Mountains swamps is a clear indicator of its presence. Adherence to the principle of maintaining a "native vegetated curtilage" is not adequate, there needs to be a significant buffer to the swamp to protect from groundwater pollution of at least 25m. A greater width may be necessary to protect the swamp vegetation from degradation (refer to discussion above).

All extensions proposed in the Strategic Plan risk degrading the Blue Mountains Swamp (an Endangered Ecological Community) and also the surrounding scheduled vegetation community of Heath and Scrub. One section proposed for lawn burials is just 8m from the mapped edge of the Blue Mountains Swamp (see groundwater discussion in introduction)

Native Vegetation and Weeds
Design Approach section mentions maintaining the native grasses by managing erosion from the road. Unfortunately, the biggest threat is actually the invasion of Coreopsis sp.

from the adjacent Crown Land area, and the too frequent mowing of the native ground covers which includes the grasses. Erosional deposition is also a factor.

Proposed Lawn areas (see general discussion above)

- Species selected should be consistent with the species present.
- Due to the close proximity to Blue Mountains swamps (an Endangered Ecological Community), no fertilisers should be used and no stoloniferous grass species introduced.

Identify trees currently in the areas to be cleared, worthy of being retained, and design the 'lawn' areas around the trees. This will remove the need to maintain the new plantings, and will be less disruptive to the site.

Megalong Valley

The Society supports the design approach except that it needs to extend beyond maintaining a "vegetated curtilage". It should also ensure none or minimal reduction in the bushland on site.

Blackheath Cemetery

Dieback is acknowledged as a problem. This could be from high nutrient levels moving down in the surface water or groundwater, and /or increased flows of water. Pollution of both surface and groundwater from within the cemetery needs to be investigated and mitigated.

Bushland management needs to gain a higher priority to address the significant degradation occurring from lack of stormwater controls, sediment and weed control throughout the site.

New lawn burial areas should ensure that they do not become an additional source of weeds and nutrients impacting bushland (see discussion above).

Katoomba Cemetery

Groundwater

The depth and location of groundwater needs to be identified as a constraint. The close proximity of Blue Mountains Swamps to the north is a clear indicator of its presence. Groundwater is also on the surface on the power easement, just 20/30m below the gate/stockpile. This small patch has become evident as swamp vegetation has been removed and left bare in the power easement.

The Society strongly recommends that a hydrogeological survey of the whole site including proposed extensions is carried out.

Bushland management

Bushland management needs to be a higher priority to address the significant degradation occurring from lack of control of stormwater, sediment and weeds throughout the site.

Restoration of the bare earth on the easement is needed as a matter of urgency, as is sediment control on this steep slope.

Buffer plantings are needed along all cleared creeklines/flowlines/drainage lines to ensure chemical and bacterial matter do not flow into the watercourse which feeds a swamp below and Yosemite Creek.

Upgrading further turf areas is identified in the report as an opportunity. It should also be recognised as a risk to the adjacent bushland (see discussion of lawn areas above).

An area of dead Eucalypts exists in the north easterly corner of the existing monuments/graves, below a soil stockpile. This could be from high nutrient levels moving down in the surface water or groundwater, and /or increased flows of water. This needs to be investigated and mitigated.

Cultural plantings
We question what is meant by proposed "cultural" plantings. From what culture? No non-local native species should be planted unless there is scientific proof that these will not become invasive and degrade bushland downslope.

Wentworth Falls Cemetery

Western Extension
The design principle of "preserving the background bushland setting …. is maintained" is in conflict with the concept proposal to extend the lawn burial areas to the west. This western section of bushland is in relatively good condition and any reduction from the 60m width (where it exists) needs to be maintained to retain the integrity of the bushland (refer to discussion earlier under degradation of native vegetation). This reduction will eventually lead to a weed infested area which will also result in the loss of the large trees as is occurring on the downslope / eastern remnant.

Weeds
The weeds observed on site include many 'ecosystem transformers' such as cotoneaster, Japanese honeysuckle, evergreen dogwood, blackberry, and broom.

Eastern Bushland area
The bushland on the downslope side is severely degraded and would require continuous bush regeneration work over a 5 year period before it could reach a maintenance level. There are already a number of dead Eucalypts and another 5/6 at high risk of dying due to the ivy climbing on the trunks, and/or the drainage.

If any extension is required it would be preferable to extend to the east and adopt a high maintenance regime to retain some appearance of "bushland" in the remaining curtilage. As the downslope area, the east will always be subjected to high impact from weeds and water runoff issues, as well as possibly groundwater pollution. The Society recommends consideration be given to the creation of a mound/bunded line between the disturbed area and the "bushland" curtilage.

Southern Bushland area
We support the retention of the width of bushland to the south which averages a width of 80m. This provides a substantial buffer from the urban edge and could be maintained in the long term with minimal work <u>if</u> an investment in bush regeneration was to be made in the near future to bring it to a maintenance level.

Cultural plantings
We again question what is meant by proposed "cultural" plantings. From what culture? No non-local native species should be planted unless there is scientific proof that these will not become invasive and degrade bushland downslope.

Lawn
The same comments apply as outlined in introductory section.

Lawson Cemetery

Bushland buffer
The bushland surrounding the cleared/used cemetery area is severely degraded on the northern boundary and on part of the eastern edge. As the structure of the vegetation community remains, it could be restored if worked on in the near future.

If the "buffer" to the north was reduced to 10m as proposed, it is inevitable that this will be very rapidly invaded by weeds unless significant resources are invested every year in maintenance (see comments on buffers above in S 4.3).

The Society recommends that a minimum width of 60m be retained as a buffer and that resources be allocated for maintenance (Smith & Smith 2010).

Drainage line through northern bushland edge
This is the source of the majority of weeds to the perimeter bushland. As this drainage line is located where it is proposed to develop new lawn burials sections, it is critical that consideration be given not only to surface water flows but also weeds when it comes to a plan to re-shape the area.

We oppose the loss of the buffer to the north. The proposed remaining 10m wide 'buffer' will have virtually no ecological value and due to the extent and range of "edge effects" will guarantee its degradation over time. Given experience to date, we are not re-assured that this expansion of the burial area will come with resources to maintain the 'remnant bushland'.

It does not make sense to install a 'nature walk' when it is proposed to get rid of most of the northern bushland and open it up to degradation.

Lawns
Design approaches proposed include continuing with mown exotic grasses and also encouraging native grasses. However. it cannot be guaranteed that the exotic grasses will not take over the natives, especially as the exotic grass are likely to be watered and fertilised.

Faulconbridge Cemetery

What materials are used in the pathway for the 'ash walk'? What are the pH levels of these? The soil surrounding the pathway will be impacted by the acidity/alkilinity of the surface from rain runoff and this may impact the surrounding bushland, making it more vulnerable to weed invasion (ref the general comments).

The design approach proposes continuing with mown exotic grasses and also encouraging native grasses – can it be guaranteed that the exotic grasses will not take over the natives? Will the exotic grass be watered and fertilised?

Springwood Cemetery

This site contains Shale Sandstone Transition Forest (SSTF), acknowledged in the report as being a critically endangered Ecological Community. Significant areas are already under threat of weed invasion. These are primarily the areas 'downslope' of the developed cemetery area. The north eastern section requires substantial weed barriers and restorative work. The south westerly areas are also beginning to suffer from weed incursions. Most of the SSTF around the cemetery is narrow (less than 60m) and suffers from weed incursions from at least 2 directions - both within the cemetery as well as from outside.

The other bushland community (Corymbia) also suffers from significant weed incursions leading to significant changes to its structure.

Rather than extending the burial areas downslope, consideration needs to be given to developing a vegetated buffer to protect both the EEC and the other bushland community.

The Society recommends:

- The development of buffers along the length of the SSTF with local native species, giving priority to the downslope areas.
- That any tree planting be of species belonging to the SSTF community, which is consistent with the remnant trees to form part of a protective buffer (as discussed by Smith & Smith 2010 report).
- That the ash walk within this vulnerable remnant bushland community is not extended unless the issues of surface material and introduced plant material can be addressed.
- That all "cultural" plantings be indigenous, which would be consistent with the dominant trees remaining within the existing cemetery areas.

The remaining EEC outside the site on the north east corner also requires a protective buffer of a minimum of 20m (Smith & Smith 2010). We therefore object to the proposal to develop the area for lawn burials and also to plant "cultural" i.e. exotic trees within it.

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Thank you for the opportunity to comment on the draft Strategic Plan for BMCC Cemeteries.

Yours sincerely

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