



## BANGALEE RESERVE BUSHCARE ACTION PLAN REVIEW

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### CONTACT INFORMATION

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<b>Reserve Name:</b>	Bangalee
<b>Reserve Number:</b>	NIL015
<b>Land Tenure:</b>	Crown (SCC Trust Manager)

### 1. BUSHCARE GROUP AIMS

The aims of the Group are:

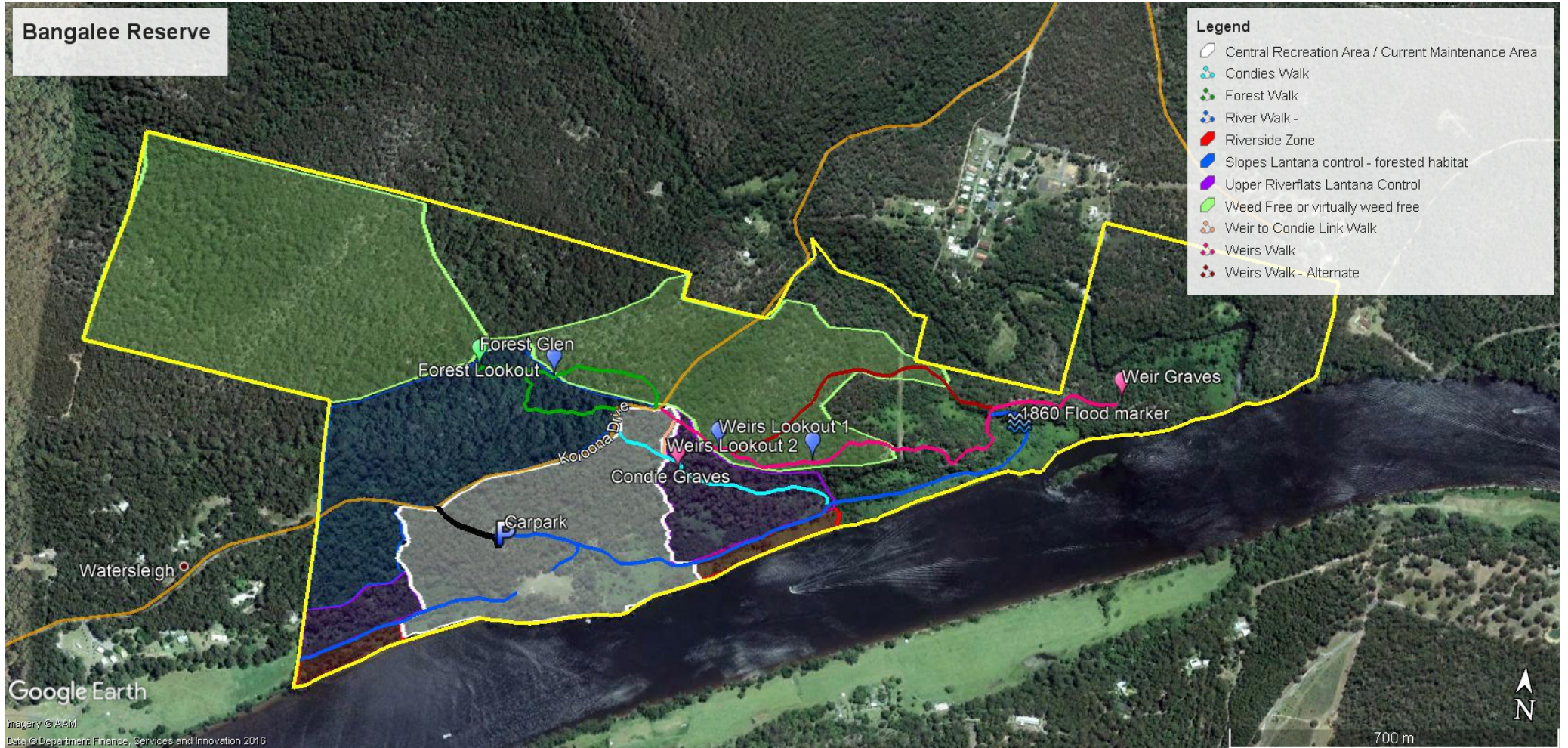
1. To undertake bush regeneration works at Bangalee Reserve with the aim of reducing weed density and abundance to improve biodiversity.
2. Undertake fauna monitoring to better understand fauna species use of weedy bush compared to regenerating bush and healthy bush.
3. Promote Bangalee Reserve for its environmental educational values and opportunities.
4. Work with other environmental groups and stakeholders within the Shoalhaven and Illawarra regions.
5. Apply for external funding to undertake projects that align with Aim 1 in consultation with Council and other environmental groups and stakeholders.
6. Monitor, record and publish findings related to success of different bush regeneration methods.
7. Conduct feral species control activities, in collaboration with adjoining landholders and agencies.

## 2. BUSHCARE GROUP ACHIEVEMENTS TO DATE

Successes/Goals/Actions achieved to date	Lessons learnt
Weed control within 16 hectares of remnant vegetation surrounding Bangalee Reserve picnic area (see attached photos in plans appendices).	That any plantings on sites where Lantana has been controlled/removed, must be protected by rigid tree cages to protect them from wombats and macropods. Also learned that there is good quality seed stored in the soil from surrounding remnant vegetation for natural regeneration so planting may not always be needed. That follow-up weeding is best conducted by selective herbicide use and manual removal.
Restoration of 7.8 hectares of forest along the northern bank of the Shoalhaven River.	That removing Lantana in exposed areas or areas under Black Wattle ( <i>Acacia mearnsii</i> ) creates extensive follow-up challenges due to the extent of secondary weed infestations with little to no natural regeneration of native vegetation.
220 metres of river bank revegetation.	The group have had ongoing issues with wombats eating and digging up many planted and germinating plants.
7 years of fauna surveys to monitor the habitat values of areas of regenerating native vegetation following Lantana removal/control.	Initial survey results showed a decline in the number of fauna species utilising the areas where Lantana has been cleared. However, the past 4 years of surveys has shown a marked increase in fauna numbers utilising regenerating areas (see appendices for survey results). Statistical analysis revealed that the Group's bush regeneration activities result in increased in native fauna using the regenerated sites.

<b>Successes/Goals/Actions achieved to date</b>	<b>Lessons learnt</b>
Volunteers working with Shoalhaven Landcare and Shoalhaven Riverwatch.	Some of the regeneration issues at Bangalee have already been resolved by Landcare and Riverwatch. For example, Landcare have devised a deer-proof tree caging system and have conducted experiments regarding the long-term efficacy of native coloniser species. Shoalhaven Riverwatch have devised the Shoalhaven Sand Sausage to control erosion and have discovered that River Oaks and Lomandra can be used extensively to control erosion as they are resistant to grazing by wombats.
Construction and maintenance of a 'home nursery' system.	High volume weed clearing requires large numbers of replacement plants. Many plants can be grown by volunteers offsite to save resources for other activities. Lesson learned is that a large volunteer network is required to propagate and maintain native seedlings offsite due to the time and space required to run a home nursery.
Launch of a website, Facebook page and joint engagement in publicity events with Shoalhaven Landcare and Shoalhaven Riverwatch.	There is a large potential volunteer base but many are not aware of the existence of Bangalee Reserve and Bangalee Bushcare. The Group has found that actively engaging with the community through media and events raises awareness of the Bushcare Program and the reserve.
Application for a Restoration and Rehabilitation Grant from the NSW Environmental Trust.	The long-term vision of different members of the Group can lead to misunderstandings regarding the scope of project proposals as well as the processes to be followed for applications. It became apparent that more detailed and frequent communication between all stakeholders is required.

### 3. BANGALEE RESERVE BUSHCARE GROUP ACTION PLAN MAP



4. **SHOALHAVEN BUSHCARE GROUP ACTIVITIES TABLE** (to be read in conjunction with above site map)  
 Priority rated as H = High (started within 12 months); M = Medium (1-3 years); or L = Low (if possible)

GROUP ACTION	PRIORITY	METHOD	TIME
<b>Zone 1 – Central Recreation Area:</b> Secondary weeding, general follow-up and maintenance of plantings. 16 ha			
1. Undertake secondary weed control of these areas targeting the following species: <ul style="list-style-type: none"> <li>a. <i>Lantana camara</i> (Lantana)</li> <li>b. <i>Acetosa sagittata</i> (Turkey Rhubarb)</li> <li>c. <i>Delairea odorata</i> (Cape Ivy)</li> <li>d. <i>Araujia sericifera</i> (Moth Vine)</li> <li>e. <i>Anredera cordifolia</i> (Madera Vine)</li> <li>f. Annual Weed species</li> <li>g. <i>Rubus fruticosus</i> (Blackberry)</li> <li>h. <i>Tradescantia fluminensis</i> (Wandering Trad)</li> </ul>	H	Young Lantana can be hand pulled, and larger plants can be dug out. Turkey Rhubarb, Cape Ivy, Moth Vine and Madeira Vine should be sprayed, stem-scraped or manually removed. Other species should be controlled using a combination of manual and chemical control. Pile burning will be conducted, if needed.	Ongoing
2. Maintenance of existing plantings: <ul style="list-style-type: none"> <li>a. Watering</li> <li>b. Weeding and spraying around plants</li> <li>c. Maintenance and upgrade of tree cages</li> <li>d. Maintaining temporary restricted vehicle access tracks</li> </ul>	H	Watering will be done if needed during dry periods. Tree cages will be upgraded or maintained according to Bushcare best practice.	Ongoing
3. Encourage natural regeneration	H	Avoid trampling. Avoid spray drift onto native seedlings. Protect non-target species where necessary.	Ongoing

GROUP ACTION	PRIORITY	METHOD	TIME
<b>Zone 1 – Central Central Recreation Area (cont.)</b>			
4. Planting: <ul style="list-style-type: none"> <li>a. Prepare and maintain new planting areas</li> <li>b. Maintain temporary restricted vehicle access tracks to planting areas</li> <li>c. Engage in primary and secondary weed control using manual and chemical control methods</li> </ul>	H	Plantings areas will be accessible and maintainable during establishment.  Removal of weeds should not overtake the speed of the regeneration and/or stabilisation of new plantings.	Ongoing
5. Work with Shoalhaven Council to assess the heritage value of the Coral trees ( <i>Erythrina x sykesii</i> ) around the Condie homestead, to determine which trees can be removed	M	Prepare a Heritage Impact Statement after assessment of the heritage value of the Coral trees	2019

GROUP ACTION	PRIORITY	METHOD	TIMING
<b>Zone 2 – Riverside:</b> Area to be regenerated under external funding grant(s) or as part of normal Bushcare regeneration activities.			
1. Control medium to high density <i>Lantana camara</i> infestation.	M	Combination of manual, chemical mechanical and fire control methods utilised where environmentally acceptable.	Ongoing
2. Bushcare Group to undertake revegetation activities and will place appropriate fencing/guarding.	M	Plants will be sourced from home nurseries, Council’s Bushcare Volunteer Nursery and other sources. Fencing and guards will be constructed according to Bushcare best practice.	Ongoing
3. Group will work with Shoalhaven Riverwatch to conduct erosion control: a. Construct and place Shoalhaven Sand Sausage b. Plant erosion control species	M	Shoalhaven Riverwatch will access Bangalee Reserve and the erosion control worksites via the main terrestrial access as well as via water. All erosion control activities will be based on best practice determined in consultation with Shoalhaven Riverwatch and other stakeholders.	Ongoing
4. Follow-up weed control.	M	Follow-up activities will be done using manual control, hand spraying and high-volume spraying. At all times, activities should aim to ensure there is enough cover to maintain soil stability.	Ongoing
5. Progress monitoring, recording and reporting.	M	Photos, videos, written documentation.	Ongoing

GROUP ACTION	PRIORITY	METHOD	TIME
<b>Zone 3 – Ridgeline:</b> currently very low density of weeds.			
1. Follow-up activities to prevent weed reinfestation.	L	Walking through the zone once or twice per year to control any regrowth. Weed regrowth is expected to be very limited in this zone.	Ongoing

<b>Zone 4 – Slopes:</b> weed control.			
1. Primary control of Lantana and other weeds	M	Manual control methods will primarily be used as this area has low density weed infestations and has high concentrations of native vegetation. Chemical control may be used in some sections.	2019-22
2. Follow-up activities to prevent weed reinfestation.	M	Walking through the zone once or twice per year to control any regrowth. Weed regrowth is expected to be very limited in this zone.	Ongoing



**Zone 5 - Upper riverflats** weed control in the moderately-canopied areas with moderate lantana infestation between the river-flats and the slopes.

1. Primary control of Lantana and other weeds.	H	Combination of manual, chemical, mechanical and fire control will be used.	2019-21
2. Follow-up activities to prevent weed reinfestation.	H	Combination of manual and chemical control methods	2019-21
3. Selective planting of native species including placement of protective cages.	H	Accessible sites will be selected to plant native species with long-term survivability.	Ongoing
a. Maintenance of plantings – watering, weeding, spraying, replacement, guarding and re-guarding	H	Watering will be conducted during extended dry periods by vehicle-based equipment where possible and by bucketing where plantings are inaccessible by vehicle.	Ongoing

**Walking tracks:** track maintenance.

1. Minor track maintenance	L	Assist Council to clear/trim fallen vegetation from tracks.	Ongoing
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## 5. BUSHCARE GROUP WORKPLACE HEALTH AND SAFETY

Volunteers must complete Council's corporate induction process and comply with the Volunteer Induction Handbook.

A new site hazard and risk assessment has been completed based on the activities included in this action plan, (Council document D18/365683). The revised risk assessment is to be used by volunteers on adoption of this plan. The site hazard and risk assessment is to be revised as needed, for example, upon the identification of a new hazard, or of a new control measure for an existing hazard.

The following activities are managed by Council through the following documents. Volunteers must comply with these standards.

<b>Activity</b>	<b>WHS documentation</b>
Manual Handling	SCC Policy P15 Hazardous Manual Tasks
Chemical weed control	SCC Policy P11 Hazardous Chemicals; SCC Procedure SWI29 Herbicide Spraying; Safety Data Sheets and product labels for chemicals used
Tree Planting and watering	SWI103 Water Cart SWI93 Trailers – towing
Minor construction (walking track, fencing, outdoor furniture)	SWI14 Drill – battery
Line trimming	SWI41 Line Trimmer
Pile burning	<b>Standards for Pile Burning (RFS)</b>
Chainsaw use – track maintenance	<b>SWI7 Chainsaw</b>

## 6. COUNCIL SUPPORT

- Supply of personal protective equipment and other Work, Health and Safety equipment required.
2. Supply of chemicals, materials, equipment and other resources within budgetary constraints.
  - a. The Group will determine what tools are needed provided the request is within the scope of the Bushcare/Parkcare procedures.
  - b. Council will provide the tools and equipment within budgetary constraints.
3. Assistance with weed control in various locations where budgets allow.

4. Supply of an on-site Bushcare Field Officer for 3 hours per month to assist with WHS advice and technical support, weed control and other bush regeneration activities.
5. Support with project planning and applications for external funding.
6. Support for publicity events, open days and other such activities. Council will work with the Group and other stakeholders to promote the Group and support all events and publicity activities in line with budgets and Bushcare procedures.
7. Council will provide public liability and personal accident insurance, within the limits of the current insurance policies.
8. Council will provide technical support for fauna surveys.

## 7. POSSIBLE FUTURE FUNDING

Project	Potential Funding source
Bangalee Riverbank Regeneration Project – funding for continued weed removal and revegetation primarily	e.g., NSW Environmental Trust

## 8. REVIEW

This plan will be reviewed six years from its adoption but can be reviewed sooner if agreed.

## 9. REGIONAL MANAGEMENT PLANS OR STRATEGIES

Document	Year	Produced by
Foreshore Reserve Policy POL16/38	2005 (updated 2016)	Shoalhaven City Council
Generic Plan of Management for Natural Area Reserves	2001 (updated 2016)	Shoalhaven City Council
Lower Shoalhaven River Estuary Management Plan	2008	Shoalhaven City Council
Bushcare/Parkcare Policy and Procedures	2018	Shoalhaven City Council

**10. BUSHCARE SITE RECOMMENDED PLANTING/REVEGETATION SPECIES LIST**

<b>OVERSTOREY TREES</b>	
<b>Botanical</b>	<b>Common</b>
<i>Acmena smithii</i>	Lilly Pilly
<i>Alphitonia excelsa</i>	Red ash
<i>Syncarpia glomulifera</i>	Turpentine
<i>Alphitonia excelsa</i>	Red Ash
<i>Brachychiton acerifolius</i>	Illawarra Flame Tree
<i>Corymbia maculata</i>	Spotted Gum
<i>Corymbia gummifera</i>	Red bloodwood
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eucalyptus saligna x botryoides</i>	<i>Bangalay x Sydney Blue Gum</i>
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Melaleuca linariifolia</i>	Flax-leaf Paperbark
<i>Toonia ciliata</i>	Red Cedar
<i>Ficus rubiginosa</i>	Port Jackson Fig
<i>Ficus macrophylla</i>	Moreton Bay Fig
<i>Angophora floribunda</i>	Rough Barked Apple
<i>Ehretia acuminata</i>	Koda
<i>Casuarina cunninghamiana</i>	River Oak
<b>SHRUBS</b>	
<b>Botanical</b>	<b>Common</b>
<i>Trema aspera</i>	Native peach
<i>Streblus brunonianus</i>	Whalebone tree
<i>Ficus coronata</i>	Sandpaper fig
<i>Guioa semiglauca</i>	Guioa
<i>Clerodendrum tomentosum</i>	Hairy Clerodendrum
<i>Solanum aviculare</i>	Kangaroo apple
<i>Elaeocarpus reticulatus</i>	<i>Blueberry Ash</i>
<i>Melia azedarach</i>	White Cedar
<i>Pittosporum undulatum</i>	Sweet Daphne
<b>UNDERSTOREY (grasses, herbs, climbers)</b>	
<b>Botanical</b>	<b>Common</b>
<i>Piper novae-hollandiae</i>	Giant pepper vine
<i>Cissus hypoglauca</i>	Water vine
<i>Lomandra longifolia</i>	Spiny Matt Rush

## 11. BUSHCARE SITE WEED LIST

The following weeds have been recorded on the site

<b>Weeds</b>	<b>Control Method</b>
<i>Lantana camara</i> (Lantana)	Spray, hand pull
<i>Acetosa sagittata</i> (Turkey Rhubarb)	Scrape and paint, hand pull
<i>Anredera cordifolia</i> Madeira Vine	Scrape and paint, hand pull
<i>Aruajia sericifera</i> (Moth Vine)	hand pull
<i>Erythrina X sykesii</i> (Coral Tree)	Heritage Impact Statement needed for mature trees; hand pull smaller plants
<i>Delairea odorata</i> (Cape Ivy)	Chemical control or smaller plants can be hand pulled
<i>Rubus fruticosus</i> (Blackberry)	Chemical control or scrape stems and apply glyphosate
<i>Grevillea robusta</i> (Silky Oak)	Heritage Impact Statement needed for mature trees; Cut and paint or hand pull smaller plants
<i>Tradescantia fluminensis</i> (Wandering Trad)	Rake and roll or chemical treatment
<i>Sida rhombifolia</i> (Paddy's Lucerne)	Hand pull
<i>Solanum mauritianum</i> (Wild Tobacco)	Dig out, cut and paint

## 12. BUSHCARE SITE SPECIES LIST

The following species have been recorded on the site:

<b>OVERSTOREY TREES</b>	
<b>Botanical</b>	<b>Common</b>
<i>Acmena smithii</i>	Lily Pilli
<i>Alphitonia excelsa</i>	Red Ash
<i>Brachychiton acerifolius</i>	Illawarra Flame Tree
<i>Corymbia maculata</i>	Spotted Gum
<i>Eucalyptus botryoides</i>	Bangalay
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eucalyptus saligna x botryoides</i>	<i>Bangalay x Sydney Blue Gum</i>
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Livistona australis</i>	Cabbage Palm
<i>Melaleuca linariifolia</i>	Flax-leaf Paperbark
<i>Melia azaderach</i>	White Cedar
<i>Syncarpia glomulifera</i>	Turpentine
<i>Toonia ciliata</i>	Red Cedar
<b>SHRUBS</b>	
<b>Botanical</b>	<b>Common</b>
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia ulicifolia</i>	Prickly Moses
<i>Breynia oblongifolia</i>	Native Coffee Bush
<i>Cassine australis</i>	Red Fruited Olive Plumb
<i>Clerodendrum Tomentosum</i>	Hairy Clerodendrum
<i>Claoxylon australe</i>	Brittlewood
<i>Cryptocarya miconeura</i>	Morrogun
<i>Duboisia myoporoides</i>	Corkwood
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Geijera salicifolia ssp. latifolia</i>	
<i>Guioa semiglauca</i>	Guioa
<i>Hymenanthera dentata</i>	Tree Violet
<i>Leucopogon juniperinus</i>	Bearded Heath
<i>Lomatia myricoides</i>	River Lomatia
<i>Macrozamia communis</i>	Burrawang
<i>Melia azedarach</i>	White Cedar
<i>Melicope micrococca</i>	Melicope
<i>Notelaea longifolia</i>	Mock Olive
<i>Pittosporum multiflorum</i>	Orange Thorn
<i>Pittosporum undulatum</i>	Sweet Daphne
<i>Podocarpus spinulosus</i>	Plumb Pine
<i>Pomaderris intermedia</i>	Pomaderris
<i>Santalum obtusifolium</i>	Sandlewood
<i>Solanum stelligerum</i>	Devils Needles
<i>Synoum glandulosum</i>	Scentless Rosewood
<i>Zieria smithii</i>	Sandfly Zieria

**BUSHCARE SITE SPECIES LIST (cont.)**

<b>UNDERSTOREY (grasses, herbs, orchids)</b>	
<b>Botanical</b>	<b>Common</b>
<i>Blechnum ambiguum</i>	Gristle Fern
<i>Dianella longifolia ssp longifolia</i>	Blue Flax Lily
<i>Dichondra repens</i>	Kidney Weed
<i>Entolasia marginata</i>	Bordered Panic
<i>Lastreopsis decomposita</i>	Trim Shield Fern
<i>Lepidosperma laterale</i>	Sword Sedge
<i>Lomandra longifolia</i>	Spiny Matt Rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Oplismenus aemulus</i>	Basket Grass
<i>Oplismenus imbecillis</i>	Basket Grass
<i>Siegesbeckia orientalis</i>	Indian Weed
<i>Solanum aviculare</i>	Kangaroo Apple
<i>Urtica incisa</i>	Stinging Nettle
<b>UNDERSTOREY (vines &amp; climbers)</b>	
<b>Botanical</b>	<b>Common</b>
<i>Aphanopetalum resinatum</i>	Gum Vine
<i>Cissus antarctica</i>	Kangaroo Grape
<i>Cissus hypoglauca</i>	Native Grape
<i>Clematis aristata</i>	Old Man's Beard
<i>Eustrephus latifolius</i>	Wombat Vine
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Marsdenia rostrata</i>	Common Milk Vine
<i>Pandorea pandorana</i>	Wonga Vine
<i>Passiflora herbertiana</i>	Native Passionfruit
<i>Smilax australis</i>	Sable Jack
<i>Stephania japonica</i>	Snake Vine