
MASTERPLAN FOR THE PENSHURST BOTANIC GARDENS MARCH 2018

Submission by:

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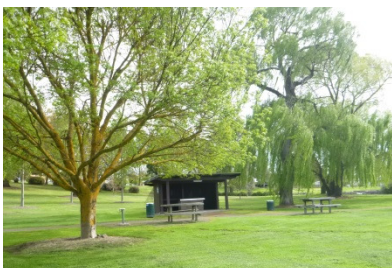
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Masterplan for the Penshurst Botanic Gardens

Southern Grampians Shire Council
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FOR SOUTHERN GRAMPIANS SHIRE COUNCIL
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In particular we wish to acknowledge the contributions by:

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1 Executive Summary

The Masterplan's Vision and recommendation focus on strengthening the gardens' identity as a botanic gardens and providing features that make it more attractive and accessible to the community.

In December 2016, Michael Smith and Associates Landscape Architecture and Urban Design in conjunction with Practical Ecology were appointed by Southern Grampians Shire Council to prepare the Masterplan for the Penshurst Botanic Gardens. The planning process is covered in detail within Chapter 3.

In developing the 2018 Masterplan, consideration has been given to the strengths, weaknesses and opportunities inherent in the Penshurst Botanic Gardens as indicated through the consultation and engagement process with Council's Project Control Group, Council staff, stakeholders groups, the Advance Penshurst Committee, and members of the community. The study will provide a guide for future improvement, development, management, operation and programming/ activation for the botanic gardens for at least the next 15 years.

The last Masterplan for the Penshurst Botanic Gardens was prepared by SGD Collaborative in February 1994.

1.1 Vision

In consultation with the Project Control Group and representatives of the Advance Penshurst Committee, the future vision for the botanic gardens was agreed by all stakeholder groups as the following:

To continue to build Penshurst Botanic Gardens' identity as a botanic gardens.

To establish a quality resource of amenity and a unique horticultural and educational focus throughout the southwestern region of Victoria.

1.2 Masterplan Recommendations

Below is the summary of masterplan recommendations for each of the eleven themes, which are expanded on in Chapter 6.

Infrastructure
<ul style="list-style-type: none"> • Install additional directional signage at the south-west and south-east corners of the gardens. • Undertake an audit of existing infrastructure to include buildings/structures, signage, fencing and furniture. • Ensure the existing gravel paths within the gardens are well maintained. • Remove the concrete pad to the north-west side of the natural spring. Construct a gravelled vehicle parking area. • Improve the surrounds of the natural spring through ground levelling and planting. Remove rocks and rubble from around the spring. Place capping stones to the rim of the spring basin. Remove rocks from within the outflow of the spring and pipes conducting inflow. • Construct a fountain within the spring as a point of visual interest. • Construct a low bubbler fountain for each of the ponds to assist in water movement. • To the seating and seating pads within the gardens, provide decorative artwork images in conjunction with the community. • Improve the presentation and sense of arrival to the entrances to the gardens through feature corner walling and pillars, signage, hedging and bollards. • Install solar lights with smart lighting sensors around the existing gazebo at the American wetland. • Install solar lights along the internal footpaths to assist people walking in the gardens at night. Lights need to have smart light sensors to detect movement. • Improve the perimeter fencing around the gardens. Replace the existing pine rail barriers with bollards. Fencing only to short sections leaving at least 80% of the perimeter unfenced. • Make the horse trough on Martin Street more prominent and provide an interpretive sign documenting its history. • Incorporate public art within the gardens. Establish a commissioning process to engage specialist artisans to undertake a range of artworks within the gardens. • Upgrade the existing public toilet block. Consider an alternative toilet system. • Improve the irrigation system to garden beds and grassed areas. Undertake an intensive audit of the existing irrigation system prior to any upgrades. • Construct a modern barbecue shelter to replace the existing shelter. Consider a dual purpose shelter that can also service the amphitheatre area. Incorporate a kitchen garden. • Install additional seating throughout the gardens. Provide new seats with arm rests and back support. • Replace the existing picnic tables over a period of time with DDA compliant picnic tables. • Create a 'Sculpture Walk' leading from the main entrance (at the south-west corner) to the car park area by instigating an inaugural Acquisition Sculpture Prize for artists of the Southwest Victoria Region. • Upgrade the former tennis club room for public use. Maintain the roof and building in order to ensure future use. Investigate the demand as a community asset, i.e. a camp kitchen and cinema pop-up screen storage. Further community consultation is required. • Install clearer car park signage/directional signage. • Install formal or informal barriers to discourage people from parking on grassed areas beside Martin Street.

- Provide additional parking on Chesswass Street at the American pond to assist in activating this frontage. Improve the stormwater drainage in this area prior to any construction works.

Botanical

- Provide better interpretive signage of the different garden sections. Label plant species for at least one representative plant within the gardens.
- Strengthen the character and planting zones through containing additional planting within their respective area of origin zones and phasing out trees and shrubs in poor health. Future planting must adhere to the character zones.
- Provide infill planting within the existing garden beds.
- Incorporate an indigenous plants section within the gardens to showcase local ecology.
- Add more flowering shrubs and groundcovers.
- Improve the wetland vegetation.
- Install interpretive signage about local ecology and geology.
- Create marshlands or rain gardens in some of the low-lying sections to the north-east corner and eastern side. Construct drainage channels to the existing stream to the east to direct water away from the grassed areas. Plant with macrophyte plants.
- Council to undertake a broadscale multi-disciplinary stormwater and groundwater management study of Peshurst township. This is to include the botanic garden and perimeter. This is to assist in the management of Azolla and Duckweed within the ponds. Leakage from the ponds needs to be resolved.
- Conduct an assessment of all trees within the gardens and develop a succession plan for replacement of trees.
- Undertake a survey of the aquatic flora and fauna within the ponds.
- Spade edge grassed areas rather than spraying weeds to key zones within the gardens.

Community

- Develop a locally themed nature sensory playspace based on the volcanoes, aquifers and associated geomorphology of the region. Provide shade to the play space area with deciduous and evergreen trees.
- The Advance Peshurst Committee, Council and Stakeholder groups in Peshurst to work together on promotion of Peshurst and surrounding area. This includes a strategy to manage events, marketing and tourism specifically for Peshurst.
- Provide space within the gardens for the use of approved group activities, i.e. markets, music events, plays/theatre, botanic and geological educational activities and cinema.
- Host regular outdoor cinema events within the gardens. A pop-up cinema screen has been purchased.
- Upgrade the gazebo adjacent to the 'American Wetlands' and footbridges across the ponds.
- Construct a grassed amphitheatre adjacent to the existing barbecue shelter for events.
- Remove the existing tennis court surface and construct a basketball half court and masonry rebound wall. The grassed area can be used for informal overflow parking during events.
- Incorporate local indigenous interpretive signage and/or art within the gardens. Involve local indigenous in the works.

Tourism

- **Delineate the caravan park's boundaries through planting and create more levelled grassed caravan sites. Locate a camping area near to the caravan sites.**
- **Undertake a feasibility study to determine the need for more powered sites based on demand and current usage. Allow for access by vehicles and large caravans.**
- **Upgrade the toilet block in the caravan park to be accessible to all.**
- **Provide information signage about Napier Waller within the gardens.**
- **Promote the gardens in conjunction with other attractions in the immediate area through digital strategies such as NFC/QR codes, apps and/or a dedicated tourism website.**

2 Introduction

The rural township of Peshurst is located in southwest Victoria, approximately 290 kilometres west of Melbourne. The resident population of the township in 2011 was estimated at 471. Peshurst is approximately 30 kilometres south of Hamilton, which is the main town within Southern Grampians Shire.

The Peshurst Botanic Gardens is a reserve of approximately of 5.3 hectares and bounded by Chesswass Street, French Street, Cox Street and Martin Street. The gardens are the northern gateway entrance from the approach southbound on the Hamilton Highway and the Peshurst Dunkeld Road (Chesswas Street). It is a short walk to other destinations within the core township zone such as the Volcanoes Discovery Centre and the main retail strips in town, Bell Street and Martin Street. Mount Rouse is only 1.5 kilometres south of Peshurst's core township area and rises steeply to 120 metres above the surrounding plains. Its height above sea level is 360 metres. The mount is a landmark for many kilometres radius of the township. The area lies centrally within the Kanawinka Geo Trail which envelops southwest Victoria and extends into southeast South Australia.

The Peshurst Botanic Gardens Masterplan aims to address the development, management, operation and programming of the botanic gardens for at least the next 15 years. The area covered by the Peshurst Botanic Gardens Masterplan includes the entire area bounded by Chesswass Street, French Street, Cox Street and Martin Street.

2.1 *Project Aims*

Southern Grampians Shire Council has an on-going program of public realm upgrades and place making initiatives. The Shire's vision for the municipality is "to be Australia's Most Liveable Provincial Community". The project assists in fulfilling objectives in the Council Plan to foster population and economic growth, enhance wellbeing and culture and help communities to feel safe and dynamic.

Southern Grampians Shire Council set the following Aims and Objectives for the development of a Masterplan for the Peshurst Botanic Gardens.

- Improve the sense of arrival at the gardens and in fact, to the town of Peshurst.
- Guide the direction for the future of the gardens through embracing community and stakeholder consultation and its outcomes.
- Prepare the vision for the gardens building on input from the consultation and engagement process and analysis stages.
- Determine the key values of the gardens from the community and shire perspective.
- Determine funding sources and an implementation program
- Provide a contextual background on the special historical and botanic values such as the presence and proximity to Mount Rouse, the lava flow aquifers resulting in the wetlands, the connection to the town, the oak tree planting and the landscape setting.
- Seek initiatives and directions to capture tourism, promotion of the gardens and Peshurst as a destination for events and visitation.
- Determine the appropriate use and setting of the gardens given their direct link to the town, the Volcano Centre and recreation/sports activities within the garden's precinct.
- Understand the future location of any recreation activities and associated infrastructure within the precinct.
- Provide advice and recommendations for the integration with the Peshurst streetscape and sense of arrival to the town and the gardens.
- Build on the garden's special setting in terms of local geology, the botanic collection of trees, the wetlands and a sense of place derived from the basalt lava flows and the associated aquifer

network stemming from Mount Rouse. This leads to opportunities to create interpretive information on the botanic collection, the region's geology and the environment.

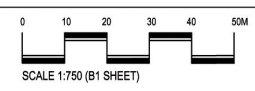
- Determine through consultation and analysis the infrastructure improvements for visitor and caravan park users such as toilets, lighting, connectivity, surveillance and CPTED principles.
- Provide a succession (replacement strategies) for some of the trees, promote the use of flora that is indigenous to the area.
- Prepare an implementation program based on priorities, budget and funding opportunities.

EXISTING CONDITIONS PLAN
PENSHURST BOTANIC GARDENS
SOUTHERN GRAMPIANS SHIRE COUNCIL



LEGEND

- Existing building/ structure as noted
- Existing grassed area
- Existing tree grouping. Refer to existing layout plan.
- Existing lake / ponds and connecting channel
- Existing feature gazebo
- Existing bluestone gravel path
- Existing stream/ swale channel
- Existing timber bridge
- Existing timber seat
- Existing electric barbecue unit
- Existing timber picnic table
- Existing rubbish bin
- Existing drinking fountain
- Existing directional and interpretive signage or as noted
- Existing powered camping site
- Existing drainage outlet
- Existing drainage pit
- Existing fire hose reel
- Existing light pole
- Existing treated pine log barrier fence



Amendments:

Print Issue:

Title: Existing Conditions Plan
Penshurst Botanic Gardens

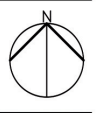
Client: Southern Grampians Shire Council

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Drawing No.: Sheet 1 of 1



3 Process

The table below outlines the actions undertaken to inform the development of the Masterplan.

December 2016	<p>Appointment of Consultant Southern Grampians Shire Council appointed Michael Smith and Associates (MSA) in conjunction with Practical Ecology to prepare the Penshurst Botanic Gardens Masterplan.</p>
March 2017	<p>Council Staff and Stakeholder Workshop An informal workshop was held with Council's staff and representatives from the Advance Penshurst Committee to discuss the Vision, current issues and future opportunities for the botanic gardens.</p>
May-June 2017	<p>Community Engagement An extensive community engagement program was undertaken to explore what visitors, residents and stakeholders think about the Gardens, and the changes and improvements they would support in the future. Two drop-in sessions were held on Thursday 11th May 2017 at the Volcanoes Discovery Centre.</p> <p>A project update and an online community survey were published to gauge people's reactions to the Draft Vision and the summary of issues and key directions. A summary of community feedback is provided under each category in Chapter 6.</p> <p>Assessment of Opportunities (refer to Appendix 2) The consultant team assessed each opportunity and provided a recommendation about the level of priority assigned to each. Four categories were used to summarise the opportunities:</p> <ul style="list-style-type: none"> • Infrastructure • Community • Botanical • Tourism
July 2017	<p>Preparation of the Draft Masterplan The consultant team prepared the Draft Masterplan for presentation during the next phase of community consultation in October 2017.</p>
October-November 2017	<p>Presentation of the Draft Masterplan and Council Review The consultant team presented the Draft Masterplan to representatives of Council's Project Control Group, Council staff and the Advance Penshurst Committee.</p> <p>Public Display of the Draft Masterplan The Draft Masterplan was on display for a period of four weeks with community comment invited.</p>
December 2017	<p>Internal Review of the Draft Masterplan Council's Project Team and the Consultant Team reviewed community comment invited.</p>
January 2018	<p>Finalisation of the Masterplan The Draft Report was amended to become the Final Report.</p>
February 2018	<p>Presentation of the Masterplan to Councillors The Final Report was presented to Councillors of Southern Grampians Shire Council.</p>

4 Background

4.1 History

The Peshurst Public Gardens were set aside as a reserve in 1876 and the first official planting was completed by 1889. Originally pines were planted within the gardens and they were replaced with oaks, poplars and willows in the 1920's.

Redevelopment of the Peshurst Botanic Gardens was commissioned by the former Shire of Mount Rouse in 1993. The 'never failing spring' was then enclosed as a circular pond and the water and lake theme was developed. As with botanic gardens throughout Victoria, finding and enhancing a theme is a critical factor in providing visitors with something different. The enhancement of lakes, channels and broader swales including the establishment of wetland vegetation, is key direction this Masterplan has taken.

The garden's development is a long term project, supported by the community of Peshurst and plays a key role in recreation, conservation and research.

4.2 Design and Existing Planting

With the exception of the 'never failing spring', the oldest part of the gardens is the collection of European trees located to the east of the gardens. The majority of these trees are English Oak (*Quercus robur*), Algerian Oak (*Quercus canariensis*) and a number of hybrids between the English Oak and the Algerian Oak. There are also specimens of Arizona Cypress (*Cupressus arizonica*), Himalayan Cedar (*Cedrus deodara*), Sycamore (*Acer pseudoplatanus*), Peppercorn (*Schinus molle*), White Poplar (*Populus alba*), Golden Willow (*Salix alba*) and Weeping Willow (*Salix babylonica*).

A key feature of the Peshurst Botanic Gardens is the chain of ponds downstream of the 'never failing spring'. The ponds and channels are divided into four planting zones of Australasian, Asian, American and European, although the planting is ill-defined and confused. Delineation between the zones is not immediately obvious.

A man-made channel (swale) links the Australian wetland to the American wetland. The American wetland has a rotunda that is a key feature accessed by a timber bridge that is in a fair condition. There are approximately 20 Swamp Cypress (*Taxodium distichum*) both in the lake in earth mounds and some to the perimeter of the lake. There is a strong and diverse range of European trees within the gardens.

At present, the gardens don't immediately or overtly read as a botanic garden and even though there are interesting features (lakes) and many different exotic species of trees, there are very minimal plant labels to trees and none for shrubs.

Botanic gardens developed largely through the actions of forward thinking public figures in allocating the land to be used for the purposes of expanding and making access to horticultural knowledge and a showcase of plants from other countries and areas of Australia. Some botanic gardens were developed to assist in systematic botany and recording plant species and performance. In doing so, they often specialise in establishing a point of distinction from other botanic gardens by a combination of setting, character and plant associations.

The Royal Horticultural Society (RHS) in England have defined a botanic garden as:

‘A garden in which a diversity of plants is grown for purposes of study and instruction and in which they are arranged according to a system of classification, not necessarily landscape harmony or unison. Plants are clearly labelled and some botanic genera/family are grown together.’

Leslie Lockwood, Jan Wilson and Murray Fagg¹, in their book *Botanic Gardens of Australia* state that botanic gardens also had an important role in educating the common person. Botanic gardens should inspire people to visit and linger longer in undertaking a journey of discovery and learning about plants and where they originate.

Early botanic gardens and large parks in Australia were very much created as a reflection of the European garden. There was a strong reluctance to embrace and incorporate native plants in a showcase of trees and shrubs in a largely contrived landscape setting. The 1950's post-war boom brought hope, wealth and a newfound confidence in the use of native plants in gardens with people such as Thistle Harris, Edna Walling and Ellis Stones advocating the use of Australian native plants.

By the 1980's there was concern for conservation and biodiversity, government grants were available as bicentenary grants and allowed for the expansion and creation of botanic gardens throughout Australia. This new major purpose of the botanic gardens is supported by the International Agenda for Botanic Gardens in Conservation's² definition of a botanic garden:

‘Botanic gardens are institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education.’

In Victoria we have the soil and climatic conditions to grow a wide range of plants from around the world and from other parts of Australia.

There is scope to build on the existing framework of the gardens in establishing low shrubs, perennials, groundcovers and wetland plants. Most of this planting should be confined to existing garden bed areas/ planting zones in which there are many bare areas, rather than create entire new garden beds. The plantings should be concentrated or prioritised to alongside pathways and corner entrances to provide botanic interest in the array of species already established in the gardens.

¹ L Lockwood, J Wilson and M Fagg (2001) *Botanic Gardens of Australia*, New Holland Publishers, Sydney.

² Botanic Gardens Conservation International (2016) International Agenda for Botanic Gardens in Conservation. Sourced from the BGCI website. http://www.bgci.org/files/Worldwide/News/SeptDec12/international_agenda_web.pdf

5 Summary of Existing Strategies and Planning Documents

The following is a summary of existing Southern Grampians Shire Council strategies and planning documents that are relevant to the Penshurst Botanic Gardens.

5.1 1994 PENSHURST BOTANIC GARDENS MASTERPLAN

The vision for the 1994 Masterplan was for Penshurst Botanic Gardens to become a quality resource of amenity and a unique horticultural and educational focus throughout the western region. Redevelopment proposals were based on focusing on the 'never failing spring' and its overflow that delivers water to the gardens to supply its water features. Every attempt was made to recycle or otherwise adapt existing buildings in the recommendations.

Key Elements to the Masterplan were:

- The Mount Rouse Shire Council's enthusiasm to establish a botanic garden.
- The gardens' location serving horticultural education, heritage and recreational purposes. The gardens should become a destination place for people to visit, learn, to play in and to relax.
- The gardens have the potential to become one of the significant botanic gardens of Victoria.
- The gardens can attract government grants, private sponsorship, link with educational bodies and activate local community involvement in voluntary tasks so as to relieve pressure on local government resources.
- The project would provide scope for the use of a wide range of local resources.
- The obvious significance of the 'never failing spring' and cultural background are the basis for the redevelopment.
- The cultural significance of some of the nearby heritage building stock is obvious. Potential folk museum and continuing education centre.

A total of nine plans were prepared and divided into macro and micro level. Plant lists were prepared as part of the 1994 Masterplan.

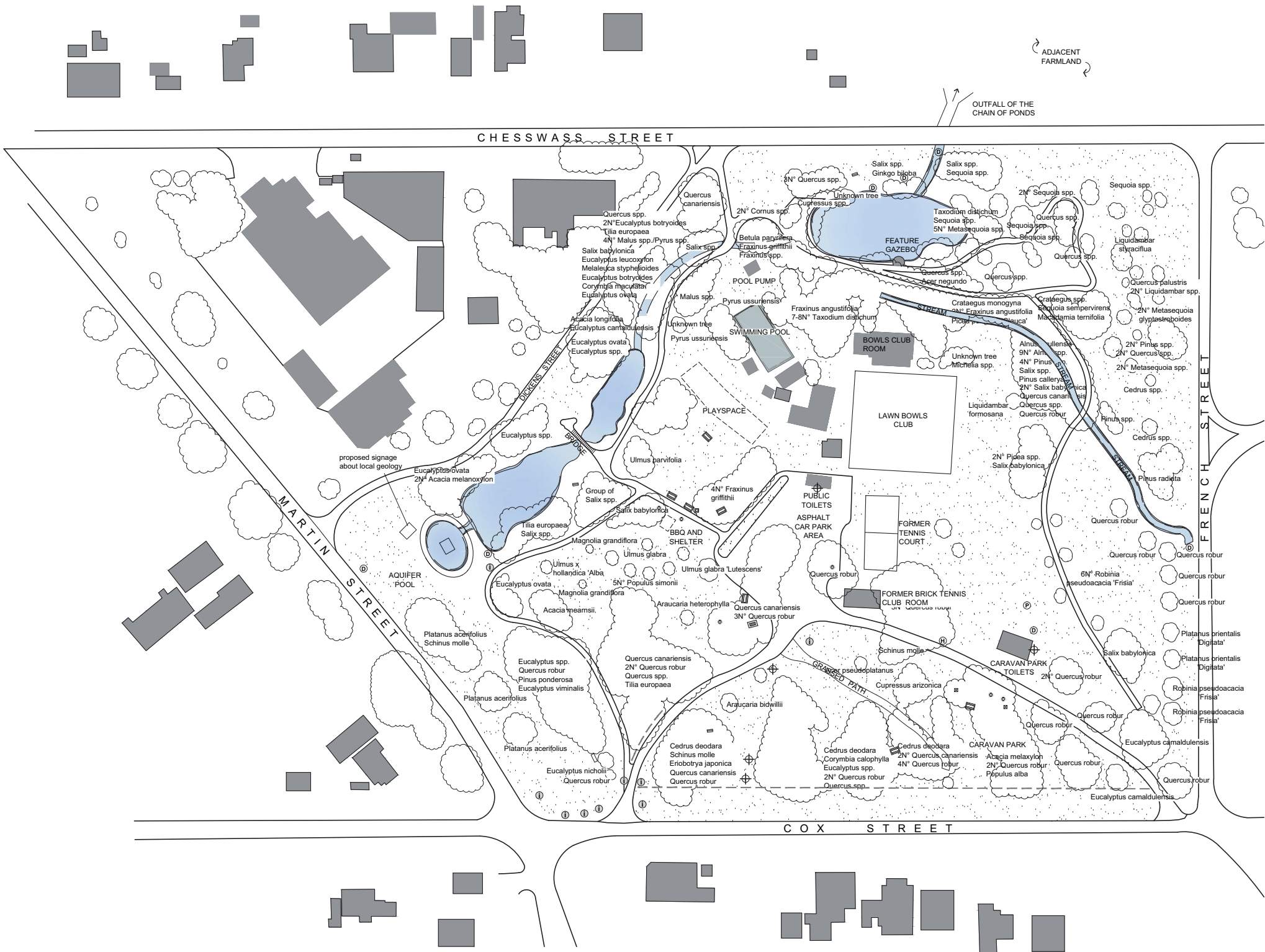
RECOMMENDATION	WAS IT ACHIEVED?
<ul style="list-style-type: none"> • Divide the gardens into five zones: Arboretum Zone, Wetlands/Aquatic Garden Zone, Demonstration garden Zone, Car park Zone, Caravan Park Zone. 	Partially
<ul style="list-style-type: none"> • Plant selected wetland trees, particularly Salix, Populus and Alnus. 	Yes
<ul style="list-style-type: none"> • Maintain full inventory of plants within the gardens. 	Yes, but not updated
<ul style="list-style-type: none"> • Label plants in the garden. 	Partially
<ul style="list-style-type: none"> • Maintain photographic records of the gardens. These must be updated regularly to record the development progress of the gardens. These can be used in a pamphlet or guide book. 	No
<ul style="list-style-type: none"> • Redevelop the pump house and pond. 	No
<ul style="list-style-type: none"> • Provide the swimming pool buildings with visual softening through pergolas with associated planting and climbers. 	Partially. Softening was achieved through shrubs.
<ul style="list-style-type: none"> • In the long term, relocate the swimming pool and associated facilities off-site or reconstruct the facilities in their current location. For the latter, incorporate the pool into a conservatory complex. 	No
<ul style="list-style-type: none"> • Reduce the visual impact of the bowling club building. In the macro plan, re-orientate the building. 	No
<ul style="list-style-type: none"> • Provide the caravan park with visual softening through pergolas with associated planting. 	No
<ul style="list-style-type: none"> • In the longer term, relocate the caravan park off-site. 	No
<ul style="list-style-type: none"> • Provide the tennis pavilion with visual softening through pergolas with associated planting or a surrounding garden. Utilise the tennis pavilion as a temporary exhibition and educational space. 	No
<ul style="list-style-type: none"> • Redevelop the public toilet block. 	No
<ul style="list-style-type: none"> • Consolidate the playspace to have a more compact footprint, leaving more open space for other recreation and sporting activities. 	Yes
<ul style="list-style-type: none"> • Reduce the impact of vehicles within the gardens. In the long term, prohibit vehicles from entering the gardens. 	No
<ul style="list-style-type: none"> • Relocate power and telecommunications lines underground. Reuse septic systems. 	No
<ul style="list-style-type: none"> • Construct a new rotunda and garden centre centrally located within the gardens. 	No

5.2 2017-2020 PENSHURST COMMUNITY PLAN (DRAFT)

The Council report documented many streetscape, townscape and open space improvements for Peshurst. A chapter discusses and provides specific strategies and actions pertaining to Peshurst Botanic Gardens and its interface to the core township area. Specific mention to the Peshurst Botanic Gardens include:

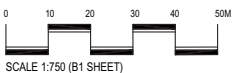
- Prepare a Masterplan for the botanic gardens that explores the following:
 - Increasing the caravan park accommodation and capacity.
 - Creating a Napier Waller Walk, linking the botanic gardens to the main retail strips (Bell Street and Martin Street) and the Peshurst Recreation Reserve.
 - Renaming the botanic gardens to the 'Napier Waller Gardens'.
 - Reviewing vehicle access and gateways to the gardens.
 - Considering ways of linking the gardens to the Volcanoes Discovery Centre
 - Holding selected and appropriate activities within the gardens that promote botanic education and build on the local geology.
 - Reviewing the possibility of translating interpretive information materials to other languages.
 - Revitalising the existing playspace within the gardens.
- Undertake works to revitalise the gardens.

EXISTING TREE GROUPS PLAN
PENSURST BOTANIC GARDENS
SOUTHERN GRAMPIANS SHIRE COUNCIL



LEGEND

- Existing building/ structure as noted
- Existing grassed area
- Existing tree grouping. Refer to existing layout plan.
- Existing lake / ponds and connecting channel
- Existing feature gazebo
- Existing bluestone gravel path
- Existing stream/ swale channel
- Existing timber bridge
- Existing timber seat
- Existing electric barbecue unit
- Existing timber picnic table
- Existing rubbish bin
- Existing drinking fountain
- Existing directional and interpretive signage or as noted
- Existing powered camping site
- Existing drainage outlet
- Existing drainage pit
- Existing fire hose reel
- Existing light pole
- Existing treated pine log barrier fence



Amendments:

Print Issue:

Title: Existing Tree Groups Plan
Penshurst Botanic Gardens

Client: Southern Grampians Shire Council

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Date: 27.01.2017
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Drawing No.: Sheet 1 of 1



6 Masterplan Recommendations

The following discussion or narrative underpins the Recommendations derived from the site analysis, the assessment of merit of ideas raised during the consultation and engagement process and adoption of Council Planning Policies and Strategies, including the objectives of the Masterplan.

6.1 Infrastructure

Current Situation

The existing public toilet block is outdated but adequate for non-peak usage. The other buildings within the gardens are the swimming pool buildings, lawn bowls club room, former tennis club room and caravan park toilet block. The existing pine log barriers to the south perimeter and also bordering some grassed areas within the gardens are likewise outdated.

There is a formal sealed car parking area located centrally within the gardens, which cater not only to the gardens' visitors but also to users of the swimming pool and lawn bowls green. There are seven existing picnic tables, most of which are located near the playspace and the barbecue shelter near the centre of the gardens. There are only four existing seats, including one in the feature gazebo.

A feature gazebo located south of the American wetland provides a space for quiet reflection. There are two barbecue units, including one unit in the barbecue shelter. The barbecue shelter has some structural faults, that require immediate rectification.

The main attraction within the gardens is the 'never fail' natural spring located at the Martin Street section of the gardens.

The main information signs containing the Penshurst Botanic Gardens map and short history are located in two areas: at the Chesswass Street section near the southwest entrance and at the Chesswass Street section near the American Wetlands. There are two interpretive signs at the western section of the gardens about the spring and the Cricketers Arms. The main directional sign to the gardens, which states 'Wetland Garden 300m', is located at Martin Street.

There are no formal perimeter paths around the gardens. Apart from the informal grassed path at the caravan park and two asphalt vehicular roads to the southwest and southwest of the gardens, all of the existing pedestrian paths are of crushed bluestone aggregate.

Recommendations

Install additional directional signage at the south-west and south-east corners of the gardens. HIGH PRIORITY

Directional signage is necessary, particularly for the two main entrances on Cox Street, to promote the gardens as a destination place and connect to surrounding regional features. Directional signage to the caravan park area is very necessary to prevent campers from parking their vehicles on non-caravan park areas.

Undertake an audit of existing infrastructure to include buildings/structures, signage, fencing, paths and furniture. HIGH PRIORITY

An audit will be necessary to ascertain if the existing infrastructure are in the appropriate location, accessible to all and serviceable. The audit will have to be undertaken prior to upgrades to buildings and structures particularly the former tennis club room, gazebo, public toilet block and caravan park toilet block.



Visualisation of proposed improvements to the 'never failing spring'.

Ensure the existing gravel paths within the gardens are well maintained. MEDIUM PRIORITY

Currently the internal pathway system is crushed bluestone quarter minus aggregate. It appears adequate at present and is permeable to rain water.

Remove the concrete pad to the north-west side of the natural spring. Construct a gravelled vehicle parking area. HIGH PRIORITY

The concrete pad to the northwest side of the spring is a foundation of the former pump station. It is a visual blight on the presentation of the spring and pond (basin).

Improve the surrounds of the natural spring through ground levelling and planting. Remove rocks and rubble from around the spring. Place capping stones to the rim of the spring basin. Remove rocks from within the outflow of the spring and pipes conducting inflow. HIGH PRIORITY

The spring's upper round pond is a prominent feature of the gardens and can be better presented through removing the rocks around the basin. Once the rocks are removed, the surrounding area can be appropriately levelled to allow for a path, some feature planting and seating. The path will link the perimeter of the spring to the existing internal pathways within the gardens. Capping stones would enhance the appearance of the spring and would provide a neatly defined edge/rim.

To reduce the potential safety hazard of people entering the upper level spring, a concave formation to the pond edge should be provided. This is to avoid fencing around the perimeter.

Construct a fountain within the spring as a point of visual interest. LOW PRIORITY

A low fountain (4-5 metres in height) would enhance the appearance and importance of the spring. A fountain will serve as an eye-catching element to pique the interest of motorists travelling along Martin Street.

Construct a low bubbler fountain for each of the ponds to assist in water movement. LOW PRIORITY

Provide a solar pump for each bubbler fountain to aerate the water in the settling ponds. This may help break up the duckweed. Costing and appropriate location for the fountains have to be further investigated.

To the seating and seating pads within the gardens, provide decorative artwork images in conjunction with the community. LOW PRIORITY

Several feature seats constructed of or partly incorporating mosaic tiles by local people, including children, would contribute to the sense of pride and ownership from a local perspective.

Improve the presentation and sense of arrival to the entrances to the gardens through feature corner walling and pillars, signage, hedging and bollards. HIGH PRIORITY

The gardens don't register to the visitor as a botanic gardens as such. The provision of some perimeter walling and fencing at key boundaries would help delineate and reinforce view cones at key points. Particular attention should be given to the presentation of the southwest entrance at Cox Street as it serves as the main entrance to the gardens. The southeast entrance is to have stone pillars on either side to distinguish it as the main caravan park access. A wing wall and unobtrusive signage are recommended for the improved definition of the northeast corner.



Example of random ashlar bluestone walling

Install solar lights with smart lighting sensors around the existing gazebo at the American wetland. LOW PRIORITY

Solar lights can be a sustainable solution to lighting. Lighting needs to be handled with care to avoid anti-social use of the gardens. A good option is to use smart lighting, which is activated by movement by sensors.

Install solar lights along the internal footpaths to assist people walking in the gardens at night. Lights need to have smart light sensors to detect movement. LOW PRIORITY

Solar lights can be a sustainable solution to lighting. Lighting within the gardens needs to be handled with care in terms of anti-social night time use.

Improve the perimeter fencing around the gardens. Replace the existing pine rail barriers with bollards. Fencing only to short sections leaving at least 80% of the perimeter unfenced. MEDIUM PRIORITY

The existing treated pine rail barriers are dated and more appropriate delineation would improve the presentation of the gardens. This could be intermittent sections of bollards, bluestone walling and hedge planting.

Make the horse trough on Martin Street more prominent and provide an interpretive sign documenting its history. HIGH PRIORITY

Elements of cultural history are important to reference. The horse trough is currently partially hidden by shrubs. Do not fill the horse trough with soil.

Incorporate public art within the gardens. Establish a commissioning process to engage specialist artisans to undertake a range of artworks within the gardens. MEDIUM PRIORITY

Public art will add another dimension of interest for users of the gardens. Encourage local and regional artisans in a commissioning process in conjunction with Council's Arts Policy. Artworks and sculptures can be of a botanic, nature or garden theme, so as not to detract from the aesthetic value of the gardens. Artworks can be integrated into new wayfinding and information signage.



Visualisation of proposed improvement to the southwest entrance and southern perimeter (Cox Street)

Upgrade the existing public toilet block. Consider an alternative toilet system. HIGH PRIORITY

In promotion of the garden's general infrastructure, improvements to the public toilet need to be commensurate with the overall improvement to the gardens. If the gardens are to be utilised for more events, the existing public toilet block must be replaced with a modern facility with larger capacity. Portable toilets can be hired for use during major events.

Improve the irrigation system to garden beds and grassed areas. Undertake an intensive audit of the existing irrigation system prior to any upgrades. HIGH PRIORITY

Improvement to the irrigation system will allow greater diversity of plant types to be grown, particularly annuals, perennials and exotic shrubs. This would be a longer term opportunity as the installation of an automatic irrigation system is a high cost.

Construct a modern barbecue shelter to replace the existing shelter. Consider a dual purpose shelter that can also service the amphitheatre area. Incorporate a kitchen garden. HIGH PRIORITY

The existing shelter has some structural faults and needs to be replaced. There is opportunity to design the shelter to address the central amphitheatre space and as a part of a potential larger designated events area in the gardens. The design of the new barbecue should take into consideration the following:

- The barbecue shelter should be large enough in size to allow viewing out.
- It should be designed such that people are protected from cold prevailing southwest winds.
- It is recommended that seating be provided within the extended (enlarged) barbecue shelter.
- A pathway for wheelchair access is also required.
- The existing power should be reviewed and if necessary, upgrade to three phase power.

The location of the kitchen garden is to be within 10 metres of the barbecue shelter and is to have appropriate signage advising of the following:

- Picking of the herbs is only for use associated with the barbecue units.
- Use by locals and visitors.
- Please think of others in picking only what is necessary to your immediate barbecue needs.

Monitor success of the kitchen garden over time. Involve local schools in revegetation and the planting of the kitchen and bushfoods gardens.

Refer to the Indicative Layout Plan - Proposed Picnic Shelter on the next page.

Install additional seating throughout the gardens. Provide new seats with arm rests and back support. HIGH PRIORITY

There is a lack of seating throughout the gardens. Locate additional seats within flat zones with enough space for pram, scooter and wheelchair parking. Future seating should be of a consistent palette/style. Consider seats with secure fixing to concrete slabs.

Replace the existing picnic tables over a period of time with DDA compliant picnic tables. HIGH PRIORITY

Over time, replace all the picnic tables in the gardens. Only one picnic table (near the existing playspace) is DDA-friendly. It is a high priority to at least add another DDA compliant table, possibly near the existing/new barbecue shelter.

EXISTING PATHWAY

Open

SEAT

BBQ

SEAT

Picnic Table

PROPOSED PICNIC
SHELTER

SEAT

BBQ

SEAT

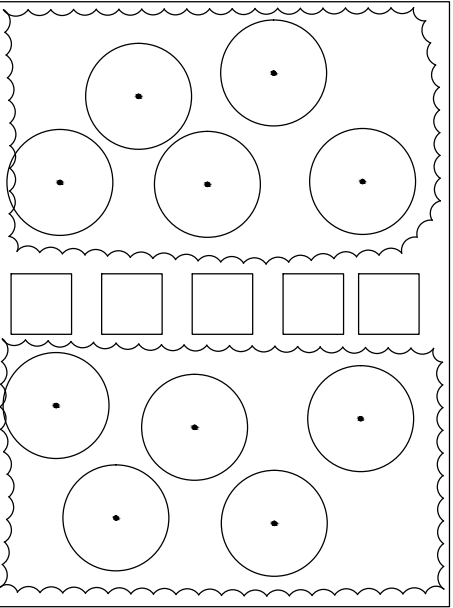
Picnic Table

Open

Prevailing
southwest wind

OPTIONAL THREE SLIDING PANELS TO
NORTH AND SOUTH SIDES OF SHELTER

Kitchen Garden



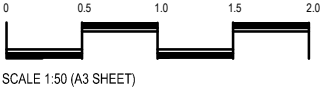
EXAMPLE OF HERBS TO BE INCLUDED:

- Rosemary
- Chives
- Borage
- Parsley
- Oregano
- Basil
- Mint
- Sage
- Thyme
- Marjoram

THE KITCHEN GARDEN IS TO HAVE SIGNAGE ADVISING OF THE FOLLOWING:

- Picking of herbs is only for use associated with the barbecue units.
- Use by locals and visitors.
- Please think of others in picking only what is necessary to your immediate barbecue needs.

INDICATIVE LAYOUT PLAN - PROPOSED PICNIC SHELTER
PENSHURST BOTANIC GARDENS
SOUTHERN GRAMPIANS SHIRE COUNCIL



Amendments:

Print Issue:

Title: Indicative Layout Plan -
Proposed Picnic Shelter
Penshurst Botanic Gardens
Client: Southern Grampians Shire Council

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Date: 30.08.2017

Project No.:16-053

Cad File:

Drawing No.: Sheet 1 of 1



Create a 'Sculpture Walk' leading from the main entrance (at the south-west corner) to the car park area by instigating an inaugural Acquisition Sculpture Prize for artists of the Southwest Victoria Region. LOW PRIORITY

A sculpture walk is part of Council's Arts Policy and encouragement of local/regional artisans would create interest and another dimension to the gardens.

Upgrade the former tennis club room for public use. Maintain the roof and building in order to ensure future use. Investigate the demand as a community asset, i.e. a camp kitchen, and cinema pop-up screen storage. Further community consultation is required. MEDIUM PRIORITY

Suggestions have been for a camp kitchen or storage, which would be a positive outcome. Suggestions have also been made to improve the external presentation of the building through rendering the walls. Final use of the former tennis club room will be ascertained through detailed discussion with the community and Council's tourism department.

Install clearer car park signage/directional signage. HIGH PRIORITY

Clearer signage will help prevent informal parking on grassed areas and be of benefit for tourists. Signage will be at the south-east, the south-west corner and on Chesswass Street. This will include new signs showing caravan access and departure points.

Install formal or informal barriers to discourage people from parking on grassed areas beside Martin Street. LOW PRIORITY

Informal parking on grassed areas on Martin Street is a regularly occurring problem. The barriers could be a range of materials such as hedging, bollards or timber fencing. Establish low hedging plants along Martin Street and consider some parking spaces on Martin Street, particularly when the spring is better presented.

Provide additional parking on Chesswass Street at the American pond to assist in activating this frontage. LOW PRIORITY

This provides another access point to the gardens and relies on the upgrade of the presentation of the gardens, particularly to the American Pond and connection to French Street in the longer term. Provide a path connecting the proposed parking with the existing pathway system within the gardens.

EXISTING FURNITURE



BENCH



PICNIC TABLE



BARBECUE UNIT



LITTER BIN



DRINKING FOUNTAIN

PROPOSED FURNITURE



BENCH



PICNICTABLE



BOLLARDS

WALLING, WATER FEATURES AND LIGHTING



ENTRANCE WALLING



POND CAPPING STONES

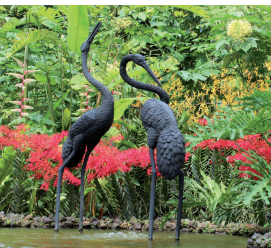


POND FOUNTAIN

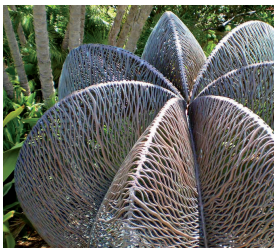


SOLAR LIGHTS WITH
SMART SENSORS

PUBLIC ART



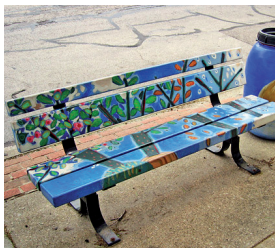
PUBLIC ART



PUBLIC ART



PUBLIC ART



SEAT ARTWORK



PUBLIC ART



PUBLIC ART - ABORIGINAL



PUBLIC ART - ABORIGINAL



PUBLIC ART - ABORIGINAL



PUBLIC ART - ABORIGINAL

PLANTS LABELS AND SIGNAGE



PLANT LABEL



GARDEN SECTION
SIGNAGE

PALETTE OF MATERIALS
PENSHURST BOTANIC GARDENS
SOUTHERN GRAMPIANS SHIRE COUNCIL

6.2 Botanical

Current Situation

A key feature of the gardens apart from the 'never failing' spring are the chain of ponds divided into four planting zones, i.e. Australasian, Asian, American and European. The planting is currently confused; delineation between the planting zones is not immediately obvious. Apart from the information on the gardens key plan and history signs, there are no interpretive signs for each of the different planting zones of the gardens.

The grassed areas along the south side of Chesswass Street have shallow depressions that collect drainage water during high rainfall events. The areas most affected are the northeast section's grassed area and the triangular junction to the northwest, underneath the *Quercus canariensis*.

The only existing plant labels are for a few mature trees in the Martin Street and Chesswass Street sections of the gardens.

Recommendations

Provide better interpretive signage of the different garden sections. Label plant species for at least one representative plant within the gardens. HIGH PRIORITY

This should include the zones and more detailed information on plant communities, origins of species and horticultural requirements. Incorporation of a QR code within the sign that links to a dedicated Penshurst Botanic Gardens webpage or a horticultural/botanic website is recommended as digital solution that can be used on signs. Interpretive signs are to be located on pathways. Consider the use of Braille in the new interpretive signs. To reduce the incidence of theft or removal of plant labels, consider fixing labels as plaques on rocks.



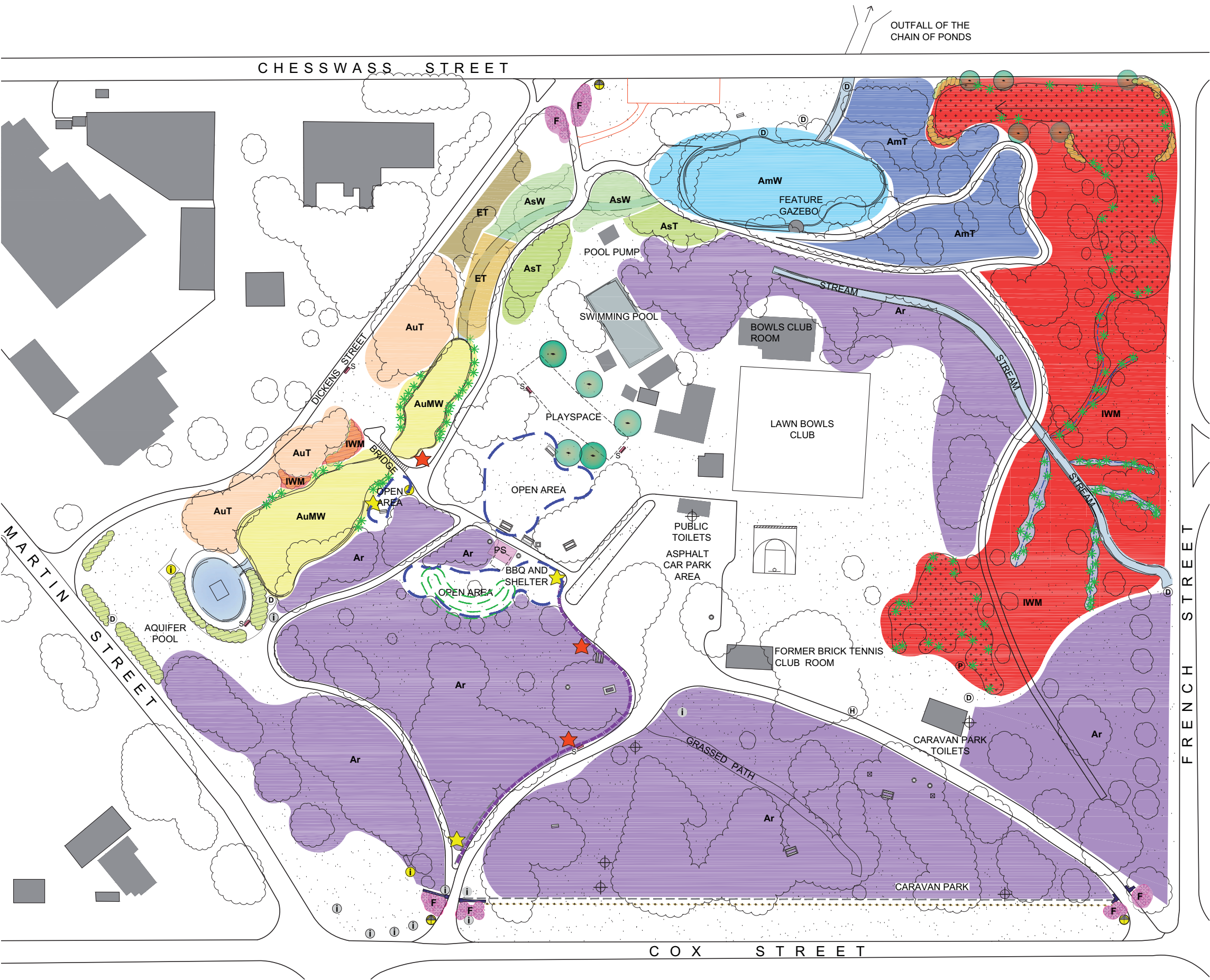
Example of a garden bed interpretive sign in Swan Reserve, Warrnambool



Example of a plant label
(Source: Santa Fe Botanical Garden)



Existing plaque secured to rock in the gardens



LEGEND

- AuT Australian trees
- AuMW Australian wetland plants
- IWM Combination of indigenous wetland and marshland plants
- AmT American trees
- AmW American wetland plants
- AsT Asian trees
- AsW Asian wetland plants
- ET European trees
- EW European wetland plants
- Ar Arboretum (exotic and native)
- F Flowering plants (exotic and native)
- Open area
- Proposed shade tree
- Proposed vegetation
- Proposed indigenous and native tufting plants
- Proposed marshland/ low lying zone planted with indigenous macrophytes

VEGETATION ZONES
PENSHURST BOTANIC GARDENS
SOUTHERN GRAMPIANS SHIRE COUNCIL

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0 5 10 15 20 25 50M
SCALE 1:500 (B1 SHEET)

Amendments:

Print Issue:
XX.XX.2017 DRAFT Emailed to _____

Title: Vegetation Zones
Penshurst Botanic Gardens

Client: Southern Grampians Shire Council

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Drawing No.: Sheet 1 of 1



Strengthen character and planting zones through containing additional planting within their respective zones and phasing out trees and shrubs in poor health. Future planting must adhere to the character zones. HIGH PRIORITY

This is important for the vegetation zones – Australian, Asian, European and American – to read as distinctive ‘themes’ in their own right. These zones must be quite contained from a physical and visual perspective. Over time the world origin zones can be strengthened by phasing out trees and shrubs that are not part of that zone. Increasing the planting relevant to each particular zone is very important.

American Wetland

Cornus sericea ‘Flaviramea’ (shrub)

Darmera peltata (shrub)

Filipendula rubra (shrub)

Gunnera manicata (shrub)

Pontederia cordata (aquatic plant)

Schoenoplectus lacustris subsp. *tabernaemontani* ‘Zebrinus’ (aquatic plant)

Asian Wetland

Acorus calamus (aquatic plant)

Alocasia macrorrhiza (aquatic plant)

Angelica gigas (shrub)

Calocasia esculenta (aquatic plant)

Cornus alba (shrub)

Ligularia species and cultivars (shrub)

Oenanthe javanica ‘Flamingo’ (groundcover)

Australian Wetland

Baumea articulata (aquatic plant)

Baumea rubiginosa (aquatic plant)

Bulboschoenus medianus (tufting plant)

Callistemon sieberi (shrub)

Cares appressa (tufting plant)

Carex fascicularis (tufting plant)

Eleocharis sphacelata (aquatic plant)

Ficinia nodosa (tufting plant)

Olearia glandulosa (shrub)

European Wetland

Aruncus dioicus (shrub)

Mentha aquatica (aquatic plant)

Provide infill planting within the existing garden beds. HIGH PRIORITY

Infill planting must follow the already established character zones which currently are compromised by mixed planting particularly within the Australian section. Zones need to be defined and adhered to.

Incorporate an indigenous plants section within the gardens to showcase local ecology. HIGH PRIORITY

This is important but must be in the Australian zone and not compromising the integrity of other character zones. The planting of more indigenous trees, shrubs and groundcovers will increase habitat values and create horticultural interest and educational value. An Aboriginal bushfoods garden with interpretive information can be incorporated into the indigenous planting zone.

Add more flowering shrubs and groundcovers. HIGH PRIORITY

This is important for a botanic gardens to "read" as a botanic gardens and requires adherence to the specific character zones. Providing flower beds on the corner entrances will ensure the gardens is visually appealing even in winter time, when the mature deciduous trees are bare. Proposed plants to the northern entrance at Chesswass Street need to tolerate shade and wet conditions due to the existing very large *Quercus canariensis* and because stormwater tends to accumulate in that area during heavy rain events.

As a suggestion, below are recommended flowering shrubs and groundcovers:

<i>Acanthus mollis</i> *	<i>Grevillea</i> 'Sandra Gordon'
<i>Anemone nemerosa</i> *	<i>Grevillea rosmarinifolia</i>
<i>Brachyscome multifida</i>	<i>Helleborus</i> cultivars *
<i>Boronia muelleri</i> *	<i>Lavandula angustifolia</i>
<i>Chamelaucium uncinatum</i>	<i>Olearia erubescens</i>
<i>Crowea exalata</i>	<i>Olearia ramulosa</i>
<i>Cyclamen hederifolium</i> *	<i>Santolina chamaecyparissus</i>
<i>Cyclamen purpurascens</i> *	<i>Santolina rosmarinifolia</i>
<i>Grevillea</i> "Austraflora Canterbury Gold"	<i>Stachys byzantina</i>
<i>Grevillea lanigera</i> "Mount Tamboritha"	<i>Telopea</i> cultivars
<i>Grevillea</i> "Ned Kelly"	

*plants that can tolerate shade

Tufting plants, succulents and flowering bulbs are recommended to supplement the flowering shrubs and groundcovers, particularly in shaded areas such as at the northern entrance. Below are some suggestions:

Aloe ferox
Clivia miniata
Cotyledon orbiculata and cultivars
Dianella caerulea
Dianella revoluta
Dianella tasmanica
Echeveria cultivars
Euphorbia cultivars
Hemerocallis cultivars
Liriope muscari
Lomandra "Tanika"
Ruscus hypoglossum
Tulbaghia violacea

Improve the wetland vegetation. MEDIUM PRIORITY

The ponds/wetlands along with the established existing trees are a key feature of the gardens. Further wetland planting must adhere to the character zone and can be undertaken once an in-depth study of the water quality and flow within the pondages is completed.

Install interpretive signage about local ecology and geology. MEDIUM PRIORITY

This value-adds to the visitor experience and builds on the Kanawinka Geotrail in the region. Signage about the threatened, rare and significant flora within the Southern Grampians Shire will contribute to the greater awareness within the community and for the visitors.

Create marshlands or rain gardens in some of the low-lying sections to the north-east corner and eastern side. Construct drainage channels to the existing stream to the east to direct water way from the grassed areas. Plant with macrophytes. MEDIUM PRIORITY

The area to the north-east corner and along French Street is low lying and often wet. There is scope to create an extensive ephemeral- type wetland zone using Australian native and indigenous plants. Plants that can be used should tolerate being inundated during winter and being dry during summer.

As a suggestion, below are recommended plants:

Agonis linearifolia
Astilbe hybrids and cultivars
Baloskion tetraphyllum
Bauera rubioides
Bauera sessiliflora
Boronia heterophylla
Bossiaea foliosa
Brachyscome scapigera
Brachyscome spathulata
Bulboschoenus medianus
Callistemon sieberi
Carex appressa
Carex fascicularis
Dianella caerulea "Breeze"
Dianella caerulea "Little Jess"
Dierama pulcherrimum
Ficinia nodosa
Juncus pallidus
Lepironia articulata "Twizzler"
Leptospermum lanigerum
Lomandra hystrix "Katie Belles"
Lomandra longifolia "Tanika"
Ranunculus graniticola
Ranunculus lappaceus
Scaevola hookeri
Telopea truncata

Council to undertake a broadscale multi-disciplinary stormwater and groundwater management study of Penshurst township. This is to include the botanic garden and perimeter. This is to assist in the management of Azolla and Duckweed within the ponds. Leakage from the ponds needs to be resolved. HIGH PRIORITY

The study needs to include ecological, biological and hydrological expertise. The study needs to address the levels and hydrological flow through the pond system. Particular review of the Dickens and Chesswass Streets edge is required to assess existing levels and drainage flows.

The presence of Azolla and Duckweed is a problem due to nutrification of the almost pure spring water entering the pond system. The nutrification can be reduced by improved septic tank treatment systems at the public toilets in the gardens and through further scientific testing to determine the source(s) of nutrients. Regularly 'sweeping-up' of the weed will assist and should be included in the maintenance works program. Practical Ecology's subconsultant report on the following pages has reviewed water quality reports and recommended a combination of chemical, mechanical and preventative control of the Azolla and Duckweed.

7 August 2017

Azolla Management at Penshurst Botanic Gardens

Introduction

The spring pond, stream and associated ponds at the Penshurst Botanic Gardens have large areas of floating ferns of the genus *Azolla*, which is possibly two different species. They occur in floating mats in many areas.

The following excerpt from Agriculture Victoria's website provides a good overview of the species and associated issues:

Azolla is a common free floating fern up to 10 to 30 millimetres in diameter with roots hanging down to about 40 millimetres below the water surface. Azolla fronds float on the surface of the water individually or as large mats.

Two species of Azolla are commonly found in Australia, including Azolla pinnata and Azolla filiculoides. The plant supports nitrogen fixing bacterium, which allows it to use nitrogen from the water and air for its own growth.

The occurrence of a vigorously growing population of azolla in a farm dam generally indicates high nutrient levels in the water. Azolla can survive within a water pH range of 3.5 to 10, but optimum growth occurs in the pH range of 4.5 to 7 and temperature range of 18°C to 26°C.

Under optimum conditions, azolla's growth spreads across the dam surface until it covers the surface of the water in a dense cover. Azolla can double its leaf area in seven days if conditions of high nutrient levels and water temperatures persist.

Is azolla a problem?

Azolla is not harmful to stock that drink the water or consume the plant. Nor does azolla have a harmful effect on domestic house and garden water.

Source: <http://agriculture.vic.gov.au/agriculture/farm-management/soil-and-water/water/farm-water-solutions/technical-resources/azolla-growth-in-farm-dams>

The abundance of *Azolla* at the Penshurst Botanic Gardens is possibly the result of nutrient enrichment in the recharge and catchment of the spring. It is possible that fertiliser use in the farming landscape around Penshurst is leading to nutrient enriched groundwater which of course is expressed in the spring flow. The water quality of the spring has been tested over time with several years of data available; the levels of nutrients doesn't appear extreme but it is only a few data

points over time and the issues need to be investigated by professionals with experience in managing water quality.

The permanence, stillness of pools and lack of strong flows in some areas of the Penshurst Botanic Gardens create the opportunity for Azolla growth in the context of unnatural levels of nutrients in the spring water. In addition, the presence of abundant Azolla in the valued public spaces of the Penshurst Botanic Gardens cause concerns about amenity, visitors prefer open water, and potentially create hazards as visitors may walk on floating Azolla mats thinking they are solid and find themselves in the water.

It is clear that Azolla is a visual problem in the Botanic Gardens and a potential hazard for visitors and is a possible indicator of enhanced nutrients in the local groundwater. However, it is not a danger to stock which may eat it or people who might come in contact with it.

Management and/or Control of Azolla

Management of the Azolla at Penshurst Botanic Gardens will need to consist:

1. Short-term event-focussed control actions; and/or
2. Long-term prevention through managing nutrients and changing hydrology or plant structure.

The two strategies are proposed because the water quality and site conditions are supporting the abundance of Azolla at the present time and there is only the opportunity for targeted control in the short-term but long-term prevention is required to reduce the problem over time. Without any significance change in water quality and site conditions the current abundance levels are likely to continue and the only option in the short-term is to implement control measures around particular events. Visitors may be more abundant at key times and the aim may be to implement control measures leading up to a time where risks need to be reduced, i.e. floating lawns reduced, and/or open water is wanted for aesthetic reasons. In the long-term it may be possible to change conditions so that Azolla is not so abundant and doesn't require short-term control efforts.

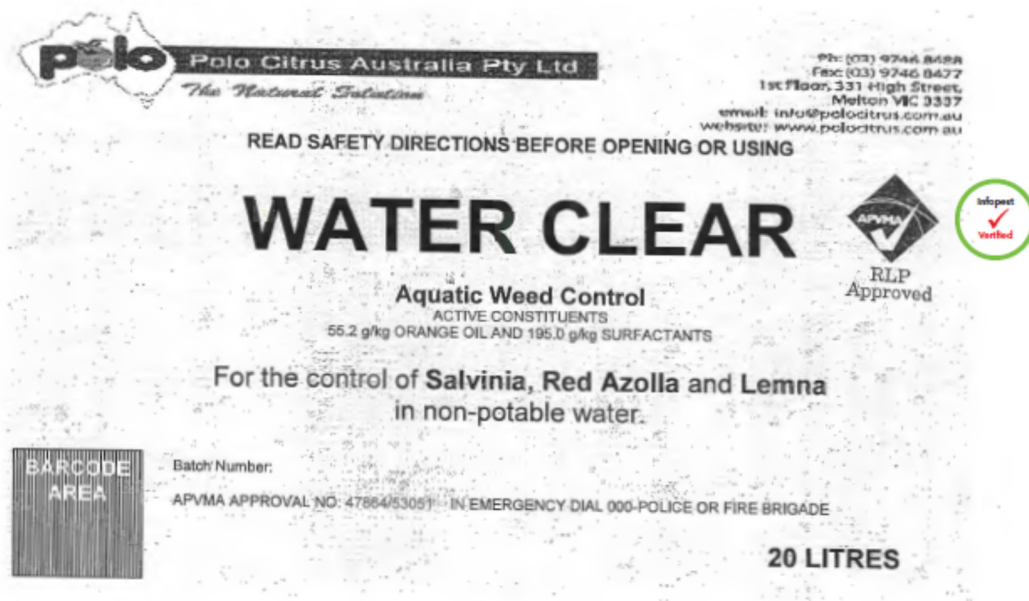
Short-term or Event Focussed Control

The waterway and ponds flowing from the spring at the botanic gardens has significant Azolla present at the present time and this is likely to continue into the future given the likelihood for conditions to remain the same with no substantial changes. It is also likely that any control efforts would only have a short-term effect as the plant can grow very fast and the same conditions that support the current population would continue to occur. With these factors in mind short-term control processes will be proposed and it is recommended that control actions be limited to just prior to events where open water is desired so that only key targeted efforts are implemented.

Removal of the floating layer of Azolla through raking and removal is likely the best method of achieving open water areas for a limited time. Azolla removed from the water will die and can be composted for fertiliser. This is the best technique, although labour intensive, because it doesn't require chemical use in the waterway and it won't leave dead material in the water that will cause

increased biological oxygen demand during its decomposition leading to negative impacts on aquatic organisms as the oxygen they need to live is taken up by decomposition processes.

Chemical control of Azolla would be possible as there are several registered chemicals on the market, which can be searched for separately, but it has two key disadvantages. The first is the use of chemicals to kill the Azolla might not be seen as acceptable by the community. The second disadvantage is that dead Azolla left in the water would cause increased biological oxygen demand during its decomposition leading to negative impacts on aquatic organisms. However, there is one registered chemical that is made with natural ingredients and would likely have less impact than synthetic chemicals; it would still create the problem of increased biological oxygen demand.



In summary, there is unlikely to be any effective strategy to reduce Azolla in the long-term without substantial changes to water quality and/or changing the hydrological flow of the water from the spring. Control of the “floating lawn” of Azolla may be deemed necessary for particular events and occasional chemical control efforts may be acceptable and affordable. The best approach to short-term control will be simple mechanical removal of the Azolla. Chemical control is problematic with the impact of the possible chemicals used and the impact of dead material in the aquatic environment and should be avoided. However, the long-term reduction of Azolla mats will require more substantive changes in conditions.

Long-term Prevention

It is likely that any effective control of Azolla over time will require the conditions to change substantially over time. Nutrients in the landscape and water quality in the spring water may need to be addressed to prevent the nutrients being present that support the species. The actual design of the waterway will also likely need to be modified so that water flow, wind and shade can be used to reduce the amount of Azolla present and maximise open water in desired priority areas.

Managing water quality likely has two scales to address.

First, the recharge area of the spring needs to be assessed for nutrient pollution issues and managed as a catchment with efforts made to ensure that nutrients leaching into groundwater are avoided and limited. Addressing these landscape scale issues will likely require the cooperation of the Southern Grampians Shire Council, Glenelg Hopkins CMA and/or Southern Rural Water as it is an issue well beyond the Botanic Gardens. There may be the need to investigate the scale of the nutrient contamination in the ground water and determine where the “hot spots” of nutrient pollution are in the local area. Once the scale of the issue is determined the actions required may include supporting farmers to manage fertiliser better, fencing off streams and dams and creating filtering strips around dams so that nutrients are kept out of water bodies that add to groundwater.

Secondly, nutrients might also be entering the water within the Botanic Gardens itself from on-site sources or local streets and these sources may need to be managed.

The following preventative strategies will apply to the local scale in the Botanic Gardens:

- Limit the influx of nutrients to streams or groundwater by preventing runoff carrying fertilisers from adjacent streets, homes or lawn areas by ensuring that any drainage lines feeding the waterways are designed to filter nutrients and capture sediments.
- Establish buffer strips of native grass, shrubs and trees along the waterways in the Botanic Gardens to intercept nutrients and soil particles from adjacent lawns. This may also help guide people away from areas of water that have hazards that should be avoided.
- Minimise sunlight on the waterways by planting native vegetation on the north and west sides of the margins. Do not plant trees on embankments that act as dam walls where leaks from roots must be avoided.

There are also possible longer-term projects that might help with the abundance of Azolla, including:

- Adapt or redesign plantings around the waterways in the Botanic Gardens so prevailing winds from the northwest or southwest can be channelled into the ponds and may help push any floating plants to one side creating open water to some
- Consider redesigning waterways leading from the spring with the help of a hydrologist so ongoing water flows discourage still surface water in key areas where people might want to access the water's edge or the gazebo and encourage the movement of Azolla.

Conclusion

There are unlikely to be any substantial solutions to reducing Azolla in the Penshurst Botanic Gardens waterways unless key background conditions such as reducing nutrients in the water and redesigning the waterways so that wind and water are used to reduce the areas where water is still enough to allow floating mats of plants such as Azolla. Any options for short-term control, such as chemical control or mechanical removal, could be effectively used for reducing the cover for key events but are unlikely to produce long term reductions in cover.

Written by Lincoln Kern, Ecological and Bushfire Risk Consultant

Conduct an assessment of all trees within the gardens and develop a succession plan for replacement of trees. HIGH PRIORITY

This is essential for the long term presentation of the gardens and includes succession planting/management and safety for users of the gardens. This is critical to maximising the lifespan and minimising limb drop of the existing mature trees. An annual audit of the health of trees within Penshurst Botanic Gardens is already undertaken by an external body, in conjunction with Hamilton Botanic Gardens. The recent engagement of an arborist by Council will assist in undertaking regular tree assessments, tagging of each tree, mapping within an electronic database and provision of quarterly reports.

Undertake a survey of the aquatic flora and fauna within the ponds. LOW PRIORITY

A survey will assist in the management of Couch, Azolla and Duckweed. It will also provide information that can be placed on proposed interpretive signage on local ecology.

Spade edge grassed areas rather than spraying weeds to key zones within the gardens. MEDIUM PRIORITY

It has been identified by respondents that a botanic garden shouldn't display sprayed weeds/grass. Due to the cost of spade edging, it should be contained to the key zones of core centre of the gardens, i.e. the amphitheatre garden area.

6.3 Community

Current Situation

Apart from the public toilets, the playspace in the centre of the gardens is one of the most well used amenity in the gardens. There are no shade trees or shade structure directly adjacent to the playspace.

The tennis court in the centre of the gardens is rarely used.

There used to be a Friends of the Botanic Gardens but is now defunct.

Council currently holds one major event each year (Australia Day) at the gardens. Past one-off major events held in the gardens were the Black Dog Ride starting point (a fundraising motorbike ride held in March 2017) and the Mount Rouse Festival (held in in February 2012). The occasional wedding and funeral service also take place in the gardens.

Recommendations

Develop a locally themed nature sensory playspace based on the volcanoes, aquifers and associated geomorphology of the region. Provide shade to the play space area with deciduous and evergreen trees. HIGH PRIORITY

A playspace creates another activity of interest and makes a family visit to the gardens more enjoyable. Volcano and geomorphological themes are appropriate to the region. Sensory play spaces incorporate planting that has scent, texture, colour and foliage. This would attract more families to visit the gardens. Consider the incorporation of geomorphology-inspired play equipment such as slides and climbing nets in the shape of a volcano and other geological features.

As a suggestion, below are recommended deciduous shade trees:

Acer x freemanii "Autumn Blaze"
Acer negundo "Sensation"
Fraxinus excelsior "Aurea"
Fraxinus pennsylvanica "Cimmaron TM"
Fraxinus pennsylvanica "Urbanite TM"
Lagerstroemia indica x *faueri* cultivars
Melia azedarach "Elite"
Pyrus calleryana cultivars
Ulmus parvifolia "Todd"

Below are recommended small to medium-sized evergreen shade trees:

Corymbia citriodora "Dwarf Pink"
Corymbia citriodora "Fairy Floss"
Eucalyptus leucoxylon "Euky Dwarf"
Eucalyptus leucoxylon "Goolwa Gem"
Eucalyptus mannifera "Little Spotty"
Eucalyptus pauciflora "Little Snowman"
Eucalyptus pauciflora "Edna Walling"
Tristaniopsis laurina

Below are suggested plants with interesting flowers, fragrance and foliage texture that can be used as part of the natural and sensory play experiences:

<i>Anigozanthos</i> "Bush Gem" hybrids	tufting plant
<i>Atriplex semibaccata</i>	shrub
<i>Boronia muelleri</i>	shrub

<i>Cassinia aculeata</i>	shrub
<i>Cerastium tomentosum</i>	groundcover
<i>Chrysocephalum apiculatum</i> *	groundcover
<i>Chrysocephalum semipapposum</i> *	groundcover
<i>Correa</i> "Dusky Bells"	shrub
<i>Correa reflexa</i>	shrub
<i>Dianella caerulea</i> "Breeze"	tufting plant
<i>Eremophila glabra</i> "Kalbarri Carpet"	shrub
<i>Eremophila glabra</i> "Michigan River"	shrub
<i>Eremophila nivea</i>	shrub
<i>Nepeta cataria</i>	groundcover
<i>Ozothamnus obcordatus</i>	groundcover
<i>Pennisetum alopecuroides</i>	tufting plant
<i>Poa labillardieri</i>	tufting plant
<i>Rhagodia spinescens</i>	shrub
<i>Stachys byzantina</i>	groundcover
<i>Viminaria juncea</i>	shrub
<i>Wahlenbergia communis</i> *	groundcover
<i>Wahlenbergia stricta</i> *	groundcover

*plant that attract butterflies

The Advance Penshurst Committee, Council and Stakeholder groups in Penshurst to work together on promotion of Penshurst and surrounding area. This includes a strategy to manage events, marketing and tourism specifically for Penshurst. HIGH PRIORITY

During the consultation and engagement stage of the masterplan's development, a common thread was the promotion of the gardens in conjunction with the regional attractions.

Provide space within the gardens for the use of approved group activities, i.e. markets, music events, plays/theatre, botanic and geological educational activities and cinema. HIGH PRIORITY

This is likely to increase visitation rates and allows greater exposure to the gardens. An increase in usage will lead to more passive surveillance and potentially less vandalism. A permanent events structure locks in the space used for events and is not considered desirable. Other areas may better suit a range of different events. There must be flexibility in the location of event spaces within the lawn areas, so as to reduce wear and tear to lawns. Examples of suitable events as proposed by the community include markets, music in the park, music festivals, long lunches, botanic and geological educational activities.

Host regular outdoor cinema events within the gardens. A pop-up cinema screen has been purchased. HIGH PRIORITY

The Advance Penshurst Committee recently acquired the necessary equipment to hold film screenings. The gardens offer an ideal surrounding for theatre and cinema events due to the terrain's spatial enclosure by trees and the general ambiance of the gardens.

Upgrade the gazebo adjacent to the 'American Wetlands' and footbridges across the ponds. HIGH PRIORITY

This would be a more cost-effective alternative to constructing another gazebo/rotunda. Maintenance needs to be undertaken urgently as the gazebo is not only a space for events and recreation, it is also a source of marketing.

Construct a grassed amphitheatre adjacent to the existing barbecue shelter for events. MEDIUM PRIORITY

A low amphitheatre-like grassed mounding for use during events will be complementary to the gardens' character. It provides another activity attraction and exposure to the gardens. Refer to the Indicative Layout of the Amphitheatre. During a community consultation meeting in October 2017, a suggestion was raised for another gazebo however, the consensus of those present at the meeting was that it was unnecessary as there are enough buildings (structures) in the gardens.

Remove the existing tennis court surface and construct a basketball half court and masonry rebound wall. The grassed area can be used for informal verflow car parking during events. HIGH PRIORITY

More youth targeted-areas such as a basketball half court will attract more youth to visit the gardens. The grassed area immediately to the south and west of the court can be used as an informal parking area during events.

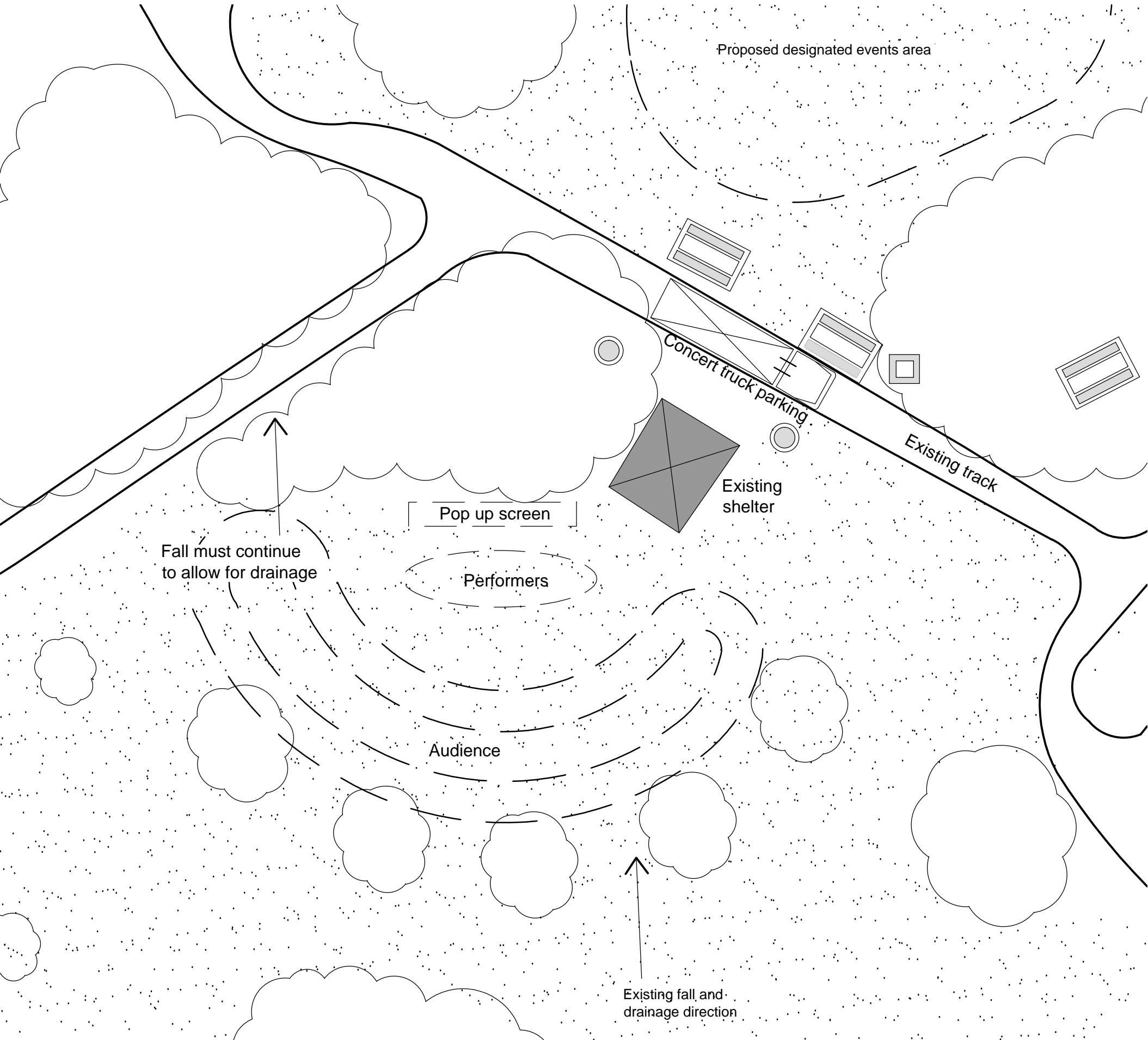
Incorporate local indigenous interpretive signage and/or art within the gardens. MEDIUM PRIORITY

It is appropriate to integrate indigenous storytelling within wayfinding signage and artwork. Indigenous input into public art and interpretive signage is necessary. The stories of the local indigenous people (Nareeb Nareeb and Kolor aborigines) from pre-European settlement should be better represented in Penshurst. References to the aboriginal people need not be limited to signage. A graphic and artistic representation through the pathways, seating and public art is recommended.

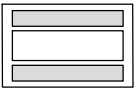
John Lovett, an indigenous person, advised of the spiritual significance of Mount Rouse. Sharon Lane, an expert in Aboriginal cultural heritage, lives in Penshurst. Both John Lovett and Sharon Lane should be consulted prior to any implementation.

Establish a Friends Group to work in partnership with Council. HIGH PRIORITY

It is essential that a Friends of the Penshurst Botanic gardens is established. The group should comprise interested local and regional people. The aim of the group is to provide specialist input into the maintenance of the gardens including procurement of plants, marketing and promotion of the gardens. The Friends Group should be a conduit between the community and the presentation of the gardens.



LEGEND



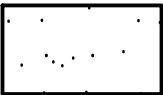
Existing timber picnic table



Existing drinking fountain

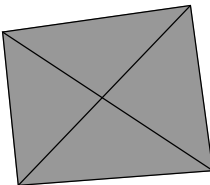


Existing rubbish bin

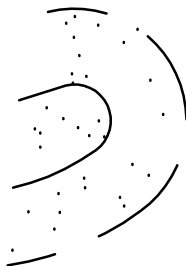


Existing grassed area

Existing gravel track



Existing shelter to be upgraded

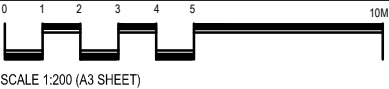


Proposed low grassed mounding for the amphitheatre

NOTE

Survey levels are required to determine the precise location of the amphitheatre to avoid collecting drainage water within the crescent shape.

INDICATIVE LAYOUT PLAN - AMPHITHEATRE
PENSURST BOTANIC GARDENS
SOUTHERN GRAMPIANS SHIRE COUNCIL



Amendments:

Print Issue:

Title: Indicative Layout Plan - Amphitheatre
Penshurst Botanic Gardens

Client: Southern Grampians Shire Council

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Date: 30.08.2017

Project No.:16-053

Cad File:

Drawing No.: Sheet 1 of 1



6.4 Tourism

Current Situation

The gardens are one of the main tourist attractions in Peshurst, together with the Volcanoes Discovery Centre, Mount Rouse and Yatmerone Wildlife Reserve.

The caravan park located on the southern section of the gardens is one of the main accommodation providers in Peshurst. Powered sites and a dedicated caravan park toilet block are available for campers to use.

Recommendations

Delineate the caravan park's boundaries through planting and create more levelled grassed caravan sites. Locate a camping area nearby the caravan sites. HIGH PRIORITY

The caravan park site currently has a few areas with uneven levels. Levelling these areas will increase the caravan park capacity. Consider providing more areas for large vans and campers. Formal delineation of the caravan park's boundaries will help prevent caravan users from making use of other parts of the gardens to park their vehicles. Provide drive-in and drive-out spaces. Refer to the Indicative Layout Plan – Caravan Park on the next page for the location of proposed additional level areas.

Undertake a feasibility study to determine the need for more powered sites based on demand and current usage. Allow for access by vehicles and large caravans. HIGH PRIORITY

Peshurst Caravan Park is the only accommodation provider in Peshurst. Extending the caravan park's boundaries could be an option should the demand for budget accommodation increase.

Upgrade the toilet block in the caravan park to be accessible to all. MEDIUM PRIORITY

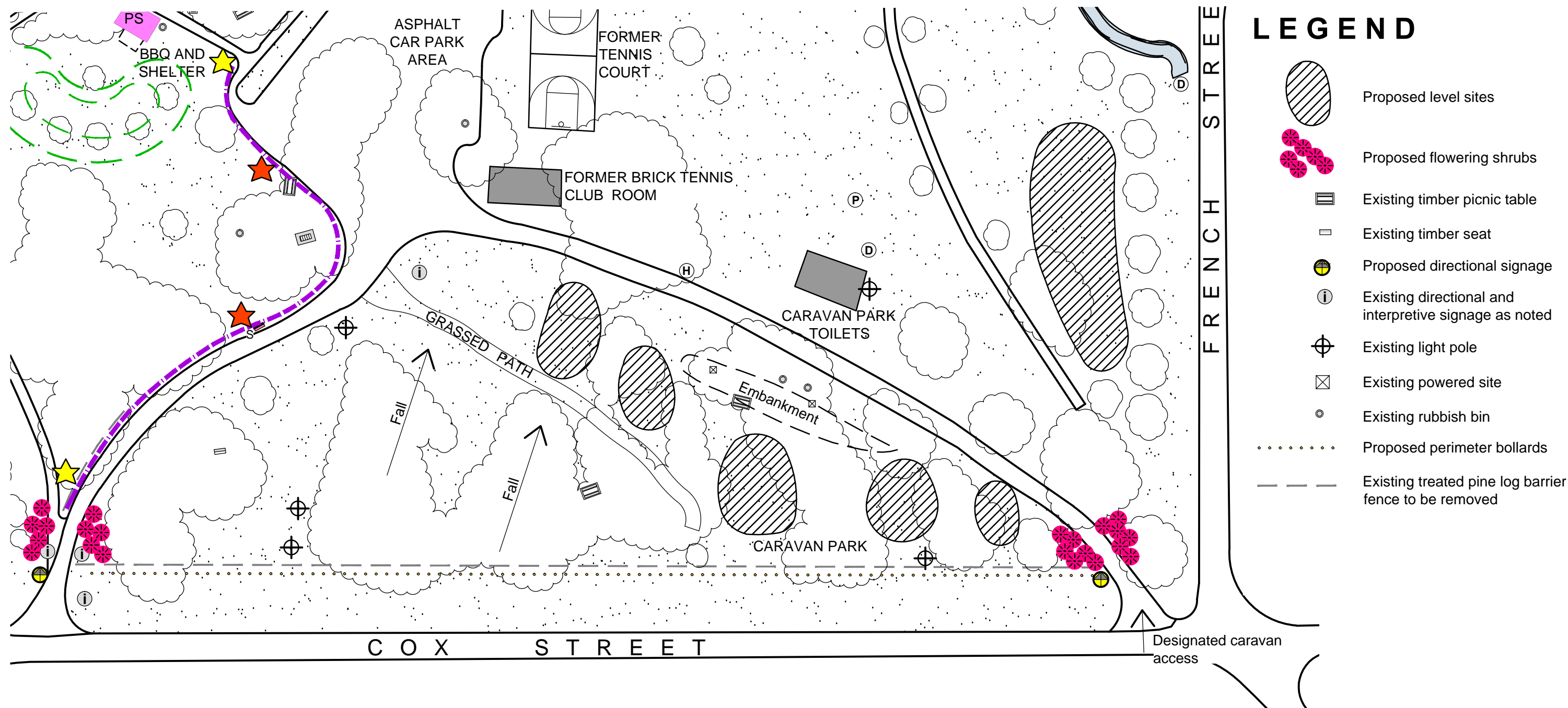
This will ensure caravan park users of all abilities can access the toilets.

Provide information signage about Napier Waller within the gardens. MEDIUM PRIORITY

Napier Waller came from Peshurst and it will be good to acknowledge him through signage and images. Information signage and imagery pertaining to Napier Waller could be a key opportunity in connecting the town centre and the botanic gardens.

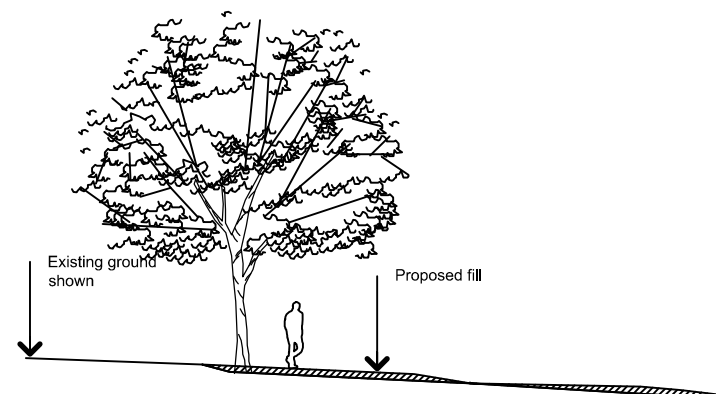
Promote the gardens in conjunction with other attractions in the immediate area through digital strategies such as NFC/QR codes, apps and/or a dedicated tourism website. HIGH PRIORITY

Promotion of the gardens on websites such as Tripadvisor and Visit Victoria and on social media platforms such as Facebook will assist in attracting more visitors to Peshurst and region. By incorporating NFC/QR codes on signage, visitors can easily access linked tourism and Council websites.



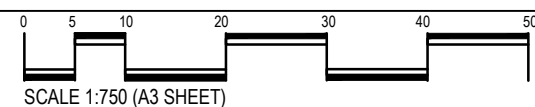
PRINCIPLES

1. Avoiding benching too deep and too close to tree root zones
2. Providing several more level sites than are presently available
3. Gentle benching away from tree root zones (Refer to drawing)
4. Future works to determine precise van site/ camping sites is to accurately locate trees and levels through professional site survey.



Gentle benching away from tree root zones

INDICATIVE LAYOUT PLAN - CARAVAN PARK PENSHURST BOTANIC GARDENS SOUTHERN GRAMPIANS SHIRE COUNCIL



Amendments:

Print Issue:

Title: Indicative Layout Plan - Caravan Park
Penhurst Botanic Gardens

Client: Southern Grampians Shire Council

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Project No.: 16-053
Cad File:
Drawing No.: Sheet 1 of 1



7 Masterplan Recommendations Plan



LEGEND

- Existing building/ structure as noted
- Existing picnic shelter to be removed
- Proposed picnic shelter
- Existing grassed area
- Existing tree grouping. Refer to existing layout plan.
- Proposed shade tree
- Proposed vegetation
- Proposed flowering shrubs
- Proposed indigenous and native tufting plants
- Proposed marshland/ low lying zone planted with indigenous macrophytes

- Proposed designated events area
- Proposed grassed amphitheatre. Refer to indicative layout plan
- Existing bluestone gravel path to be retained
- Existing lake / ponds and connecting channel to be retained and enhanced
- Existing feature gazebo
- Existing stream/ swale channel
- Existing timber bridge

- Proposed rebound wall and basketball half court
- Existing timber picnic table
- Existing electric barbecue unit
- Existing timber seat
- Existing drinking fountain
- Proposed seat secured on a concrete pad
- Existing rubbish bin
- Existing directional and interpretive signage or as noted
- Existing powered camping site
- Existing light pole
- Proposed directional signage to include caravan access and departure points signs
- Proposed interpretive signage
- Proposed location for additional parking spaces and connecting path

- Proposed location for public artwork/sculpture
- Proposed location for local indigenous art and/or signage
- Proposed play features such as climbing nets and slides in the shape of a volcano or other geological features
- Proposed 'Sculpture Walk'
- Proposed feature bluestone walls
- Proposed feature bluestone pillars
- Proposed perimeter bollards
- Existing treated pine log barrier fence to be removed
- Proposed drainage channel planted with indigenous macrophytes to connect into the existing main channel

KEY DIRECTIONS

INFRASTRUCTURE

- Install additional directional signage at the south-west and south-east corners of the gardens.
- Undertake an audit of existing infrastructure to include buildings/structures, signage, fencing, paths and furniture.
- Ensure the existing gravel paths within the gardens are well maintained. Provide a wheelchair accessible path to the swimming pool.
- Remove the concrete pad to the north-west side of the natural spring. Construct a gravelled vehicle parking area.
- Improve the surrounds of the natural spring through ground levelling and planting. Remove rocks and rubble from around the spring. Place capping stones to the rim of the spring basin. Remove rocks from within the outflow of the spring and pipes conducting inflow.
- Construct a fountain within the spring as a point of visual interest.
- Construct a low bubbler fountain for each of the ponds to assist in water movement.
- To the seating and seating pads within the gardens, provide decorative artwork images in conjunction with the community.
- Improve the presentation and sense of arrival to the entrances to the gardens through feature corner walling and pillars, signage, hedging and bollards.
- Install solar lights with smart lighting sensors around the existing gazebo.
- Install solar lights along the internal footpaths to assist people walking in the gardens at night. Lights need to have smart light sensors to detect movement.
- Improve the perimeter fencing around the gardens. Replace the existing pine rail barriers with bollards. Fencing only to short sections leaving at least 80% of the perimeter unfenced.
- Make the horse trough on Martin Street more prominent and provide an interpretive sign documenting its history.
- Incorporate public art within the gardens. Establish a commissioning process to engage specialist artisans to undertake a range of artworks within the gardens.
- Upgrade the existing public toilet block. Consider an alternative toilet system.
- Improve the irrigation system to garden beds and grassed areas. Undertake an intensive audit of the existing irrigation system prior to any upgrades.
- Construct a modern barbecue shelter to replace the existing shelter. Consider a dual purpose shelter that can also service the amphitheatre area. Incorporate a kitchen garden.
- Install additional seating throughout the gardens. Provide new seats with arm rests and back support.
- Replace the existing picnic tables over a period of time with DDA compliant picnic tables.
- Create a 'Sculpture Walk' leading from the main entrance (at the south-west corner) to the car park area by instigating an inaugural Acquisition Sculpture Prize for artists of the Southwest Victoria Region.
- Upgrade the former tennis club room for public use. Maintain the roof and building in order to ensure future use. Investigate the demand as a community asset, i.e. a camp kitchen and cinema pop-up screen storage. Further community consultation is required.
- Install clearer car park signage/directional signage.
- Install formal or informal barriers to discourage people from parking on the grassed areas beside Martin Street.
- Provide additional parking on Chesswass Street at the American pond to assist in activating this frontage.

BOTANICAL

- Provide better interpretive signage of the different garden sections. Label plant species for at least one representative plant within the gardens.
- Strengthen the character and planting zones through containing additional planting within their respective area of origin zones and phasing out trees and shrubs in poor health. Future planting must adhere to the character zones.

- Provide infill planting within the existing garden beds.
- Incorporate an indigenous plants section within the gardens to showcase local ecology.
- Add more flowering shrubs and groundcovers.
- Improve the wetland vegetation.
- Install interpretive signage about local ecology and geology.
- Create marshlands or rain gardens in some of the low-lying sections to the north-east corner and eastern side. Construct drainage channels to the existing stream to the east to direct water away from the grassed areas. Plant with macrophyte plants.
- Council to undertake a broadscale multi-disciplinary stormwater and groundwater management study of Penshurst township. This is to include the botanic garden and perimeter. This is to assist in the management of Azolla and Duckweed within the ponds. Leakage from the ponds needs to be resolved.
- Conduct an assessment of all trees within the gardens and develop a succession plan for replacement of trees.
- Undertake a survey of the aquatic flora and fauna within the ponds.
- Spade edge grassed areas rather than spraying weeds to key zones within the gardens.

COMMUNITY

- Develop a locally themed nature sensory playspace based on the volcanoes, aquifers and associated geomorphology of the region. Provide shade to the play space area with deciduous and evergreen trees.
- The Advance Penshurst, Council and Stakeholder groups in Penshurst to work together on promotion of Penshurst and surrounding area. This includes a strategy to manage events and marketing specifically for Penshurst.
- Provide space within the gardens for the use of approved group activities, i.e. markets, music events, plays/theatre, botanic and geological educational activities and cinema.
- Host regular outdoor cinema events within the gardens. A pop-up cinema screen has been purchased.
- Upgrade the gazebo adjacent to the 'American Wetlands' and footbridges across the ponds.
- Construct a grassed amphitheatre adjacent to the existing barbecue shelter for events.
- Remove the existing tennis court surface and construct a basketball half court and masonry rebound wall. The grassed area can be used for informal overflow car parking during events.
- Incorporate local indigenous interpretive signage and/or art within the gardens. Involve local indigenous people in the works.
- Establish a Friends Group to work in partnership with Council.

TOURISM

- Delineate the caravan park's boundaries through planting and create more levelled grassed caravan sites. Locate a camping area near to the caravan sites. (Refer to the enlargement layout plan with the report)
- Undertake a feasibility study to determine the need for more powered sites based on demand and current usage. Allow for access by vehicles and large caravans.
- Upgrade the toilet block in the caravan park to be accessible to all.
- Provide information signage about Napier Waller within the gardens.
- Promote the gardens in conjunction with other attractions in the immediate area through digital strategies such as NFC/QR codes, apps and/or a dedicated tourism website.

Amendments:
18.01.2018 Draft to Final Plan

Print Issue:
18.01.2018 Emailed to M. McCarthy

Title: Key Directions
Penshurst Botanic Gardens

Client: Southern Grampians Shire Council

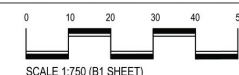
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Drawing No.: Sheet 1 of 1

KEY DIRECTIONS PENSHERST BOTANIC GARDENS SOUTHERN GRAMPIANS SHIRE COUNCIL

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SCALE 1:750 (B1 SHEET)

