WATERGUMS CREEK FLORA RESERVE NO. 127

SITE SPECIFIC WORKING PLAN

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This site-specific working describes the important values of an individual flora reserve and identifies site-specific priorities for management. The plan is to be read in conjunction with the Flora Reserve Plan: Background and General Management document, which identifies Forestry Corporation's broad objectives and strategies for managing flora reserves. These two documents together form the flora reserve working plan in line with the requirements of section 25 of the *Forestry Act 2012*.

1. DETAILS OF THE RESERVE

1.1 LOCATION

Watergums Creek Flora Reserve is located within Nadgee State Forest on the far South Coast of New South Wales, approximately 30 kilometres south of the town of Eden in a direct line, and about 40 kilometres by road. See Locality Map in Appendix 1.

1.2 KEY ATTRIBUTES OF THE RESERVE

Under the *Forestry Act 2012*, flora reserves are set apart for the preservation of native flora.

The reserve possesses the following identified attributes that are to be protected:

- stands of Pinkwood (*Eucryphia moorei*) rainforest, occupying about 75 hectares in the valley of the reserve
- a mixture of cool temperate rainforest and warm temperate rainforest (reflected in the co-dominance of Pinkwood and Lilly Pilly (*Acmena smithii*))
- representative examples of forest ecosystems in the area.

1.3 GENERAL DESCRIPTION

Area

Watergums Creek Flora Reserve comprises of an area of about 240 hectares.

Topography

The reserve occupies the head of the catchment of Watergums Creek, a stream that flows northwards for about 10 kilometres before joining the Wonboyn River, and thence entering the ocean at Disaster Bay.

Aspect is generally toward the north, and the topography is moderately steep with an altitude range of from 170 metres above sea level to 460 metres. Refer to Appendix 2 for topographic map.

Geology and Soils

Soils in the reserve are derived from Middle Devonian granites. They are generally reddish coloured deep soils with a moderate to high erodibility. Nutrient content is moderate, being one of the more fertile solids found in coastal forests in the area.

Climate

Rainfall in the reserve is believed to be in excess of 900 mm, due to the proximity of the Nadgee Range which causes the adiabatic cooling of on-shore air masses, leading to frequent cloud formation and increased rainfall compared with near-coastal sites, such as Green Cape.

The rainfall is fairly evenly distributed throughout the year, with a slight tendency towards a peak in summer and autumn. The annual rainfall can show considerable variability, with the rainfall at Eden (mean 898 mm) showing a range from 432 mm to 1822 mm in a year.

Prevailing winds tend to be westerly (west to southwest in winter, west to northwest in summer), while easterly sea breezes are also experienced in summer.

Vegetation / flora and fauna

The main feature of the reserve is the occurrence of a stand of Pinkwood (*Eucryphia moorei*) rainforest, occupying about 75 hectares in the valley of the reserve. The rainforest is somewhat intermediate in form between the typical Pinkwood-dominated cool temperate rainforest and warm temperate rainforest, and this mixture is reflected in the co-dominance of Pinkwood and Lilly Pilly (*Acmena smithii*) in the rainforest stands. Somewhat similar stands are preserved about 10 kilometres further south in Maxwells Flora Reserve No. 116, and both areas are noteworthy for the unusually low altitude occurrence of Pinkwood.

The more exposed and higher altitude parts of the reserve carry dry sclerophyll forest dominated by Silvertop Ash (*Eucalyptus sieberi*), and covering about 60 hectares, while lower slopes and upper parts of the gullies support a tall wet sclerophyll forest dominated by Yellow Stringybark (*E. muelleriana*) and Mountain Grey Gum (*E. cypellocarpa*) and covering about 100 hectares. Appendix 2 Map shows the various forest types and their locations within the reserve.

Appendices 3 and 4 outline a list of flora and fauna species known to occur within the reserve. Included among these are three species of Tree Fern (Rough Tree Fern, *Cyathea australis*, Prickly Tree Fern, *C. leichhardtiana*, and Soft Tree Fern, *Dicksonia Antarctica*): the Prickly Tree Fern is an unusual species in the Eden district. The record for Star-hair (*Astrotricha* sp. *Aff. Longifolia*) is the only one for this unnamed species form the Eden region. *Hakea macraeana*, which was at one time considered a rare species, occurs in the reserve at close to the southern limit of its distribution.

Notwithstanding its name, Water Gum (*Tristaniopsis laurina*) has not been identified from within the reserve.

1.4 HISTORY

Aboriginal History and Cultural Values

Watergums Creek Flora Reserve is situated within the traditional lands of the Yuin people and there are a number of Aboriginal cultural heritage sites located within or within the surrounding area. The area is part of a cultural landscape, used for everyday and ceremonial activities including seasonal food and resource gathering and also as a travel route from the mountains to the coast. Tangible aspects of these activities are evident as walking tracks and scar trees, the remains of camp sites with stone tools (isolated stone artefact and artefact scatters) as well as sacred features and places created at the beginning of time.

Post European Settlement

Harvesting

The surrounding areas has had a long history of harvesting activities, and these would undoubtedly have affected parts of what is now the reserve. A sawmill was located in the vicinity until the 1960's. 70 hectares of the current reserve were salvage logged in 1973/74, following the 1972 Nadgee wildfire: this logging was confined to ridgetops and mid-slopes and had little impact on the rainforest.
A system of logging access roads has been constructed in the reserve along these ridges that were subject to salvage logging.

Fire

Fire has been part of the Australian landscape for at least the last 60,000 years and most forests have experienced fire multiple times over many centuries. The reserve is in an area that has had a severe fire history. The great wildfires of 1938/39 and 1951/52 passed through the area. The Nadgee fire of 1972 burned some 3000 hectares of Nadgee State Forest. In November 1980 the Timbillica fire burned through the area covering a total of 4400 hectares and included much of the 1972 Nadgee fire area.

The area covered by the reserve, being generally a moist gully system, does not appear to have suffered the same severe damage as surrounding areas of forest, with a large portion of the rainforest and surrounding moist eucalypt forest remaining only lightly burned. However, edges of the rainforest were affected in some instances, resulting in some local structural deterioration.

Recently, the reserve was impacted by wildfire during the 2019/20 summer season. Medium to high fire intensity was recorded, resulting in the canopy being partially burnt in the southeast corner of the reserve.

Establishment of Flora Reserve

The area was accepted into the Forestry Commission Native Forest Preservation programme in 1982, initially at Watergums Creek Forest Preserve pending its notification as a Flora Reserve.

The area was officially gazetted as Watergums Creek Flora Reserve No. 127 on 23 September 1988.

1.5 CURRENT USAGE

All weather access to Watergums Flora Reserve is provided by Watergums Road and Mountain Road, which border the reserve for a short distance in the northeast and south respectively. The reserve receives limited recreational usage. No recreational facilities are provided at the reserve and there is no intention to develop any facilities.

2.1 OBJECTIVES OF MANAGEMENT

The objects of management will be to:

- protect existing flora and fauna
- preserve the stand of Pinkwood (*Eucryphia moorei*) rainforest
- enhance the ecological quality of the mixture of cool temperate rainforest and warm temperate rainforest
- protect representative examples of forest ecosystems in the area
- protect Aboriginal cultural heritage sites and cultural values
- maintain reference stands and provide for limited scientific study consistent with the protection of the area, including the development of an understanding of successional growth processes after disturbance and as a reference for assessing the effects of alternative land use in surrounding areas
- provide for the continued protection of the reserve and neighboring areas from damaging wildfire and other agents.

2.2 MANAGEMENT STRATEGIES

The broad management strategies and related actions to preserve native flora and improve the value and extent of habitat in State forest flora reserves are detailed in the Flora Reserve Management Plan: Background and General Management document, which is to be read in conjunction with this plan. Specific additional management strategies applied in this flora reserve may include:

- Property maintenance, through:
  - establishment and maintenance of appropriate fences, gates, and signs
  - removal of unnecessary fencing
  - maintenance of roads and trails
  - restricting visitor use to walking trails for educational activities.
- Conservation and improvement of habitat, through:
  - maintenance of native vegetation, which may include manipulation by mechanical means for habitat improvement
  - regeneration of any cleared or degraded land, through plantings and natural recruitment
  - removal of rubbish
  - weed control
  - management of human disturbance, including harvesting and other forest product operations
  - retention of dead timber and other habitat resources
  - management of fire, including prescribed or hazard reduction burning.
- Pest animal control.

Cultural Values

Explore opportunities for Aboriginal community involvement in managing the flora reserve.

Weeds

The vegetation within the flora reserve is in very healthy state with no obvious weeds present. As far as reasonably practicable, exotic species will be controlled, as detailed in section 2.4.

Trail maintenance

Maintenance of roads and trails is important to enable access to the forest for forest management, firefighting, tourism and recreation. Poorly maintained roads can also transport significant levels of sediment, increasing the turbidity of water within creeks. This consequently reduces habitat quality and aquatic biodiversity and can take significant periods of time to recover.

Permitted activities

Under the Forest Management Zoning (FMZ) system, Watergums Creek Flora Reserve №. 127 is a dedicated reserve zoned FMZ 1 and therefore contributes to the dedicated reserve system in the Southern Region. Management will be consistent with the requirements of JANIS dedicated reserves.

The State Forests of NSW, Operational Circular 99/10 (1999) *Managing our Forests sustainably: Forest Management Zoning in NSW State Forests* describes the activities not permitted in FMZ 1.

The following activities may be permitted subject to standard conditions approved by the delegated Manager and consistent with the management objectives for the reserve, forest practices / operational circulars, protocols, licenses, and management / recovery plans:

- scientific studies (e.g., fauna surveys including trapping)
- maintenance of existing roads and fire trails
- maintenance of existing recreation facilities and upgrading where necessary to keep pace with demand while protecting the attributes of the reserve
- limited tree and or limb removal for safety, viewing or construction of facilities in areas used for recreation
- pest animal and weed control
- general access for activities such as bush walking, photography, and nature study
- beekeeping (existing set-down sites may be used)
- Aboriginal use of forest products consistent with the maintenance of the conservation attributes to be protected in the reserve.
- fire management will be undertaken in a manner consistent with maintaining the health of forest ecosystems.

The following activities may only be permitted with special conditions:

- Construction of new roads. Construction will only be permitted in exceptional instances and consistent with the following principles:
    - no practical alternative is available
    - the attributes of the reserve will not be significantly affected by the road or fire trail
    - opportunity is provided for public comment on the proposal, obtained through advertising in the local newspaper
    - Ministerial approval is given for the proposal.

Mining

There are no gazetted exemptions from provisions of the *Mining Act 1992* for this this flora reserve.

2.3 MANAGEMENT RESPONSIBILITY

The reserve will be administered by Forestry Corporation of NSW's Hardwood Division, with the authority for decision making delegated to the Senior Manager Forest Stewardship or equivalent level manager.

2.4 MONITORING, REPORTING AND REVIEW

The region will monitor changes to the key attributes of the reserve and will review the effectiveness of the management strategies designed to protect those attributes and to achieve the management objectives.

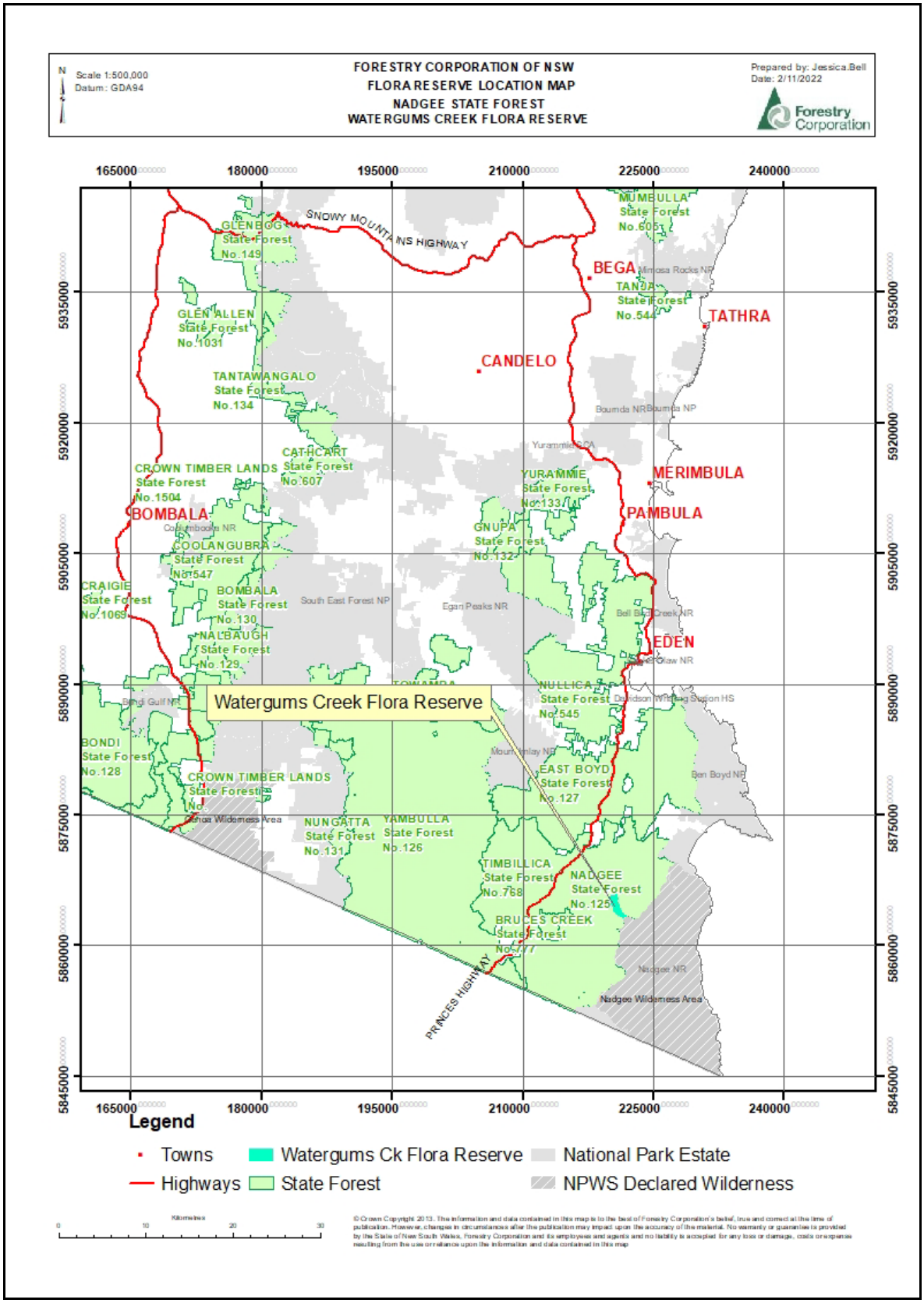
The results of this monitoring, review and management response will be included in annual reporting processes.

The provisions of this working plan will be amended, if necessary, in light of the results of the monitoring program and / or legislative change and with the approval of the Minister administering the *Forestry Act 2012*.

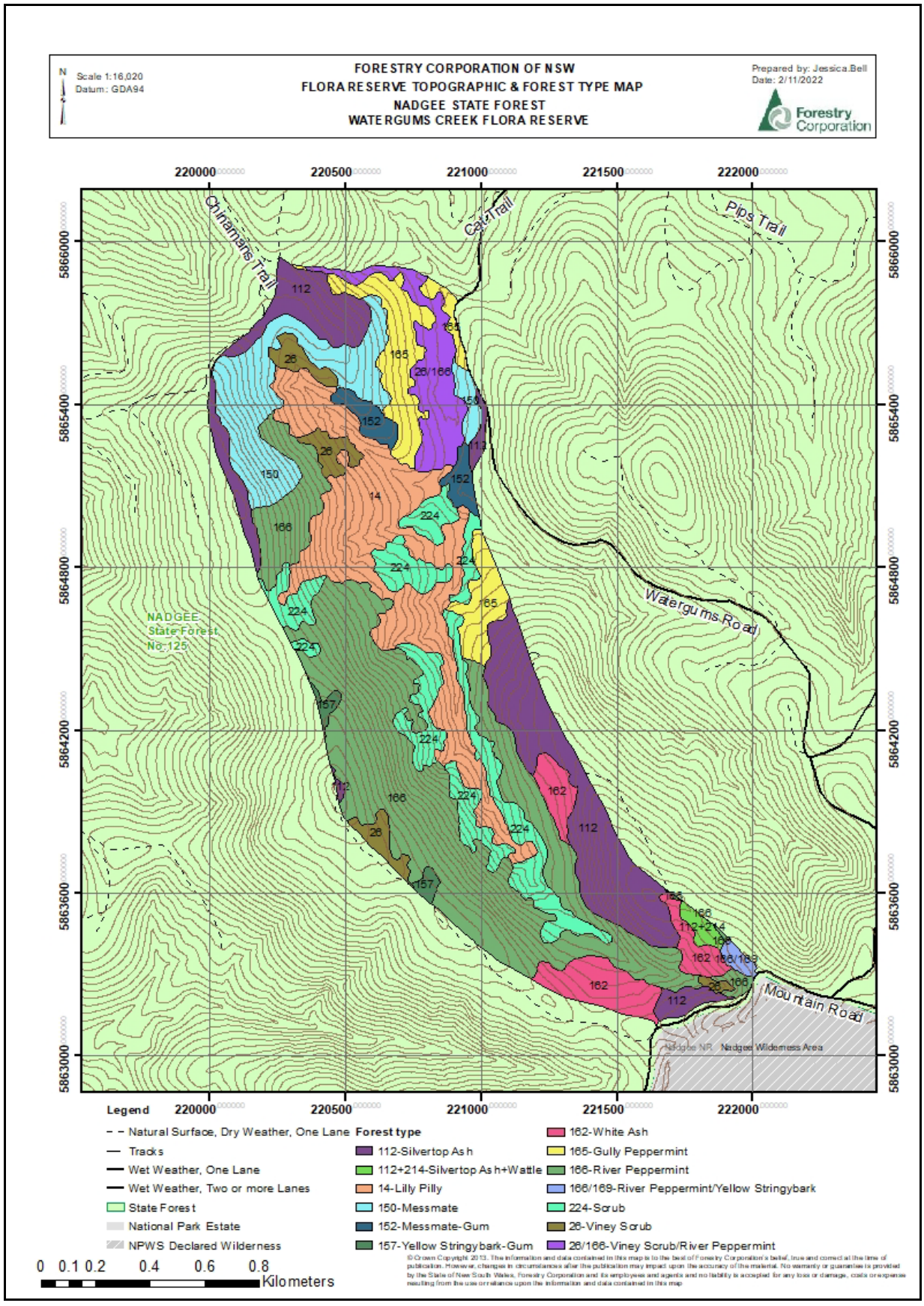
3. LIST OF APPENDICES

- Appendix 1 – Locality Map
- Appendix 2 – Topographic and Forest Type Map
- Appendix 3 – Flora Species List
- Appendix 4 – Fauna Species List
- Appendix 5 – Approval and Amendments from previous version

APPENDIX 1 – LOCALITY MAP



APPENDIX 2 – TOPOGRAPHIC & FOREST TYPE MAP



APPENDIX 3 – FLORA SPECIES LIST

Flora found within 5000m of Flora Reserve, desktop search undertaken February 2022

Scientific name
Acacia aculeatissima
Acacia constablei
Acacia longifolia
Acacia longifolia subsp. longifolia
Acacia mearnsii
Acacia obtusifolia
Acacia terminalis
Acacia verticillata subsp. verticillata
Adiantum aethiopicum
Allocasuarina littoralis
Allocasuarina verticillata
Angophora floribunda
Aotus ericoides
Argentipallium obtusifolium
Asplenium flabellifolium
Astrotricha sp. 'Nadgee'
Banksia serrata
Banksia spinulosa var. spinulosa
Billardiera scandens
Blechnum cartilagineum
Blechnum nudum
Blechnum wattsii
Boronia muelleri
Boronia thujona
Brachyloma daphnoides
Brachyscome angustifolia var. heterophylla
Burchardia umbellata
Bursaria spinosa subsp. spinosa
Calochlaena dubia
Calomeria amaranthoides
Carex appressa
Cassinia aculeata
Cassinia longifolia
Cassinia trinerva
Cassytha glabella f. glabella

Scientific name
Caustis flexuosa
Chrysocephalum baxteri
Cissus hypoglauca
Clematis aristata
Clematis glycinoides
Comesperma defoliatum
Comesperma ericinum
Comesperma volubile
Coprosma quadrifida
Coronidium scorpioides
Correa reflexa var. reflexa
Corymbia gummifera
Cyathea australis
Cyathochaeta diandra
Dampiera stricta
Daviesia buxifolia
Desmodium gunnii
Dianella caerulea
Dianella caerulea var. caerulea
Dichondra repens
Dillwynia glaberrima
Diplarrena moraea
Drosera auriculata
Echinopogon ovatus
Elaeocarpus reticulatus
Entolasia marginata
Entolasia stricta
Epacris impressa
Eucalyptus agglomerata
Eucalyptus angophoroides
Eucalyptus baxteri
Eucalyptus conspicua
Eucalyptus croajingolensis
Eucalyptus cypellocarpa
Eucalyptus elata
Eucalyptus globoidea
Eucalyptus longifolia
Eucalyptus muelleriana

Scientific name
Eucalyptus obliqua
Eucalyptus ovata
Eucalyptus radiata subsp. radiata
Eucalyptus sieberi
Eucalyptus smithii
Euchiton japonicus
Eustrephus latifolius
Exocarpos cupressiformis
Exocarpos strictus
Ficinia nodosa
Gahnia clarkei
Gahnia melanocarpa
Gahnia radula
Galium binifolium
Galium leiocarpum
Galium propinquum
Geranium homeanum
Geranium potentilloides var. potentilloides
Geranium solanderi var. solanderi
Glossodia major
Glossodia minor
Glycine clandestina
Glycine microphylla
Gonocarpus tetragynus
Gonocarpus teucrioides
Goodenia ovata
Goodia lotifolia
Gratiola peruviana
Hakea decurrens
Hibbertia aspera
Hibbertia dentata
Hibbertia diffusa
Hibbertia empetrifolia subsp. empetrifolia
Hibbertia virgata subsp. virgata
Hierochloe rariflora

Scientific name
Hydrocotyle acutiloba
Hydrocotyle hirta
Hydrocotyle sibthorpioides
Hymenophyllum cupressiforme
Hypericum japonicum
Hypolepis muelleri
Isachne globosa
Isolepis cernua
Kennedia rubicunda
Kunzea ambigua
Lagenifera stipitata
Lasiopetalum ferrugineum var. cordatum
Lasiopetalum macrophyllum
Lepidosperma gunnii
Lepidosperma laterale
Leptospermum continentale
Leptospermum scoparium
Leptospermum squarrosum
Leptospermum trinervium
Leucopogon ericoides
Leucopogon lanceolatus
Leucopogon lanceolatus var. lanceolatus
Libertia paniculata
Lobelia gibbosa
Lomandra confertifolia subsp. rubiginosa
Lomandra longifolia
Lomandra multiflora subsp. multiflora
Lomatia myricoides
Marsdenia rostrata
Melaleuca armillaris subsp. armillaris
Melaleuca ericifolia
Microlaena stipoides var.

Scientific name
stipoides
Mitrasacme polymorpha
Myoporum acuminatum
Myoporum insulare
Notelaea venosa
Olearia myrsinoides
Olearia ramulosa
Olearia stellulata
Opercularia aspera
Oplismenus imbecillis
Oxalis exilis
Oxalis spp.
Ozothamnus argophyllus
Ozothamnus cuneifolius
Ozothamnus ferrugineus
Ozothamnus obcordatus
Ozothamnus obcordatus subsp. major
Ozothamnus turbinatus
Persoonia levis
Persoonia linearis
Phyllanthus hirtellus
Pimelea ligustrina subsp. ligustrina
Pimelea linifolia subsp. linifolia
Plantago debilis
Platysace lanceolata
Poa ensiformis
Poa meionectes
Poa tenera
Polyscias sambucifolia subsp. sambucifolia
Pomaderris aspera
Poranthera microphylla
Prostanthera lasianthos
Prostanthera melissifolia

Scientific name
Prostanthera rotundifolia
Pteridium esculentum
Pultenaea daphnoides
Pultenaea scabra
Ranunculus lappaceus
Rhagodia candolleana subsp. candolleana
Rhytidosporum procumbens
Ricinocarpos pinifolius
Rubus parvifolius
Rubus rosifolius
Rubus ulmifolius
Sambucus gaudichaudiana
Sannantha pluriflora
Santalum obtusifolium
Schelhammera undulata
Schizaea bifida
Schoenus melanostachys
Senecio linearifolius
Senecio minimus
Senecio prenanthoides
Senecio velleioides
Smilax australis
Stellaria flaccida
Stypandra glauca
Tetrarrhena juncea
Tetratheca pilosa
Tmesipteris ovata
Tmesipteris parva
Tylophora barbata
Veronica plebeia
Viola banksii
Viola hederacea
Xanthosia pilosa

APPENDIX 4 – FAUNA SPECIES LIST

Fauna found within 5000m of Flora Reserve, desktop search undertaken February 2022

Amphibians and reptiles	
Scientific name	**Common name**
Pseudophryne bibronii	Bibron's Toadlet
Limnodynastes peronii	Brown-striped Frog
Crinia signifera	Common Eastern Froglet
Geocrinia victoriana	Eastern Smooth Frog
Litoria aurea	Green and Golden Bell Frog
Paracrinia haswelli	Haswell's Froglet

Amphibians and reptiles	
Scientific name	**Common name**
Litoria phyllochroa	Leaf-green Tree Frog
Litoria lesueuri	Lesueur's Frog
Litoria peronii	Peron's Tree Frog
Uperoleia tyleri	Tyler's Toadlet
Litoria verreauxii	Verreaux's Frog
Acanthophis antarcticus	Common Death Adder
Lampropholis delicata	Dark-flecked Garden Sunskink
Cryptophis	Eastern Small-

Amphibians and reptiles	
Scientific name	**Common name**
nigrescens	eyed Snake
Varanus varius	Lace Monitor
Lampropholis guichenoti	Pale-flecked Garden Sunskink
Eulamprus tympanum	Southern Water-skink
Saproscincus mustelinus	Weasel Skink
Eulamprus heatwolei	Yellow-bellied Water-skink

Birds	
Scientific name	**Common name**
Gymnorhina tibicen	Australian Magpie
Zoothera lunulata	Bassian Thrush
Monarcha melanopsis	Black-faced Monarch
Acanthiza pusilla	Brown Thornbill
Platycercus elegans	Crimson Rosella
Artamus cyanopterus cyanopterus	Dusky Woodswallow
Acanthorhynchus tenuirostris	Eastern Spinebill
Psophodes olivaceus	Eastern Whipbird
Eopsaltria australis	Eastern Yellow Robin
Cacomantis flabelliformis	Fan-tailed Cuckoo
Callocephalon fimbriatum	Gang-gang Cockatoo

Birds	
Scientific name	**Common name**
Calyptorhynchus lathami	Glossy Black-Cockatoo
Pachycephala pectoralis	Golden Whistler
Rhipidura albiscapa	Grey Fantail
Colluricincla harmonica	Grey Shrike-thrush
Meliphaga lewinii	Lewin's Honeyeater
Eudyptula minor	Little Penguin
Glossopsitta concinna	Musk Lorikeet
Oriolus sagittatus	Olive-backed Oriole
Pycnoptilus floccosus	Pilotbird
Ninox strenua	Powerful Owl
Trichoglossus haematodus	Rainbow Lorikeet
Tyto tenebricosa	Sooty Owl
Pardalotus punctatus	Spotted Pardalote

Birds	
Scientific name	**Common name**
Cinclosoma punctatum	Spotted Quail-thrush
Acanthiza lineata	Striated Thornbill
Malurus cyaneus	Superb Fairy-wren
Menura novaehollandiae	Superb Lyrebird
Sericornis frontalis	White-browed Scrubwren
Melithreptus lunatus	White-naped Honeyeater
Gerygone olivacea	White-throated Gerygone
Cormobates leucophaea	White-throated Treecreeper
Caligavis chrysops	Yellow-faced Honeyeater
Zanda funereus	Yellow-tailed Black-Cockatoo

Mammals	
Scientific name	**Common name**
Vombatus ursinus	Bare-nosed Wombat
Chalinolobus morio	Chocolate Wattled Bat
Pseudocheirus peregrinus	Common Ringtail Possum
Canis lupus	Dingo, domestic dog
Falsistrellus tasmaniensis	Eastern False Pipistrelle
Cercartetus nanus	Eastern Pygmy-possum
Vulpes vulpes	Fox
Nyctophilus	Gould's Long-

Mammals	
Scientific name	**Common name**
gouldi	eared Bat
Chalinolobus gouldii	Gould's Wattled Bat
Phascolarctos cinereus	Koala
Miniopterus orianae oceanensis	Large Bent-winged Bat
Vespadelus darlingtoni	Large Forest Bat
Nyctophilus geoffroyi	Lesser Long-eared Bat
Vespadelus vulturnus	Little Forest Bat
Isoodon obesulus obesulus	Southern Brown

Mammals	
Scientific name	**Common name**
	Bandicoot (eastern)
Vespadelus regulus	Southern Forest Bat
Rattus lutreolus	Swamp Rat
Wallabia bicolor	Swamp Wallaby
Sminthopsis leucopus	White-footed Dunnart
Petaurus australis	Yellow-bellied Glider

APPENDIX 5 – APPROVAL AND AMENDMENTS FROM PREVIOUS VERSION

In line with section 25 of the *Forestry Act 2012*, flora reserve working plans and any amendments must be approved by the Minister. This plan forms part of the working plans for each of the individual flora reserves listed in section 6.

This plan was approved by The Hon. Tara Moriarty MLC, Minister for Agriculture, Minister for Regional New South Wales and Minister for Western New South Wales

Date of approval: 6/9/23

Version	Changes	Approval details
2.0	» Reference to the *Flora Reserve Plan: Background and General Management* » Formatting updated » Change	» The Hon. Tara Moriarty MLC, Minister for Agriculture, Minister for Regional New South Wales and Minister for Western New South Wales, 6/9/23