sustainable

Michael Perry Botanic Reserve

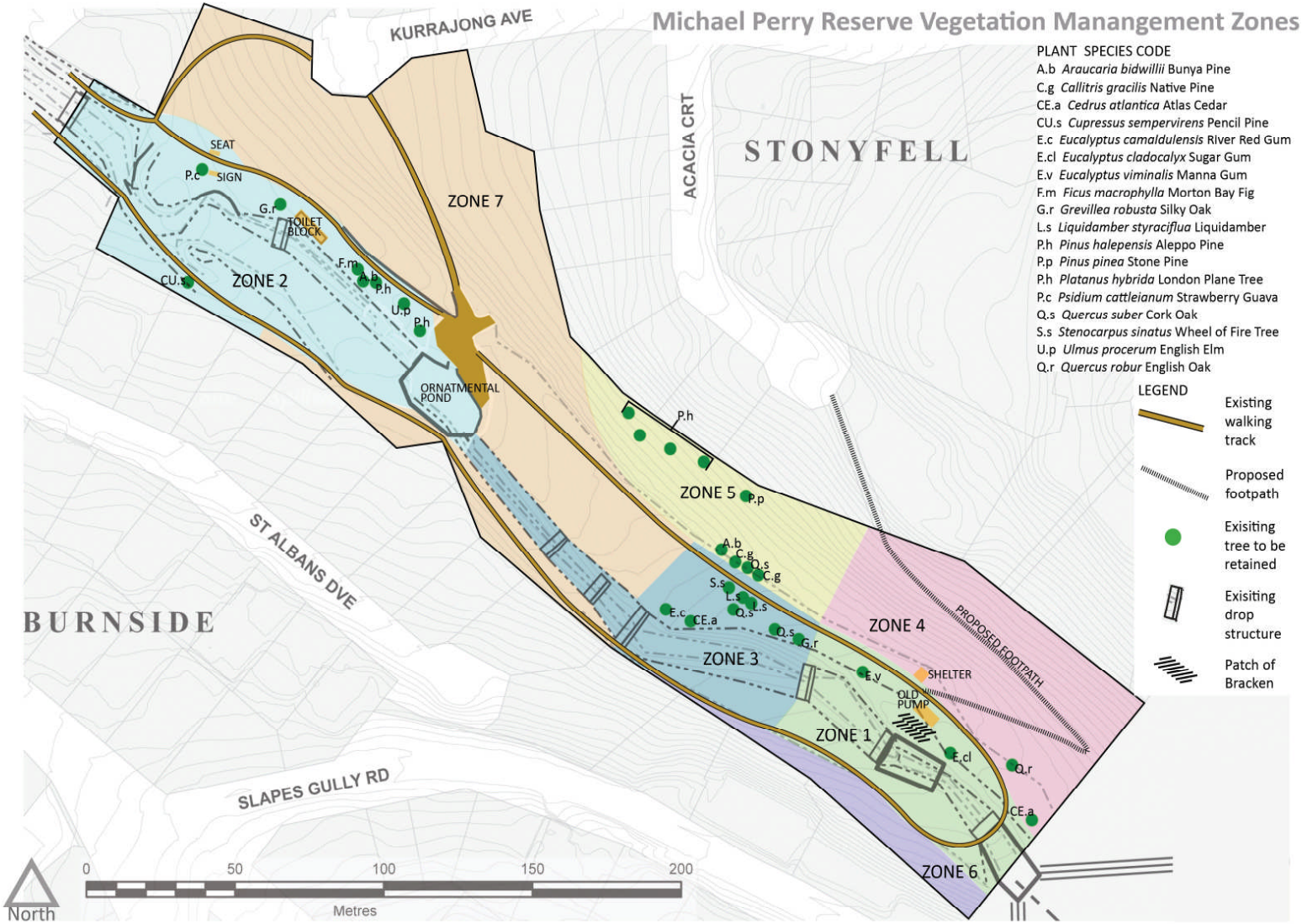
Vegetation Management Plan

November 2012

Author: Andrew Crompton, - Technical Officer, Conservation and Land Management, City of Burnside
Reviewer: Dr Leonie Scriven - Principal Strategy Officer, City of Burnside.

City of Burnside

www.burnside.sa.gov.au



DRAFT FOR CONSULTATION

INTRODUCTION

1. This Vegetation Management Plan has been prepared to establish a long term vegetation conservation management framework and works program for the Michael Perry Botanic Reserve at Stonyfell in the City of Burnside.

2. This vegetation management plan supports the following desired outcomes in the City of Burnside strategic plan Vision 2020II:

   - A range of high quality passive and active recreational facilities;
   - A connected system of well designed and maintained open spaces; and
   - Natural environments and watercourses protected and conserved.

3. The purpose of the vegetation management plan is to define and document the actions required to be implemented to protect, conserve and partially restore the Michael Perry Botanic Reserve historical exotic flora and native vegetation and fauna habitats within the Reserve.

4. The following objectives for site management have been identified to:

   - restore a healthy stream and bank ecosystem;
   - restore the naturally occuring grassy woodland vegetation;
   - maintain and improve the quality of the garden landscape and the health of the specimen trees;
   - over time implement a programmed replacement of inappropriate invasive exotics with indigenous equivalents;
   - minimise the visual impact of the proposed weed removal works and maximise native vegetation cover; and
   - undertake monitoring and maintenance activities to ensure adequate implementation of the mitigation measures and a stable restoration outcome.

BACKGROUND

5. Michael Perry Botanic Reserve is a 3.2ha reserve which was formed in the1970's from the subdivision of the former Clifton Estate.

6. The reserve contains a section of Second Creek and many old horticultural tree specimens and relics of the original Clifton Estate garden.

7. The horticultural heritage of the reserve was acknowledged by Council in the 1990's when three Green Corps teams worked to clear weeds from the gardens and stabilise the paths.

8. The biodiversity value of the reserve was recognised in the 1997 Biodiversity Action Plan for Council Land. In 2000, in a joint project with adjoining residents, dense woody weeds were cleared from the slope at the north-eastern end of the reserve. Natural vegetation was protected, regeneration encouraged and appropriate species planted. Weeds have been consistently controlled in this area since native vegetation restoration work commenced.

9. In 2009 in conjunction with the Adelaide and Mt Lofty Ranges Natural Resources Management (NRM) Board, works took place at various locations to stabilise the creek bed where the growth of Willow roots had triggered the development of erosion heads.

10. At the time, the NRM Board allocated funds to Council to undertake weed removal and revegetation works in the riparian zone at Michael Perry Botanic Reserve. This work is well under way in several locations along the creek, but can not proceed further without the removal of weedy tree species that now dominate some parts of the watercourse. Although these trees are exotic weeds and prevent or inhibit native plant regeneration, they are known to the local community and the need for their removal may not be fully understood.

11. Therefore in order to continue this restoration and regeneration works funded by the NRM Board, this plan proposes to provide a planned and environmentally sustainable scientific approach to the required works using recognised techniques and principles and the use of management zones to determine the focus of issues and the required resulting management works.

APPROACH

12. The reserve has been divided into seven (7) management zones to help describe and highlight issues and develop localised works programs. These are shown in Figure 1.

13. Zones 1, 2 and 3 are riparian (watercourse) zones, in which the primary objective is to restore a healthy stream and bank ecosystem.

14. Work has already begun in Zones 1 and 2 in areas where woody weed vegetation was removed as part of the creek stabilisation works in 2010. The areas where indigenous vegetation has been established are an example of the high quality of ecological restoration work that is proposed for the remaining creek zones.

15. Zones 4, 5 and 6 are natural woodland areas where the primary objective is to restore the naturally occuring grassy woodland vegetation.

16. Work began in Zone 4 in 2000 and restoration is well advanced. A similar approach is proposed for Zones 5 and 6.

MANAGEMENT PRINCIPLES

General Zone Management Principles

17. The specific recommendations for zones 1 to 6 assume the following basic management principles and practices:

- Standing hollows and the frames of dead trees are retained where safe to do so;
- Fallen logs and cut logs are retained for habitat (fungi, insects, lizards) where safe but can be stacked and arranged for ease of management outside the defined creek channel;
- Mulched foliage can be retained and spread away from areas subject to flooding;
- Designated non-invasive exotics are to be marked for retention;
- Naturally-occuring indigenous plants are marked for retention prior to working on other weeds;
- All contractors will be required to follow stringent weed and disease hygiene practices to prevent the introduction of new weeds to the site or diseases – particularly *Phytophthora*.
- Indigenous trees are planted immediately after treating the exotic weed trees. As many of these trees as possible should be advanced stock to generate a rapid replacement for the removed canopy;
- Indigenous ground flora is introduced only when weeds are eradicated;
- Indigenous species are planted to suit the micro-environment and are selected from the list. (Appendix 1).
- Follow-up weed control is regular and thorough and reduces as the site becomes completely covered with indigenous flora;
- Management of native flora with a brush-cutter and hand pruning will be required to maintain a low fire fuel loading and (as near as can be achieved in an urban area) mimic traditional use of fire for vegetation management;

- With an appropriate resource allocation and supervision, friends groups could be recruited from the community as volunteers and trained to develop and manage the natural areas of the reserve and the garden zone.

General Treatment of Invasive Exotic Species

18. In Zones 1 to 6, non-invasive exotic trees that are to be retained have been marked on the site plan (Figure1). These trees perform some important ecological service or have historical relevance at the site.

19. The invasive exotic species to be removed are:

- Ash which seeds freely and makes vegetation restoration impossible;
- Hawthorn which is a declared weed species and spreads to form prickly thickets;
- Olive which is a declared weed species and spreads to form dense thickets which kill native trees through competition;
- Pine which forms dense thickets and greatly increases fire fuel loads;
- False Acacia which suckers prolifically and shades native flora near creeks;
- Willow which spreads readily from dropped twigs and displaces native flora due to dense shade;
- Fig which shades watercourse flora; and
- Sweet Pittosporum which shades watercourse flora.

20. The dense shade produced by many weedy tree species prevents the growth of native plants in and beside the creek thus reducing the ability for these plants to control erosion and purify the creek water.

21. Zone 7 is the old garden area with many large and impressive exotic historically important trees. The main objective in Zone 7 is to maintain and improve the quality of the garden landscape and the health of the specimen trees. As only general management principles are provided in this report, a more detailed garden heritage plan is required for this zone and will be undertaken next financial year subject to funding availability.

Specific Zone Management Actions

Zone 1

22. Zone 1 consists of the creek zone from the upstream boundary down to the first of the original drop structures and bounded by the access track. It includes the remnants of the original pump for the Clifton Estate.

23. Vegetative restoration work in the area cleared for the stabilisation work is well advanced. This work will continue on the banks in areas presently occupied by invasive exotic trees.

Trees to be retained

24. Sugar Gum (*Eucalyptus cladocalyx*) is not an indigenous species and is somewhat invasive. It is too large to remove from the perspective of both cost and habitat. It is also a regulated tree and would require planning permission to remove. It will be retained and any seedlings it produces will be removed as a part of on-going management.

25. Atlas Cedar (*Cedrus atlantica*) can be retained as it is not an invasive species. There may be an argument for removing it later for aesthetic reasons as the landscape develops.

26. The large Manna Gum (*Eucalyptus viminalis*) is a valuable remnant indigenous tree which must be retained.

Trees to be removed

27. All other introduced species are to be removed. These are mainly False Acacia, Willow and Ash. The large Aleppo Pine near the creek is also proposed to be removed.

Management notes

28. A considerable amount of restoration work has already taken place in this zone. Following the removal of exotic trees, some additional planting will be required as well as on-going weed follow-up.

29. A patch of Bracken Fern is growing on the slope below the old pump. This patch is indigenous and should be retained.

30. The old pump is to be protected and maintained in good view from the path.

Zone 1 looking downstream. The deciduous trees by the creek are False Acacia proposed for removal. Replacement trees are already established.

Zone 1 Looking upstream. Weeds under control and indigenous vegetation establishing on the rock ramp.

Zone 2

31. This is the largest management zone, incorporating the ornamental lake and the creek downstream to the rock ramp in Willowbridge Reserve.

32. Watercourse restoration is well underway, but further work is dependent upon the removal of weedy tree vegetation.

33. It is proposed that this Zone be defined to include a small area of what is now mown grass to the north of the path and including the seat and four existing River Red Gum trees.

34. Zone 2 is not proposed to include the south side of the path opposite the row of Poplars. This will ensure the retention of a group of exotic trees for a green backdrop while the creek revegetation is developing.

Trees to be retained

35. The trees proposed for retention are the ornamentals on the north side of the creek. These are:

Psidium cattleyanum	Strawberry Guava
Grevillea robusta	Silky Oak
Ficus macrophylla	Morton Bay Fig
Araucaria bidwillii	Bunya Pine
Ulmus procera	English Elm
Platanus hybrida	London Plane

36. There is also a *Cupressus* species on the south side of the creek which will be retained.

37. Some of these species are known to be somewhat invasive and their retention should be reviewed as the riparian zone vegetation develops. Of particular concern is *Ulmus procera* as it suckers freely.

Trees to be removed

38. Most of the exotic trees in this Zone to be removed are on the south side of the creek. These are mostly Willow but include a row of Poplars which are quite prominent in the landscape. The Poplars make riparian habitat restoration difficult because of the work required to control the prolific suckers that these trees generate. The Pines on the north side of the creek are also obvious features in the landscape, but will need to be eventually

removed, as they are prolific seeders and generate many seedlings in the restoration areas.

Management Notes

39. This Zone has a high public profile and exotic tree removal will be phased so that visual impact is not too great. The first phase will be to remove the feral exotics to the south of the creek and planting of advanced River Red Gums near the row of Poplars. The second phase, a year later, or when the River Red Gums have reached a height of at least three metres, will be to remove the row of Poplars and the Pines.

40. The character of the pond should remain ornamental but invasive exotics should be replaced with indigenous equivalents. In particular, the ornamental Palm Grass *Setaria palmifolia* is known to be weedy and should be replaced with Tall Sedge *Carex appressa*. Various rushes and sedges should be used to soften the waterline around the pond.

Zone 2. Creek restoration well advanced. Weedy trees and other feral vegetation obvious on left.

Zone 2. Proposed to soften appearance by establishing indigenous rushes at places around the base of the edging wall. Ornamental Palm grass (flowering on the far right) is invasive and it is proposed to be removed.

Zone 3

41. This zone incorporates a section of the reserve from below Zone 1 to the second original drop structure and then a narrow reach of creek bed and associated steep banks from this drop structure down to the ornamental pond. No work has been undertaken on the restoration of the creek in this zone.

Trees to be retained

42. There is one original River Red Gum and several planted exotics which are part of the Clifton garden. The exotic trees to be retained are:

Stenocarpus sinuatus	Wheel of Fire Tree
Quercus sp	Oak
Quercus suber	Cork Oak
Grevillea robusta	Silky Oak
Liquidambar styraciflua	Liquidambar (2X)
Cedrus atlantica	Atlas cedar

Trees to be removed

43. Trees to be removed are Ash, Willow and Fig in the creek bed as well as Sweet Pittosporum, Mirror Bush and Buckthorn.

Management Notes

44. There are some indigenous sedges and other flora surviving along the creek. These must be protected during weed eradication.

45. This Zone will be replanted with all the watercourse species that are already established along the creek with the proviso that, in the narrow reach of creek that runs through Zone 7 to the pond, the potential range of species will be limited by the shade from the large exotic trees to be retained to the north. In this area, species that are already surviving will be favoured as well as other species with broader leaves such as *Persicaria sp, Prunella sp, Carex fascicularis* and *Juncus planifolius*.

Zone 3. No work has taken place in this zone. It is a dense weed thicket.

Zone 4

46. This is a steep slope bounded above by numbers 10, 11 and 12 Waratah Way.

47. Woody weeds were cleared from the slope in the year 2000 with the cooperation of adjoining residents. Since then, Council has worked to replant the slope with indigenous vegetation and eradicate the weeds.

Trees to be retained

48. There are two exotic trees to be retained:

Quercus robur	This large English Oak will have the lower branches removed for easier management
Cedrus atlantica	Large Atlas Cedar

Trees to be removed

49. There is one large Olive to the east of the shelter shed. This is a constant source of Olive seedlings and will be removed.

Management Notes

50. A walking trail will be constructed from Acacia Court through the Reserve to the main path below. This will assist the management of the slope and improve the accessibility of the Reserve to residents.

51. Indigenous trees and shrubs will be pruned and thinned to maintain an open woodland structure with scattered patches of shrubs for small bird shelter.

52. All ground weeds will be eradicated and plants will be introduced if necessary to develop, in time, a complete grassy and herbaceous ground cover.

Zone 4. Previously a weed infested slope. Considerable work has taken place here over 10 years to establish a good indigenous vegetation mix. Propose - access trail, continuing weed eradication and managing fire fuel loading.

Zone 5

53. This area of slope is similar to Zone 4 before restoration work commenced. Its development will follow the restoration management sequence used in Zone 4 to develop an open woodland formation with a grassy/herbaceous ground cover.

Trees to be retained

54. There are five large Pines along the top of the slope. These will be phased out in time but for now are an important landscape feature and it is not proposed to remove them until River Red Gum and Blue Gum trees of similar height have been established as replacements.

55. Other species to be retained include:

Callitris gracilis	Two original native pines to be protected
Quercus suber	Cork Oak
Araucaria bidwillii	a young Bunya Pine probably self sown

Trees to be removed

56. There is a thick mass of woody weeds on the slope: Olive, Hawthorn, Buckthorn, Pine and False Acacia lower down. All of this feral woody material will be removed.

Management Notes

57. Restoration of this area will require considerable follow up control of woody weeds and there will be a considerable growth of herbaceous weeds to be eradicated due to the large existing seed bank.

58. Care will be taken to identify and foster any indigenous flora naturally occuring on the slope, as weeds are cleared and eradicated.

Zone 6

59. This Zone consists of a gently sloping area to the south of Zone 1 between the path and the adjoining private property boundaries. The aim is to remove woody weeds and gradually restore an open woodland vegetation structure similar to Zones 4 and 5.

Trees to be retained

60. All indigenous trees are to be retained on the site. Regenerating River Red Gums will be thinned as required to achieve the desired open woodland structure.

Trees to be removed

61. Feral woody plants to be removed include Olive, Ash, Hawthorn, Buckthorn and Pine.

Management Notes

62. Management will be similar to Zones 4 and 5, although less work will be involved as the Zone is smaller and less steep.

Zone 6. Gentle slope to adjoining properties. Existing native woodland canopy invaded by many woody and herbaceous weed species.

Zone 7

63. This is the core garden area of the Clifton estate. It will be managed with reference to garden history and best horticultural and arboricultural practice.

Trees to be retained and removed

64. All trees in this zone will be inspected to determine if any are so unhealthy or crowded that they should be removed. Elm suckers will be removed as well as some feral trees on the north-west slope.

Management Notes

65. Horticultural expertise and advice is required to return this garden to the "Botanic Reserve" status, as per the Reserve's name. The formation of a well supervised Friends group with some contractor assistance could be facilitated by Council.

66. Tasks that are needed in the garden zone are:

- Maintenance pruning of trees;
- Managing Elm suckers;
- Pruning of Camellias;
- Survey garden areas to identify surviving garden plants;
- Treatment and follow-up of ground weeds for appropriate management, propagation and establishment;
- Treatment and follow-up control of ground weeds;
- Consult garden history expert to recommend appropriate species to replant;
- Maintain to a high standard; and
- Reinstate disused garden paths and repair garden edging and retaining walls.

Zone 7. Historic garden area. A separate detailed management plan is needed for this zone.

TIMING AND IMPLEMENTATION

67. Funding has been provided by the NRM Board to restore native riparian vegetation to the creek zones. It was agreed that this should be in a staged manner.

68. The following timing is proposed for using the balance of the NRM Board funds:

Zone 1 2013

Zone 2 2014 and 2015

Zone 3 2016

69. Current NRM funding does not apply to the ongoing management of Zones 1, 2 and 3 nor to the development and ongoing management of other Zones.

70. Council funding is required to prepare a Garden Management Plan for Zone 7 utilising the skills of appropriately qualified and experienced arborist and horticulturalist.

71. Works in Zones 4 to 7 will progress in a gradual manner using recurrent Council funding as follows:

Zone 4 ongoing

Zone 5 gradual improvement from 2013

Zone 6 gradual improvement from 2014

Zone 7 dependant on budget allocations

72. It is intended to seek additional AMLRNRM Board funding to assist the remainder of the vegetation restoration work that needs to be undertaken in Management Zones 4, 5 and 6.

73. Annual inspections will audit progress and adaptively modify any necessary management techniques or applications in Zones as required to meet the vegetation management plans principles and objectives.

CONCLUSION

74. The Vegetation Management Plan for Michael Perry Botanic Reserve will guide the restoration of watercourse and woodland vegetation and the improvement of the historic garden landscape. It requires the removal of feral, weedy vegetation, the removal of some planted specimens and the reestablishment of native vegetation. The Plan also provides for improved management of the core heritage garden section of the reserve. The

implementation of the Plan will enhance the biodiversity value of the site and the significant cultural and recreational value to the community.

Appendix 1

PLANTING TYPES

Local species, propagated at the Council nursery, that are suitable for ecological restoration work at Michael Perry Reserve. The list is not exhaustive. Other local species may be introduced to the site if appropriate and available.

Trees

Acacia melanoxylon
Acacia pycnantha
Acacia provincialis
Acacia retinodes
Allocasuarina verticillata
Banksia marginata
Callitris gracilis
Eucalyptus camaldulensis
Eucalyptus leucoxylon
Eucalyptus microcarpa
Eucalyptus viminalis
Pittosporum angustifolium

Shrubs

Acacia acinacea
Acacia paradoxa
Bursaria spinosa
Calytrix tetragona
Daviesia leptophylla
Dodonaea viscosa
Eutaxia microphylla
Goodenia amplexans
Goodenia ovata
Hakea carinata
Hardenbergia violacea
Logania saxitilis
Myoporum viscosum
Olearia ramulosa
Pultenaea largiflorens
Senecio hypoleucus

Low shrubs and groundcovers

Atriplex semibaccata
Atriplex suberecta
Clematis microphylla
Einadia nutans
Enchylaena tomentosa
Kennedia prostrata
Scaevola albida

Grasses, sedges etc

Austrodanthonia species
Austrostipa species
Bothriochloa macra
Carex fascicularis
Carex gunniana
Carex appressa
Cyperus vaginatus
Enneapogon nigricans
Isolepis cernua
Juncus pallidus
Juncus planifolius
Juncus subsecundus
Microlaena stipoides
Themeda triandra

Wildflowers

Arthropodium strictum
Bulbine bulbosa
Calostemma purpureum
Chrysocephalum apiculatum
Convolulus remotus
Cullen australasicum
Dianella revoluta
Dichondra repens
Goodenia albiflora
Linum marginale
Lotus australis
Malva behriana
Ranunculus lappaceus