Lake Grace Bushcare Project Management Plan

Prepared by Michelle Slarke

for Lake Grace Community Resource Centre and
Lake Grace Land Conservation District Committee
2022

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PROJECT AIMS:

- Protect and revegetate seven (7) remnant bush sites in/around the Lake Grace townsite
- Educate about and encourage conservation of native vegetation and the use of drought tolerant gardens
- Beautify and improve the Lake Grace Townsite, particularly the entries

PROJECT OVERVIEW

This project plans to revegetate and protect seven (7) sites of remnant bush located around the Lake Grace townsite. The project includes public education and awareness of conservation and brings together community volunteers to collaborate with project leader Lake Grace Community Resource Centre, Shire of Lake Grace (SoLG) and school staff and students. The project aims to employ local people (botanical consultant, designer and organisation/s) and use local knowledge.

The project sites *(see map),* a total area of approximately 18 hectare of bushland, vary in size, vegetation cover and type, and the amount of revegetation required. All sites are showing the effects of drought/dry conditions. Preliminary surveys of the sites *(see Appendix)* indicate a number of additional threats to the health of the native bush. There is a substantial amount of litter (motorists, household and general) as well as large objects accumulated over many years. Rabbits are impacting on the native plants and degrading the soil. Weeds of major concern are Caltrop and Bridal Creeper as well invasive (dumped) garden waste including statice, freesias and succulents. Other impacts are caused by people (illegally) driving over the sites, chain sawing trees and collecting firewood. There is also an issue with contractors and others dumping mulch and branches onto the plants in the remnant bush.

The Shire of Lake Grace owns and manages all sites except the area on the south side of Lake Grace District High School.

The health, extent and composition of native vegetation in the Shire and across the Wheatbelt has been impacted by land clearing, fire, secondary salinity and climate change. Every sub-region of the Wheatbelt NRM region falls well below the threshold of 30% land cover, this threshold below which species numbers rapidly decline. Wheatbelt NRM estimates – in a 25 kilometre radius of Lake Grace townsite – only 10.7% of native vegetation cover remains.[1]

Key to the project is the involvement of community volunteers to work on the sites, plant native seedlings and develop 'ownership' of individual plots of bush by adopting and continuing to care for these after the initial work was been completed.

PROJECT SITES

- East end of townsite (above housing development) - town entry **priority*
- North of Hospital precinct - town entry (Lake Grace-Dumbleyung Road) **priority*
- South side of Lake Grace District High School **priority*
- Padley Park (east of Kindergarten/Child Care Centre, Absolon Street)
- Corner of Griffiths Street and South Road - town entry
- South of the Hospital and of sporting grounds (linking sites)
- West end of Clark Avenue

[1] Dr Dimity Boggs, GIS Support Officer, Wheatbelt NRM email to Michelle Slarke, 15 June 2020

VEGETATION AND FLORA SURVEY

Anne Rick, Botanical Consultant surveyed the sites during September 2021 to prepare a Vegetation and Flora Survey of the proposed sites. The objectives of the vegetation and flora survey were to:

- describe and map the vegetation types encountered
- assess the condition of the vegetation
- provide a list of plant species recorded during the survey with soil types and plant information
- report on Threatened, Priority and other significant flora
- report on Threatened Ecological Communities in the area

The Padley Park and South Road/Griffin Street areas were not included in the survey due to a lack of native species in these areas. Only a general vegetation description was recorded for the bushland south of the hospital where large areas were degraded.

Vegetation of the Study Area

Vegetation of the remnant bushland areas surveyed in the Lake Grace town site. Remnant Vegetation Location	**Vegetation Type**	**Vegetation Condition**
North of hospital precinct	Eucalyptus *kondininensis*, Eucalyptus *myriadena* woodland	**Very Good** condition in the releve and over most of the area
South side of Lake Grace District High School	Eucalyptus *kondininensis*, woodland	**Very Good** condition over most of the area.
East end of townsite	Mallee	**Very Good** condition over most of the area.
East end of townsite	Allocasuarina shrubland	**Very Good** Condition over most of the area
Clark Avenue	*Eucalyptus kondininensis*, *Eucalyptus myriadena* woodland	South-eastern section including the releve in **Very Good** condition. Northern edge and eastern section in **Good** condition
South of Hospital	Degraded shrubland	Degraded
South of Hospital	Eucalyptus *kondininensis,* Eucalyptus *myriadena* woodland	Generally in **Good** condition
South of sporting grounds	Eucalyptus *kondininensis,* Eucalyptus *myriadena* Eucalyptus *longicornis* woodland	**Good to Very Good**. Adjacent areas degraded

Mrs Rick recorded a total of 115 plant species as occurring in the study area and 37 weed or introduced species *(see Appendix).* Due to time and seasonal constraints, the survey represents only part of the flora of the area. Further survey work, at different times of the year, is needed to provide the most comprehensive species list.

Two priority 3 species – Persoonia brevirhachis and Anticoryne melanosperma –were recorded during the survey in the Allocasuarina shrubland in the eastern end of the townsite.

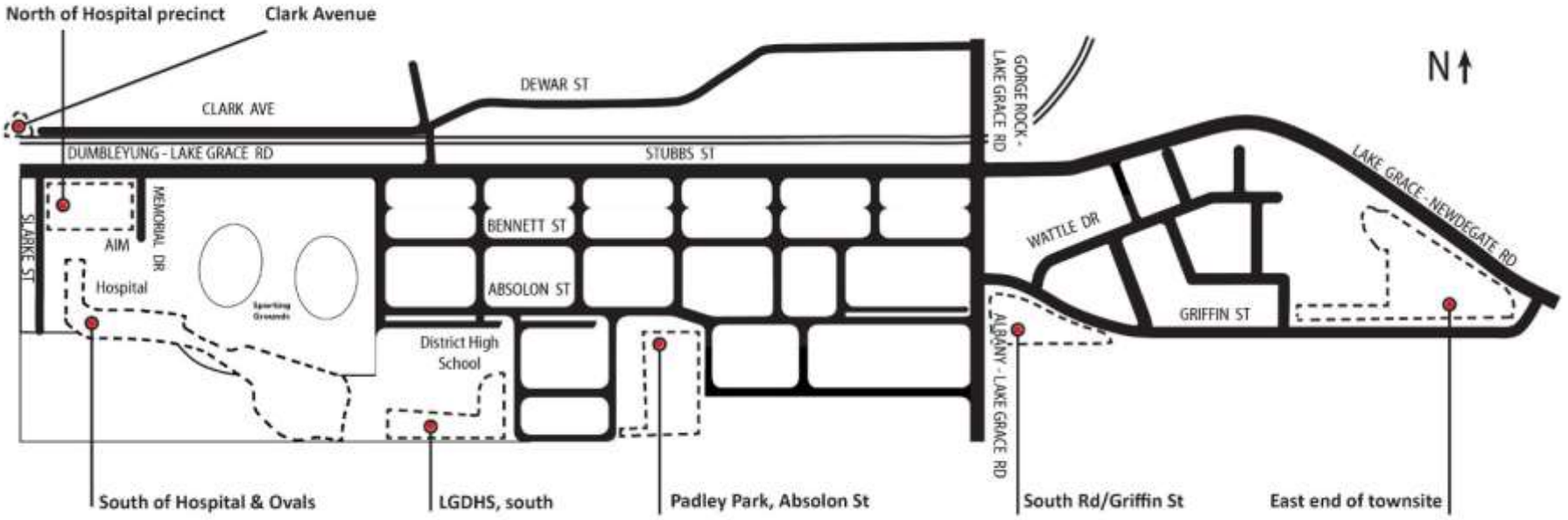
Of special mention is the 2.7ha woodland of Kondinin Blackbutts (*Eucalyptus kondininensis)* and *Eucalyptus myriadena* on the north side of the hospital. Due to land clearing in the WA Wheatbelt, eucalypt woodlands like these are now listed as critically endangered by the Commonwealth and State governments. Despite some weed infestation, this remnant is in good health and an important natural asset.[2]

The project leaders consulted and planned with the school principal over the two years prior to the project. Mid-way through the project, Department of Education WA staff engaged contractors to clear the undergrowth and lop and/or remove some trees and shrubs from the school bush site. This action was to address fire mitigation concerns. Consequently, the proposed plantings and maintenance for this site did not proceed. Students assisted in planting an additional site. In October 2022, some trees, the under and mid-storeys across the whole site were cleared.

The plantings for Padley Park were also cancelled due to a proposed development of the site. Seedlings purchased for these two sites were used elsewhere where suitable and/or distributed to community members.

[2] Rick, Anne - *Lake Grace Bushcare Project Vegetation and Flora Survey*, 2022

Map – Site Locations



RECOMMENDATIONS

WEED MANAGEMENT

- Implement a townsite weed management program targeting, treating and monitoring specific weeds across the seasons and various growth stages
- Careful herbicide selection and application to prevent unintentional damage to native vegetation
- Treat weeds in open areas to prevent them escaping into bushland
- Manual removal of weeds
- Limit vehicular access to bush sites
- Practice good wash down and checking of machines and tyres

DUMPING OF GARDEN WASTE

- SoLG staff target contractors and community members who dump rubbish in bush reserves
- Public education

DUMPING OF GARDEN MULCH

- Advise community and contractors of correct disposal site (especially tree loppings and mulch)

RABBITS

- Destroy rabbit warrens where possible

LITTER

- Liaise with Keep Australia beautiful program
- Regular litter picks
- Public education
- Include message on site signage

FIREWOOD COLLECTORS

- Public education – fines apply, buy firewood from licensed sellers, report collectors
- Include message on site signage

VEHICLES – CONTRACTORS, MOTORBIKES, WORKERS

- Limit access to sites (bollards, blocking improvised routes)
- Public education and direct communication – don't drive over native vegetation

WALKERS trampling vegetation and creating new routes and thereby islanding vegetation

- Install signage to advise
- Public education
- Bollards
- Block access to improvised routes

MANAGEMENT PRACTICES

- Monitor revegetation sites and plantings
- Spot spray or chip weeds
- Water seedlings after planting, and before and through the summer months
- SoLG and school staff ensure their own works are compatible with the care of remnant bushland sites
- Consult independent qualified botanist/s and/or arboriculturist/s prior to commencing any works and to assist in the management of the remnant bushland sites
- Acknowledgment of the value of remnant bushland and the importance of its retention reflected in Council policies, town planning processes and the assessment of development proposals

THREATS

While the sites vary in plant communities, health and topography, the following threats are observed across all sites:

- Weed infestation – carried by foot and vehicles, wind dispersed
- Dumping of garden waste introducing exotic plant species
- Dumping of garden mulch introducing exotic plant species, and smothering and damaging resident plants
- Rabbits foraging on native species and disturbing soils
- Litter – dumped and wind blown
- Firewood collectors – lopping branches and removing fallen branches and habitat
- Vehicles – contractors, motorbikes, workers
- Walkers trampling vegetation and creating new routes and thereby islanding vegetation
- Management practices

Identified Weeds

Weed management poses the major management consideration. Weeds are a fire hazard, compete with the native species and contribute to the degradation of the bushland areas especially in open areas. Weed control is essential for the success of the revegetation work.[3]

**** Dominant and across all sites***

- Guildford Grass (especially bare areas)
- Oxalis Pes-Caprae (Soursob)
- Wild Oats
- Caltrop
- Marshmallow
- Capeweed
- Turnip

Other:

- *Eragrostis curvula* (African lovegrass)

See WEEDS SPECIES LIST in Appendix

[3] Rick, Anne - *Lake Grace Bushcare Project Vegetation and Flora Survey*, 2022

REGENERATION AND REPLANTING - BUSY BEES

Date	Site	Actions
15 August 2021	**East Bush, corner Griffin Street & Lake Grace-Newdegate Rd**	Remove old rubbish and dumped garden waste, weeding
3 October 2021	**Clark Avenue bush**	Weeding, rubbish removal, spread and removed mulch
19 June 2022	• **East bush, corner Griffin Street & Lake Grace-Newdegate Rd** • **Corner Griffin Street & South Rd** • **Entry, LG-Newdegate Rd**	Planting install tree guards
19 June 2022	**North of hospital, Lake Grace Dumbleyung Rd**	Planting and install tree guards
21 June 2022	**Lake Grace-Newdegate Rd, east of housing**	Cadets planting and install tree guards
21 June 2022	**Clark Avenue bush**	Planting and install tree guards

BUSY BEE ACTION PLAN

ACTION		WHO
Invite volunteers	• Lakes Link News – articles • posters • Social Media • Word of mouth • Direct approach	Coordinators
Register volunteers	• Volunteers RSVP to CRC • Instructions - wear gardening clothes and closed shoes. Bring water bottle, hat and sunscreen. Arrive on time.	Coordinators Community volunteers
Preparation	• Allocate seedlings for each site • Count Tree guards & stakes • Transport to sites	Coordinators & volunteers
Equipment	• Pottiputkis (from DPAW) • Spades, trowels (extras) • Hammers & mallet (extras) • Buckets (kidney with strap if avail) • Tables • Chairs **Morning tea for volunteers** – urn tea, coffee, milk, sugar, cups, teaspoons, scones jam & cream, chocolates.	Coordinators & volunteers DPAW
Briefing	• Thank you • Project Background – organisations, funding, aims, flora survey • Species	Coordinators & volunteers

	• Planting Teams - at least 3 people: planter, carrier and tree guard installer • De-potters at table • Tree guard assemblers • Planting demonstrations – Pottiputki, level, tamp down, roots covered, straight • Plant tall plants first & furthest way • OK to mix up, not rows • Team to take same type of seedlings – coordinator give location and spacing • Covid – distancing	
Planting	• Planting in teams • Coordinators supervise and monitor volunteers, check plantings	Volunteers & coordinators
Finish	Pack up. Wrap up day's activities and thank yous, next busy bee	Coordinators

SITE PLANTINGS

PLANTING BY SITES

Species	Common name	East bush (north)	East bush (gap)	South Rd-Griffin St	North Hospital	LG- Nwdgt Rd	Clark Ave	Community	TOTALS
Acacia acuminata	Jam			64		89		39	**192**
Acacia hemiteles	Wattle	128	72	200		113		18	**531**
Acacia neurophylla	Wodjil							33	**33**
Atriplex paludosa	Marsh Saltbush				105		20	275	**400**
Dianella revoluta	Blueberry Lily	100	100	100		18	10	72	**400**
Disphyma crassifolium	Round-Leaved Pigface				62			138	**200**
Enchylaena tomentosa	Barrier Saltbush				52		50	48	**150**
Eucalyptus kondininensis	Kondinin Blackbutt				44		32	52	**128**
Eucalyptus longicornis	Red Morrel				64				**64**
Eucalyptus loxophleba subsp. gratiae	Lake Grace Mallee	64	12	64		40		140	**320**
Eucalyptus myriadena	Small Fruited Gum			100	44	12	16	8	**180**
Eucalyptus spathulata								72	**72**
Eucalyptus torquata	Coral Gum	64				12		216	**292**
Melaleuca lateriflora	Gorada	48	64	72		48		56	**288**
Melaleuca pauperiflora	Boree				64			224	**288**
Scaevola spinescens	Currant or Maroon Bush				143			57	**200**
		404	**248**	**600**	**578**	**332**	**128**	**1448**	**3738**

MANAGEMENT ACTIONS

ISSUE	ACTION	WHO
Public engagement and education	• Lakes Link News – articles • Workshops • Community groups adopt particular sites • Social media	Coordinators
Education	• Botanical Consultant and facilitator work with students at school site - incursions to identify flowering plants during Spring, aims of project • Students adopt site	Coordinators Botanical Consultant School students & staff
Monitoring	• Photo points – before, during and after site prep and planting.	Coordinators
SITE PREPARATION		
Litter & Garden Waste	• Identify problem areas at each site. • Busy Bees to remove litter and garden waste where possible. Leave rubbish if has become habitat. • Organise bulk removal and dispose of correctly. • Advise community and contractors of correct disposal site (especially tree loppings and mulch) • SoLG staff target contractors dumping rubbish in bush reserves • SoLG and school staff ensure their own works are compatible with care of remnant bushland sites.	Coordinators & Botanical Consultant Volunteers SoLG staff SoLG and LGDHS staff
Weeds	• Review sites – photograph and record • Identify species and major infestations • Remove by hand and spray herbicide • Consult SoLG staff about herbicide types and application methods (avoid residual effects or unintentional offsite damage) • Treat summer weeds • Treat before planting • Pre planting and post planting herbicide application / weed control, including second year weed control • Education re. dumping garden waste and spread by vehicle and foot traffic (e.g. caltrop)	Co-coordinators and Botanical Consultant Busy bees – volunteers SoLG staff SoLG staff SoLG staff SoLG staff Co-coordinators & SoLG staff

Access Driving (vehicles and motorbikes) on sites Foot traffic damaging flora and introducing weeds Islanding remnant	• Walk and map the sites, noting thoroughfares and improvised access routes. • Install bollards, fallen logs at entry points of improvised access points • Educate and inform community about altered sites – LLN and social media • Site Signage	SoLG staff position bollards/ logs before planting so public is aware of changed routes before seedlings are planted.
Firewood collectors	• Leave fallen branches for habitat and flora protection • Educate – LLN, social media • Site signage • Report offenders	Coordinators SoLG staff Coordinators Community
REPLANTING		
	• Using the flora survey, identify plant species at each site and note those absent/at risk species and storeys for re-vegetation and to create buffers.	Coordinators
Seed collection and propagation	• Under guidance of Botanical Consultant, collect seed from sites • Seed propagation • Source available seedlings of same species	Coordinators
Site prep	• Dig holes/rip and water 2 weeks before planting. • Most holes dug by hand/ motorised post-hole digger or the latter with bobcat or Kanga. • Where possible use small machine to rip • Spay weedy sites prior to planting	SoLG staff / contractors
Planting	• Planting - busy bees at each site in mid-June • Ensure seedlings are well watered before planting. • Tools and helpers ready to go • Mix of tree and shrub species in mapped areas, uneven placement, species grouped, spacing as per growth forms	Volunteers, students and community groups/ SoLG staff
Watering	• SoLG staff water plants after planting busy bees • Follow up	SoLG staff
Herbivore Pest Control	• Survey the sites for rabbits • Sites are close to housing so rabbit baiting is not suitable. Install biodegradable tree guards and stakes at planting • Check once a week	Coordinators Volunteers
	• Install signage and updates	

	• Submit report to Council and LGDHS	Coordinators
Ongoing Care	• Check plants and guards fortnightly. Implement control measures if needed. • Individuals, groups and families adopt sites • Watering post planting • Weed management - inspect sites regularly and spot spray or chip weeds.	Coordinators & volunteers Community SoLG staff Coordinators & volunteers

APPENDIX

RELEVE* DESCRIPTIONS

By Anne Rick, Botanical Consultant.
**A relevé is an unmarked area within which data are collected.*

Additional notes are from preliminary site reviews conducted by Anne Rick and Michelle Slarke.

EAST END OF TOWN

Mallee (~1ha)

Mallee Releve WP 71 Coordinates 33° 04' 11.4" 118° 28' 46.4"

Landform Mid slope

Soils, topography Gentle slope, sandy loam with gravel over clay

VEGETATION DESCRIPTION

Mid stratum 1 (M1+) Shrub Mallee to 4-7m, 10-30% canopy cover, including *Eucalyptus neutra* and *Eucalyptus tenera*

Mid stratum 2 (M2) Shrubs to 1.5m, 30-70% canopy cover, including *Melaleuca adnata, Melaleuca marginata, Melaleuca acuminata, Melaleuca laxiflora, Melaleuca spicigera, Grevillea huegelii, Acacia hemiteles, Gastrolobium parviflorum, Astus subroseus*

Recorded adjacent to releve - *Santalum acuminatum, Melaleuca hamata, Daviesia aphylla*

Ground stratum (G1) Isolated shrubs to 0.5m including *Rhagodia drummondii, Olearia muelleri, Enchylaena tomentosa, Phebalium filifolium, Phebalium tuberculosum, Sclaerolaena diacantha*

Recorded adjacent to releve - *Maireana brevifolia, Dodonaea viscosa*

Vine - *Cassytha melantha,*

Perennial herb/rush - *Dianella revoluta*

Annual herbs/forbs - *Actinobole uliginosum, Blennospora drummondii, Diuris porrifolia*

Recorded adjacent to releve - *Calandrinea eremaea, Waitzia acuminata*

Grasses - *Austrostipa elegantissima, Neurachne alopecuroides*

Weeds < 30% canopy cover in releve – *Bromus species, Briza minor, Mesembryanthemum crystallinum, Lachenalia aloides, Arctotheca calendula, Ursinia anthemoides, Sonchus oleraceus*

Weeds recorded adjacent to releve – *Lysimachia arvensis, Freesia alba x leichtlinii, Avena* species*, Brassica tournefortii, Pentameris airoides, Romulea rosea*

Condition
Very Good condition over most of the area.
Weeds in open areas. Loss of some ground cover species due to weed competition.
Dumping of garden rubbish and mulch.
Track through area.
Former tip site adjacent.
A busy bee on the 15 August 2021 cleared old rubbish and dumped garden waste from the bushland.

EAST END OF TOWN

Mallee Releve WP 099 20 x 35m Coordinates 33° 6' 11.51" 118° 28' 38.92"

Landform Valley floor, on duplex soils

Soils, topography Gentle slope to flat terrain, loamy gravel soils over clay

VEGETATION DESCRIPTION

Upper stratum (U1) Isolated trees of *Eucalyptus salubris*

Mid stratum 1 (M1+) Shrub mallee, 30-70% canopy cover, including *Eucalyptus tenera* and *Eucalyptus loxophleba* subsp. *gratiae*

Mid stratum 2 (M2) Shrubs 2m, 2-10% canopy cover, *Melaleuca adnata, Melaleuca acuminata, Melaleuca lateriflora, Santalum acuminatum*

Ground stratum (G1) Isolated shrubs to 1.0m including *Acacia hemiteles, Rhagodia drummondii, Senna artemisioides subsp. x artemisioides, Grevillea acuaria, Dodonaea viscosa*

Ground stratum (G2) Shrubs to 0.5m, 2-10% canopy cover, including *Enchylaena tomentosa, Ptilotus spathulatus, Maireana brevifolia,*

Perennial herb/forb - *Carpobrotus modestus,*

Annual herbs/forbs - *Podotheca angustifolia, Bulbine semibarbata, Calandrinia eremaea*

Vines - *Thysanotus patersonii, Cassytha melantha*

Grasses - Austrostipa elegantissimma
Weeds < 30% in releve including – *Avena* species, *Bromus* species, *Brassica tournefortii, Romulea rosea*, Oxalis pes-caprae

Condition
The releve area is in Very Good Condition. However, in open areas some aggressive weeds are present at high density resulting in loss of ground cover species due to weed competition. A walk track/cycle way runs through the middle of the remnant vegetation strip.

EAST END OF TOWN

Allocasuarina shrubland (~1.2 ha)

Releve 072 Coordinates 33° 6' 10.27" 118° 28' 47.04"

Landform mid slope

Soils, topography Gentle slope to flat terrain, gravelly soils

VEGETATION DESCRIPTION

Mid stratum 1 (M1) Isolated shrubs to 3m including *Allocasuarina acutivalvis and Santalum acuminatum*

Mid stratum 2 (M2+) Shrubs to 1.5m, 30-70% canopy cover, including *Allocasuarina campestris, Gastrolobium parviflorum, Hakea scoparia* and *Beyeria sulcata*

Ground stratum (G1) Isolated sedges to 0.5m including *Lepidosperma* species
Weeds < 30% canopy cover in releve including *Zaluzianska divaricata, Oxalis pes-caprae, Arctotheca calendula, Brassica tournefortii, Avena* species*, Ursinia anthemoides, Freezia alba x leichtlinii*

Condition
Very Good Condition over most of the area**.** Weed species at low density in open areas within bushland area. High density aggressive weeds in areas adjacent to the bushland including *Avena* species (wild oats)

EAST END OF TOWN

Allocasuarina Shrubland Releve WP 095 Coordinates 33° 06' 10.9" 118° 28' 53.9"

Landform mid slopes sandy gravel

Soils, topography Gentle slope to flat terrain, loamy soils over clay

VEGETATION DESCRIPTION

Mid stratum 1 (M1+) Shrubs 2-3m, 2-10% canopy cover, including *Allocasuarina campestris, Allocasuarina acutivalvis, Grevillea hookeriana, Leptospermum erubescens, Leptospermum ?nitens*

Ground stratum (G1) Shrubs to 1.0m, 10-30% canopy cover, including *Phebalium tuburculosum, Hakea scoparia,* ***Persoonia brevirhachis*** **P3**, *Gastrolobium parviflorum, Isopogon scabrusculus, Acacia uncinella, Acacia dielsii, Acacia multispicata, Chamelaucium pauciflorum, Grevillea teretifolia*

Adjacent to releve - *Melaleuca spicigera, Phebalium filifolium, Leptomeria preissiana* Sedges to 1.0m, 2-10% canopy cover, including *Lepidosperma* species

Ground stratum (G2) Shrubs to 0.5m, 2-10% canopy cover, including *Calytrix leschenaultii,* ***Anticoryne melanosperma*** **P3,** *Verticordia chrysantha, Acacia acanthoclada, Ericomyrtus serpyllifolia, Dampiera lavandulacea, Psammomoya choretroides, Hibbertia gracilipes, Mirbelia trichocalyx, Styphelia dielsiana, Styphelia serratifolia*

Vine - *Thysanotus patersonii, Comesperma volubile, Drosera subhirtella*

Isolated annual herbs/forbs - Actinobole uliginosum, Blennospora drummondii

Recorded adjacent to releve - *Rhodanthe manglesii*

Isolated perennial herbs/forbs - *Diuris porrifolia, Stylidium caricifolium*, *Drosera glanduligera*, *Glischrocaryon angustifolium, Ptilotus polystachyus, Opercularia spermacocea*

Recorded adjacent releve - *Dianella revoluta*

Isolated Grasses - *Neurachne alopecuroidea*

Recorded adjacent to releve – *Austrostipa exilis, Austrostipa trichophylla*

Isolated sedges - *Lepidosperma* species

Weeds <30% canopy cover in releve including *Arctotheca calendula, Ursinia anthemoides, Brassica tournefortii, Freesia alba x leichtlinii, Avena* species, *Fumaria capreolata, Oxalis pes-caprae*

Condition
Very Good condition over most of the area
Weeds in open areas with some loss of native species due to weed competition
Rubbish dumped.

Comments
Priority 3 species *Persoonia brevirhachis* and *Anticoryne melanosperma* P3 recorded in the releve.

THREATS

WEEDS PRESENT ***Dominant:*** Guildford Grass, Freesia, Caltrop, Capeweed, Oxalis pes-caprae (Soursob), Grasses, Daisy, Turnip, Marshmallow ***Other:*** Bridal Creeper, garden bulbs
RUBBISH PRESENT **Remove or retain?** Remove garden waste and large rubbish. Leave small rubbish.
Other threats Garden waste – palms, woodchip piles
FAUNA Kangaroo, rabbits, birds, fox, cat
NOTES Priorities – Bush – replant buffer and weed control, tree-line, entry trees if time and resources. Access – control dumpers, hand spray weeds. Degraded area (east) requires spraying for weeds. Treat two areas - vegetated and degraded buffer and infill open area (using tree planter?) Changes in soil types in areas.

Eastern Remnant, Griffin Street – May 2022

View north-east

Western edge

View edge of cleared track

Eastern section

East end, Lake Grace-Newdegate Road/Griffin Street

Grevillea wilsonii

Dumped garden waste: *Lachenalia aloides*
South-western edge (treated)

Freezias, south-eastern edge (treated)

Dumped garden waste (removed)

Styphelia sp.

CLARK AVENUE (~0.35ha)

***Eucalyptus kondininensis,* Eucalyptus *myriadena* woodland**

Releve 100 Coordinates 33° 5' 59.35" 118° 27' 11.36"

Landform Valley floor, on heavier soils

Soils, topography Gentle slope to flat terrain, sandy loam soils over clay, clay in north and northwest sections

Vegetation Description

Upper stratum (U1+) Trees to 12m, 10-30% canopy cover, including *Eucalyptus kondininensis* and *Eucalyptus myriadena*

Recorded adjacent releve - *Eucalyptus spathulata* planted

Mid stratum 1 (M1) Shrubs 1.5 to 2m, 2-10% canopy cover, including *Acacia merrallii, Lycium australe, Templetonia rossii, Senna artemisioides* subsp. *filifolia*

Ground stratum (G1) Shrubs to 1.0m, 30-70% canopy cover, including *Aptriplex ?paludosa* (prominent) and *Lycium australe*

Ground stratum (G2) Isolated shrubs to 0.5m including *Enchylaena tomentosa, Tecticornia pergranulata, Tecnicornia synaphea, Maireana brevifolia, Threlkeldia diffusa, Sclerolaena decantha, Rhagodia drummondii, Maireana erioclada,*

Isolated Grasses - *Austrostipa elegantissima*

Weeds <30% canopy cover in the releve – *Moraea setifolia* (thread iris), *Bromus* species*, Oxalis pes-caprae Mesembryanthemum nodiflorum, Lolium rigidum, Brassica tournefortii, Sonchus oleraceus, Arctotheca calendula, Avena* species*, Asparagus asparagoides* (bridal Creeper)

Condition
South-eastern section including the releve in **Very Good condition**.
Northern edge and eastern section in **Good** condition with tree death due to water logging**.**
Eucalyptus kondininensis trees regenerating in central areas.
Garden mulch dumped on the edge.
Cement septic slab, cement paving pieces.
Rabbits present

THREATS

WEEDS PRESENT ***Dominant:*** Guildford Grass, Wild Oats, Capeweed, Oxalis pres-caprae (Soursob), Grasses, Daisy, Turnip, ***Other:*** Bridal Creeper, Indian Love Grass (nearby) **Remove or retain?** Hand removable and spray
RUBBISH PRESENT Old dumpings and blown in from roadside Cement septic slab, cement paving pieces **Remove or retain?** Remove small rubbish and if possible the cement slab. Remove ?soil dumps and garden waste.
Other threats: soil dumps x 2 (contractors) Garden waste dumps x 2 leaves and mulch
FAUNA Rabbits (degrading site), fox, birds, cats
NOTES: neighbour revegetation? Replant edges (west & north) Templetonia, Boxwood.

Remnant west of Clark Avenue – September 2019

View to east

View to west

Regrowth over vehicle access

Dumped garden waste & wood chips (now removed)

SOUTH OF HOSPITAL (~0.4ha)

Degraded shrubland

Vegetation previously salt bush and blackbutts now weeds and samphire

Area west of Way Point 102 – no releve data recorded for this area

WP Coordinates 33° 6' 12.02" 118° 27' 5.43"

Landform Valley floor, on heavier soils

Soils, topography Gentle slope to flat terrain, loamy soils over clay

Condition

Vegetation Description General Description

Upper stratum (U1) Isolated *Eucalyptus kondininensis* trees

Mid stratum 1 (M1) Isolated *Melaleuca lateriflora* shrubs

Ground stratum (G1+) Shrubs to 0.5m, 10-30% canopy cover, including *Tecticornia* species, *Disphyma crassifolium*, *Atriplex ?paludosa*

Weeds >50% in places – *Asparagus asparagoides* (bridal creeper*), Limonium lobatum* (statice), *Avena* species, *Brassica tournefortii*, *Lolium rigidum*, *Romulea rosea*, *Hordeum leporinum* (Barley grass), *Arctotheca calendula*, *Mesembryanthemum nodiflorum*, *Oxalis pes-caprae* (soursob), *Sonchus oleraceus* (sowthistle)

Condition

Degraded. Only scattered trees and shrubs remaining from the upper and mid strata.

Sparse ground cover with only a few native species remaining.
Some aggressive weed species present at high density.

SOUTH OF HOSPITAL (~0.8ha)

***Eucalyptus kondinensis, Eucalyptus myriadena* woodland**

Area east of WP 102 - no releve data recorded for this area

WP Coordinates 33° 6' 12.02" 118° 27' 5.43"

Landform Valley floor, on heavier soils

Soils, topography Gentle slope to flat terrain, loamy soils over clay

VEGETATION DESCRIPTION General Description

Upper stratum (U1+) Trees to 10m, 10-30% canopy cover, including *Eucalyptus kondininensis*, *Eucalyptus myriadena*. (*Casuarina obesa* and *Eucalyptus platypus* planted)

Ground stratum (G1) Shrubs to 0.5m, 10-30% canopy cover, *Tecticornia* species, *Threlkeldia diffusa, Atriplex ?paludosa*, *Frankenia ?tetrapetala*, *Disphyma crassifolium, Sclerolaena dicantha, Rhagodia drummondii, Templetonia rossii* (seedlings), *Acacia merrallii, Maireana brevifolia*

Isolated perennial herbs/forbs - *Carpobrotus modestus, Calandrinia eremaea*

Isolated annual herbs/forbs – *Crassula colorata* var. *acuminata*

Isolated grasses - *Austrostipa elegantissima*

Weeds >30% canopy cover in open area including *Gazania linearis, Vicia sativa* (vetch), *Lolium rigidum* (ryegrass), *Romulea rosea* (Guildford grass)*, Brassica tournefortii* (wild turnip), *Hordeum leporinum* (Barley grass), *Trifolium arvense* (clover), *Monoculus monstrosus* (stinking roger), *Mesembryanthemum nodiflorum*

Condition

Very Good to Good condition
Garden refuse dumped
Aggressive weeds in open areas
Casuarina obesa and *Eucalyptus platypus* planted
Young trees present

SOUTH OF SPORTING GROUNDS (~1.4ha)

***Eucalyptus kondininensis* and *Eucalyptus myriadena* woodland**

Releve 104 20 x 35m Coordinates 33° 6' 13.59" 118° 27' 18.41"

Landform Valley floor, on heavier soils

Soils, topography Gentle slope to flat terrain, sandy loamy soils over clay, clay in places

Vegetation Description

Upper stratum (U1+) Trees to 15m, 10-30% canopy cover, including *Eucalyptus kondininensis* and *Eucalyptus myriadena*

Adjacent to releve – *Eucalyptus salmonophloia* – adjacent sports oval

Mid stratum 1 (M1) Isolated clump of shrubs to 3m including *Melaleuca pauperiflora*, *Acacia merrallii* (2m), *Exocarpos aphyllus*

Ground stratum (G1) Isolated shrubs to 1.0m including *Templetonia rossii, Lycium australe, Maireana brevifolia*

Ground stratum (G2) Shrubs to 0.5m, 10-30% canopy cover in places, including *Rhagodia drummondii, Atriplex ?paludosa, Threlkeldia diffusa, Enchylaena tomentosa, Disphyma crassifolium, Olearia muelleri*
Isolated grasses Austrostipa exilis
Isolated Forbs/herbs *Carpobrotus modestus*

Weeds <30% in releve – *Arctotheca calendula* (cape weed), *Avena* species (wild oats), *Brassica tournefortii* (wild turnip), *Oxalis pes-capre* (soursob), *Malva parviflora* (marshmallow), *Asphodelus fistulosus* (onion weed), V*icia sativa* (vetch), *Moraea setifolia* (thread iris), *Sonchus oleraceus* (sowthistle), *Mesembryanthemum nodiflorum* (slender iceplant)

Condition
The strip of woodland on the south side of the road is in Very Good condition
Adjacent open areas have aggressive weed species at high density and are degraded.
Rubbish dumping in the area

THREATS

WEEDS PRESENT – extensive ***Dominant:*** Guildford Grass, Wild Oats, Marshmallow, Oxalis pes-caprae (Soursob), ***Other:*** Vetch, Capeweed, Grasses, Daisy, Turnip, Gazania, palm. **Remove or retain?** Remove and spray by hand?
RUBBISH PRESENT - old dumping site (informal) **Remove or retain?**
Other threats Management – dumping garden waste, pushing over plants
FAUNA Smoker parrots, numerous birds, butterflies
NOTES Weed control critical; Fire control; No planting except bare areas, grass clippings form oval mowing Group of Morells near horse yards - protect

South side of Sporting Grounds – October 2021

View to east

View to west

Weed infestation

Dumped domestic waste

SOUTH OF SPORTING GROUNDS

***Eucalyptus longicornis* and *Eucalyptus myriadena* woodland**

Releve 107

Coordinated 33° 6' 15.65" 118° 27' 23.75"

Landform Valley floor, on heavier soils

Soils, topography Gentle slope to flat terrain, sandy loamy soils over clay, clay in places

Vegetation Description

Upper stratum (U1+) Trees to 18m, 10-30% canopy cover, including *Eucalyptus longicornis* and *Eucalyptus myriadena*

Mid stratum 1 (M1) Isolated shrubs to 1.5m including *Lycium australe, Acacia merrallii*

Recorded adjacent to releve – *Senna artemisioides, Melaleuca pauperiflora, Santalum acuminatum, Templetonia rossii, Olearia muelleri*

Ground stratum (G1) Isolated shrubs to 1.0m, including, *Atriplex ?paludosa*

Ground stratum (G2) Shrubs to 0.5m, 30-70% canopy cover, including *Rhagodia drummondii, Threlkeldia diffusa, Enchylaena tomentosa, Maireana brevifolia*,
Isolated grasses *Austrostipa elegantissima*
Isolated Rush/perennial herb *Lomandra effusa*

Weeds >30% in releve - *Oxalis pes-capense* (soursob), *Brassica tournefortii* (wild turnip), *Lolium rigidum* (ryegrass), *Hordeum leporinum* (brome grass), *Gazania linearis*, *Moraea setifolia* (thread iris), *Sonchus oleraceus* (sowthistle)

Recorded adjacent to releve - *Asparagus asparagoides* (bridal creeper)

Condition

Woodland area in Good condition.
Open areas and areas adjacent to the woodland are degraded with aggressive weeds at high density in places
Loss of native species due to weed competition.
Track through area

NORTH OF HOSPITAL PRECINCT (~2.7HA)

***Eucalyptus kondininensis,* Eucalyptus *myriadena* woodland**
Releve WP 053
Coordinates 33° 06' 05.5" 118° 27' 07.6"
Landform Valley floor, heavier soils
Soils, topography Gentle slope to flat terrain, clay loam
Vegetation Description
Upper stratum (U1+) Trees to 12m, 10-30% canopy cover (patchy) including *Eucalyptus kondininensis* and Eucalyptus *myriadena*
Recorded adjacent to releve near hospital - *Eucalyptus longicornis*
Mid stratum 1 (M1) Isolated shrubs to 1.5m including *Lycium australe, Acacia merrallii* and *Templetonia rossii*
Shrubs recorded adjacent to releve – Scaevola spinescens**,** *Senna artemisioides* subsp*. filifolia, Senna artemisioides* subsp. x *artemisioides, Melaleuca pauperiflora* and *Santalum acuminatum*
Ground stratum (G1) Shrubs to 0.5m, 30-70% canopy cover, including *Atriplex ?paludosa* (frequent), *Enchylaena tomentosa, Rhagodia drummondii* and *Disphyma crassifolium*
Shrubs recorded adjacent - *Maireana brevifolia, Maireana erioclada, Maireana trichoptera, Maireana carnosa* (hybrid), *Threlkeldia diffusa, Tecticornia synaphea, Wilsonia humilis, Acacia erinacea* and *Roepera glauca*
Herbs/forbs - Calandrinia eremaea, Crassula colorata var. acuminata
Recorded adjacent releve - *Carpobrotus modestus*
Grass – *Austrostipa elegantissima*
Weeds Weeds < 30% canopy cover including *Mesembryanthemum nodiflorum* (slender iceplant), *Romulea rosea* (Guildford grass), *Oxalis pes-caprae* (soursob), *Brassica tournefortii* (wild turnip)
Weeds recorded adjacent to releve - *Leontodon rhagadioloides* (Cretan weed), *Avena* species (wild oats*), Monoculus monstrosus* (stinking roger), *Bromus* species (brome grass), *Sisymbrium irio* (London rocket), *Arctotheca calendula* (cape weed), *Erodium botrys* (corkscrews), *Sonchus oleraceus* (sowthistle)
Condition
Very Good condition in the releve and over most of the area**.**
The Vegetation structure is intact although the mid strata shrubs are isolated.
Some aggressive weed species are present in open areas and in the southwest corner with brome grass and wild oats at high density over small areas.
Some loss of native species in the area due to weed competition.
Young blackbutt seedlings are present.
Rabbit activity recorded.
Some planted species present e.g., Callistemon (bottlebrush) and planted trees.
Parking bay and walkway present.
Comments
This woodland area meets the key diagnostic characteristics for the Critically Endangered – Eucalypt Woodlands of the WA Wheatbelt.
Releve at Way Point 053 with *Eucalyptus kondininensis* and Eucalyptus *myriadena* trees

THREATS

WEEDS PRESENT
Dominant: Guildford Grass (esp. bare areas), grasses, Oxalis pes-caprae (Soursob), daisy Asteracia, mesembryanthemum
Other: Bridal Creeper
Remove or retain? Remove by hand. Remove self-sown daisy bushes at edge of carpark.

RUBBISH PRESENT
Remove or retain? Leave old hospital rubbish (historical). Some recent litter - remove

Other threats Management – dumping garden waste, pushing over plants Firewood cutters
FAUNA Fox, rabbits, dugites, birds (including butcher birds, magpies, crows, galahs, Twenty Eight Parrots). Rabbits impacting vegetation and soil.
NOTES Planting: Some trees (eucalypts, melaleuca) and shrubs (templetonia, acacia). Understorey affected by weeds, loss of diversity. Good site for seed collecting.

Remnant north of Hospital Precinct – January & May 2019

View to south

View to west

Remnant north of Hospital Precinct – January & May 2019

Track cleared to dump garden waste

Damage by firewood collector/s

LAKE GRACE DISTRICT HIGH SCHOOL, south (~1.2ha)

***Eucalyptus kondininensis* woodland**

Releve WP 064 Coordinates 33° 06' 18.4" 118° 27' 34.1"

Landform Valley floor, on heavier soils**,** adjacent to salt lake country

Soils, topography flat terrain, loam (clay in places)

Vegetation Description

Upper stratum (U1+) Trees to 14m, 10-30% canopy cover of *Eucalyptus kondininensis*

Recorded adjacent to releve - *Eucalyptus myriadena.*

Mid stratum 1 (M1) Isolated shrubs to 3m of *Melaleuca pauperiflora*

Recorded adjacent to releve - *Melaleuca lateriflora*

Mid stratum 2 (M2) Isolated shrubs to 1.5m including *Scaevola spinescens, Santalum acuminatum* and *Lycium australe*

Recorded adjacent - *Acacia merrallii, Templetonia rossii, Acacia hemiteles, Eremophila decipiens* and *Melaleuca hamata*

Ground stratum (G1) Shrubs to 0.5m, 30-70% canopy cover, including *Atriplex paludosa (frequent), Threlkeldia diffusa, Enchylaena tomentosa, Rhagodia drummondii*

Recorded adjacent - *Disphym**a** crassifolium, Maireana brevifolia, Maireana carnosa (hybrid), Maireana trichoptera, Tecticornia ?lepidosperma*, *Tecticornia* species*, Sclerolaena diacantha, Wilsonia humilis, Roepera ovata*
Forbs/herbs of *Brachyscome ciliaris* and *Carpobrotus modestus*

Recorded adjacent to releve - *Calandrinia eremaea, Crassula colorata* var. *acuminata*

Grasses – *Austrostipa elegantissima, Austrostipa exilis*

Weeds < 30% canopy cover in releve including **-** *Mesembryanthemum nodiflorum, Oxalis pes-caprae, Romulea rosea*, *Avena* species

Weeds recorded adjacent to the releve - *Arctotheca calendula, Gazania linearis, Senecio vulgaris, Sonchus oleraceus, Ursinia anthemoides, Brassica tournefortii, Trifolium arvense, Malva parviflora, Medicargo truncatula, Hordeum leporinum, Lolium rigidum, Pentameris airoides*

Planted trees – *Eucalyptus* species and *Casuarina obesa*

Condition

Very Good condition over most of the area.
The Vegetation structure is intact although the mid strata shrubs are only isolated.
Some aggressive weed species are present in open areas with some loss of native species due to weed competition. Disturbance to the understorey with the clearing of pathways has resulted in an increase in weed species.
Planted *Eucalyptus* species and *Casuarina obesa* in small numbers.
Rubbish and garden mulch present in open areas
Walkway/ bicycle track is also present.

Comments

To reduce the fire risk of the bushland south of the Lake Grace District High School, garden refuse and logs were removed from the area. Unfortunately, some of the larger native shrubs were also removed. Weed species provide a major fire risk and are more abundant in open areas where the native vegetation is more degraded. Healthy bushland with less weeds, less rubbish and garden waste should pose a lower fire risk. These activities took place after the vegetation and flora survey.
Eucalyptus kondininensis woodland at WP 064 7

THREATS

WEEDS PRESENT
Dominant: Guildford Grass (esp. bare areas), grasses, Oxalis pes-caprae (Soursob), daisy,
***Other*:** Succulents (garden waste)

RUBBISH PRESENT
Pipes, swing, other. Branches from lopped trees.
Remove or retain? Remove large items, branches etc.

Other threats
Dumping of garden waste and raking of native vegetation back to bare areas, vehicles using walk path.

FAUNA
Frogs, reptile, birds, fox, rabbits.

PADLEY PARK

VEGETATION TYPE: Lake bank
SOIL TYPE/S:
PHYSICAL SITE CONDITIONS (slope, water, thoroughfares): Lake bank, wetland in centre, drain running along south perimeter, water run-off from road, walk path on west side
PLANT SPECIES: Various saltbushes, pigface, Kondinin blackbutts *Eucalyptus kondinensis, Eucalyptus spathulata*. **Planted or self-sown:** Tamarisk, *Acacia accuminata, Casuarina obesa,* eucalypts

HABITAT HEALTH

	Healthy Habitat		**Degraded Habitat**
	Natural tree cover remains	✓	Tree cover partly or completely cleared
	Free of weeds and exotic grasses	✓	Invaded by weeds and exotic grasses
	Range of understorey plants	✓	Few or no understorey plants
	Regeneration of trees & other plants	✓	No regeneration of young trees & other plants
	Old trees with hollows present	✓	Old trees with hollows are missing
	Fallen logs and timber present	✓	No fallen logs and timber
	Trees have a healthy foliage cover		Trees are showing signs of dieback or disease

THREATS

WEEDS PRESENT ***Dominant*** Guildford Grass (esp. bare areas), grasses, Oxalis pes-caprae (Soursob) ***Other*****:** Caltrop **Remove or retain?** Hand spray
RUBBISH PRESENT NO **Remove or retain?**
Other threats: Soil is compacted/ very hard, even in winter following good rainfall.
FAUNA Wetland birds (stilts, avocets), other birds, frogs
NOTES: Suggested planting (in cleared area) – *Eucalyptus kondininensis*, saltbushes, pigface, jam trees, *Eucalyptus spathulata*.

Corner Lake Grace-Pingrup Road and Griffin Street

Eucalypt remnant in south-western corner, acacia and melaleuca species, Quandongs and various grasses. Planted species include eucalypts, acacia acuminata, acacia and melaleuca specie, various eucalypts.

HABITAT HEALTH

	Healthy Habitat		**Degraded Habitat**
	Natural tree cover remains	✓	Tree cover partly or completely cleared
	Free of weeds and exotic grasses	✓	Invaded by weeds and exotic grasses
✓	Range of understorey plants		Few or no understorey plants
✓	Regeneration of trees & other plants		No regeneration of young trees & other plants
✓	Old trees with hollows present		Old trees with hollows are missing
	Fallen logs and timber present	✓	No fallen logs and timber
✓	Trees have a healthy foliage cover		Trees are showing signs of dieback or disease

THREATS

WEEDS PRESENT
Dominant: Guildford Grass, grasses, Oxalis pes-caprae (Soursob),

RUBBISH PRESENT roadside litter
Remove or retain? remove

Other threats
Rabbits

FAUNA
Birds, rabbits, reptiles

NOTES
Plant trees in open areas and shrubs for understory. Review original remnant in south-west corner for species present.

View to east

View to south

View to south

View to north-east

SPECIES LIST

Excerpt from *Lake Grace Bushcare Project Vegetation and Flora Survey* by Anne Rick, 2022

KEY	
Site 1	**Clark Ave**
Site 2	**North of Hospital**
Site 3	**South of Hospital and Ovals**
Site 4	**School (south side)**
Site 5	**South Road/Griffin Street**
Site 6	**East end of townsite - mallee**
Site 7	**East end of townsite - gravel**

Family	Taxa	Common Name	Growth form	Soil type	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7
Aizoaceae	*Carpobrotus modestus*	Inland Pigface	Prostrate perennial herb	Sand, clay		x	x	x		x	
Aizoaceae	*Disphyma crassifolium*	Round-Leaved Pigface	Prostrate shrub	Sand, loam, clay		x	x	x			
Amaranthaceae	*Ptilotus polystachyus*	Prince Of Wales Feather	Perennial herb	Disturbance, various soils							
Amaranthaceae	*Ptilotus spathulatus*	Mulla Mulla	Perennial herb	Clay, loam, sand, laterite						x	
Asparagaceae	*Lomandra effusa*	Scented Matrush	Perennial herb	Sand, clay, gravel			x				
Asparagaceae	*Thysanotus patersonii*	Fringe Lily	Vine	Sand, clay						x	x
Asteraceae	*Actinobole uliginosum*	Flannel Cudweed	Annual herb	Sand, loam						x	
Asteraceae	*Blennospora drummondii*	Daisy	Annual herb	Gravel						x	
Asteraceae	*Brachyscome ciliaris*	Daisy	Annual or perennial herb	Sand, clay				x			
Asteraceae	*Olearia muelleri*	Goldfields Daisy	Low shrub	Sand, loam, clay			x			x	
Asteraceae	*Podotheca angustifolia*	Sticky Longheads	Annual herb	Sand, gravel						x	
Asteraceae	*Rhodanthe manglesii*	Pink Daisy	Annual herb	Sand, loam, clay							x
Asteraceae	*Waitzia acuminata*	Orange Immortelle	Annual herb	Sand, loam, clay, gravel						x	

Casuarinaceae	*Allocasuarina acutivalvis*	Sheoak	Tall dioecious shrub or small tree	Sand, gravel							x
Casuarinaceae	*Allocasuarina campestris*	Sheoak, Tamma	Medium dioecious shrub	Sand, gravel							x
Chenopodiaceae	*Atriplex ?paludosa check*	Marsh Saltbush	Low shrub	Sand, clay, loam, salt lake	x	x	x	x			
Chenopodiaceae	*Enchylaena tomentosa*	Barrier Saltbush	Low prostrate or erect shrub	Variety of soils often saline	x	x	x	x		x	
Chenopodiaceae	*Maireana brevifolia*	Small Leaf Bluebush	Low shrub	Loam, sandy clay	x	x	x	x		x	
Chenopodiaceae	*Maireana erioclada*	Bluebush	Low shrub	Sand, loam, clay	x	x					
Chenopodiaceae	*Maireana radiata*	Bluebush	Low shrub	Sand, sandy clay, loam		x					
Chenopodiaceae	*Maireana species*	Bluebush	Low shrub	Sand, sandy clay, loam		x		x			
Chenopodiaceae	*Rhagodia drummondii*	Salt Bush	Low shrub	Sand, loam, clay	x	x	x			x	
Chenopodiaceae	*Rhagodia preissii*	Salt Bush	Low shrub	Sand, loam, clay							
Chenopodiaceae	*Sclerolaena diacantha*	Grey Copperburr	Prostrate perennial herb	Sand, loam, clay	x			x		x	
Chenopodiaceae	*Threlkeldia diffusa*	Coast Bonefruit	Prostrate or erect perennial herb	Sand, clay	x	x	x	x			
Chenopodiaceae	*Tecticornia species*	Samphire	Low shrub	Clay	x	x	x	x			
Convolvulaceae	*Wilsonia humilis*	Silky Wilsonia	Prostrate shrub	Sandy soils, clay		x		x			
Cyperaceae	*Lepidosperma species*	Sedge	Sedge	Sand, loam, clay, gravel							x
Dilleniaceae	*Hibbertia gracilipes*	Native Buttercup	Low shrub	Sand, gravel							x
Droseraceae	*Drosera glanduligera*	Pimpernel 'Sundew	Small 2-6cm perennial herb	Gravel (found in all soil types)							x
Droseraceae	*Drosera subhirtella*	Sundew	Vine	Gravel, sand, loam, clay							x
Euphorbiaceae	*Beyeria sulcata*		Small to med shrub	Gravel, sand							x
Fabaceae	*Acacia acanthoclada*	Wattle	Low shrub	Gravel, sand							x
Fabaceae	*Acacia acuminata*	Jam	Shrub or small tree	Loam, clay, sand							
Fabaceae	*Acacia erinacea*	Wattle	Prostrate, spreading shrub	Loam, clay							
Fabaceae	*Acacia hemiteles*	Wattle	Med shrub	Loam, clay				x	x	x	
Fabaceae	*Acacia merrallii*	Wattle	Med shrub	Loam, clay	x	x	x	x			
Fabaceae	*Acacia uncinella*	Wattle	Med shrub	Sandy gravel							x

Fabaceae	*Daviesia aphylla*	Rattle Pod, Pea	Med shrub	Loam, clay, sand						x	
Fabaceae	*Gastrolobium musaceum/parviflorum*	Poison Plant	Med shrub	Gravel soils							x
Fabaceae	*Mirbelia trichocalyx*	Pea Plant	Low shrub	Gravel soils							x
Fabaceae	*Senna artemisioides subsp. filifolia*	Cassia	Med shrub	Gravel, sand, loam, clay	x	x					
Fabaceae	*Senna artemisioides subsp. x artemisioides*	Cassia	Med shrub	Gravel, sand, loam, clay		x	x			x	
Fabaceae	*Templetonia rossii/sulcata*	Centipede Bush, Pea	Low to med shrub	Loam, clay, (can be in a variety of soils)	x	x	x	x			
Frankeniaceae	*Frankenia species*		Prostrate shrub	Sand, clay, loam, salt lake			x				
Goodeniaceae	*Dampiera lavandulacea*	Dampiera	Low shrub	Gravel (variety of soils)							x
Goodeniaceae	*Scaevola spinescens*	Currant Or Maroon Bush	Med shrub	Loam, clay,		x		x			
Haloragaceae	*Glischrocaryon aureum*	Common Popflower	Perennial herb	Gravel, sand, loam, clay							x
Hemerocallidaceae	*Dianella revoluta*	Blueberry Lily	Perennial herb	Variety of soils						x	x
Lauraceae	*Cassytha melantha*	Dodder-Laurel	Parasitic perennial herb, climber	Preferred host eucalypts						x	
Montiaceae	*Calandrinia eremaea*	Twining Purslane	Annual herb	Sand, sandy clay, loam		x	x			x	
Myrtaceae	*Anticoryne melanosperma? Check*	Mytle	Low shrub	Gravel							x
Myrtaceae	*Calytrix leschenaultii*	Star Flower	Low shrub	Gravel, sand, loam							x
Myrtaceae	*Chamelaucium pauciflorum*	Wax Flower	Med shrub	Laterite, sand							x
Myrtaceae	*Ericomyrtus serpyllifolia*	Myrtle	Low shrub	Gravel, sand							x
Myrtaceae	*Eucalyptus kondininensis*	Kondinin Blackbutt	Tree	Clay, sandy clay, loam near salt lakes	x	x	x	x			
Myrtaceae	*Eucalyptus longicornis*	Red Morrel	Tree	Loam, clay loam		x	x				
Myrtaceae	*Eucalyptus loxophleba subsp. gratiae*	Lake Grace Mallee	Mallee	Loam, sandy clay,						x	
Myrtaceae	*Eucalyptus loxophleba subsp. loxophleba*	York Gum	Tree	Loam, clay loam, sand							
Myrtaceae	*Eucalyptus myriadena*	Small Fruited Gum	Tree	Clay, sandy clay, loam	x	x	x	x	x		
Myrtaceae	*Eucalyptus neutra*	Newdegate Mallee	Mallee	Sandy clay, loams, gravel						x	

Myrtaceae	*Eucalyptus salmonophloia*	Salmon Gum	Tree	Clay, loam, sand			x				
Myrtaceae	*Eucalyptus salubris*	Gimlet	Tree	Clay, loam						x	
Myrtaceae	*Eucalyptus spathulata*	Swamp Mallet	Tree	Sandy clay near salt lakes	planted ?						
Myrtaceae	*Eucalyptus tenera*	Glazed Mallee	Mallee	Sand, clay						x	
Myrtaceae	*Leptospermum erubescens*	Roadside Teatree	Med to tall shrub	Sand, gravel							x
Myrtaceae	*Leptospermum ?nitens*	Teatree	Med to tall shrub	Sand, gravel							x
Myrtaceae	*Melaleuca acuminata*	Melaleuca	Med to tall shrub	Sandy or clayey soils						x	
Myrtaceae	*Melaleuca adnata*	Melaleuca	Med shrub	Sandy or clayey soils sometimes laterite						x	
Myrtaceae	*Melaleuca hamata/sclaena*	Broom Bush	Med to tall shrub	Clay, loam. Gravel						x	
Myrtaceae	*Melaleuca lateriflora*	Gorada	Tall shrub	Sandy clay				x		x	
Myrtaceae	*Melaleuca laxiflora*	Melaleuca	Med shrub	Sandy, clayey,						x	
Myrtaceae	*Melaleuca marginata*	Melaleuca	Med shrub	Sandy, clayey,						x	
Myrtaceae	*Melaleuca pauperiflora*	Boree	Tall shrub or tree	Clay, clay loam, loam		x	x	x			
Myrtaceae	*Melaleuca spicigera*	Melaleuca	Med shrub	Sandy or clay, gravel						x	
Myrtaceae	*Rinzia communis*	Mallee Rinzia	Low shrub	Sandy loam, gravel						x	
Myrtaceae	*Verticordia chrysantha*	Feather Flower	Low shrub	Sandy gravel							x
Poaceae	*Austrostipa elegantissima*	Feather Spear Grass	Grass	Loam, clay	x	x	x	x		x	
Poaceae	*Austrostipa species*	Spear Grass	Grass	Loam, clay			x	x		x	
Poaceae	*Neurachne alopecuroidea*	Foxtail Mulga Grass	Grass	Clay, loam, sandy gravel						x	x
Polygalaceae	*Comesperma volubile*	Love Creeper	Climber	Gravel (variety of soils in general)							x
Proteaceae	*Grevillea acuaria*	Grevillea	Low shrub	Loam, clay loam, laterite						x	
Proteaceae	*Grevillea hookeriana*	Tooth Brush Grevillea	Med shrub	Laterite							x
Proteaceae	*Grevillea huegelii*	Grevillea	Low to med shrub	Sandy clay						x	
Proteaceae	*Grevillea teretifolia*	Round Leaf Grevillea	Low to med shrub	Laterite							x
Proteaceae	*Hakea scoparia*	Hakea	Med shrub	Laterite, loam, granite							x

Proteaceae	*Isopogon scabriusculus*	Coneflower	Low to med shrub	Gravel soils							x
Proteaceae	*Persoonia brevirhachis*	Persoonia	Low to med shrub	Gravel							x
Rutaceae	*Phebalium filifolium*	Slender Phebalium	Low to med shrub	Gravel						x	x
Rutaceae	*Phebalium tuberculosum*	Phebalium	Low to med shrub	Gravel						x	x
Santalaceae	*Exocarpos aphyllus*	Leafless Ballart	Med shrub	Loam, clay loam			x				
Santalaceae	*Leptomeria preissiana*		Low to med shrub	Sand, gravel							x
Santalaceae	*Santalum acuminatum*	Quandong	Small tree to tall shrub	Sand, clay loam		x	x	x		x	
Sapindaceae	*Dodonaea viscosa*	Sticky Hop Bush	Low to med shrub	Sand. Loam, clay						x	
Scrophulariaceae	*Eremophila decipiens*	Slender Fuchsia	Low to med shrub	Sand, clay				x			
Solanaceae	*Lycium australe*	Australian Boxthorn	Med shrub	Sand, clay	x	x	x	x			
Zygophyllaceae	*Roepera apiculata*	Twinleaf, Gallweed	Low shrub	Sand, loam, clay				x			
Zygophyllaceae	*Roepera glauca*	Pale Twinleaf	Low shrub	Sand, loam, clay		x					

WEEDS SPECIES LIST

Excerpt from *Lake Grace Bushcare Project Vegetation and Flora Survey* by Anne Rick, 2022

Family	Species name	Common Name
Aizoaceae	Mesembryanthemum crystallinum	Ice Plant
Aizoaceae	Mesembryanthemum nodiflorum	Slender Iceplant
Asparagaceae	Asparagus asparagoides	Bridal Creeper
Asparagaceae	Lachenalia aloides	Soldiers
Asphodelaceae	Asphodelus fistulosus	Onion Weed
*Asteraceae	Arctotheca calendula	Cape Weed
Asteraceae	Gazania linearis	Gazania
Asteraceae	Hypochaeris radicata	Flat Weed
Asteraceae	Leontodon rhagadioloides	Cretan Weed
Asteraceae	Monoculus monstrosus	Stinking Roger
Asteraceae	Senecio vulgaris	Groundsel
Asteraceae	Sonchus oleraceus	Sowthistle
Asteraceae	Ursinia anthemoides	Ursinia
Brassicaceae	Brassica tournefortii	Wild Turnip
Brassicaceae	Sisymbrium irio	London Rocket Or Indian Hedge Mustard
Fabaceae	Medicago truncatula	Barrel Medic
Fabaceae	Trifolium arvense	Clover
Fabaceae	Vicia sativa	Vetch
Gentianaceae	Centaurium erythraea	Common Centaury
Geraniaceae	Erodium botrys	Corkscrews
Iridaceae	Freesia alba x leichtlinii	Freezia
Iridaceae	Moraea setifolia	Thread Iris
*Iridaceae	Romulea rosea	Guildford Grass
*Malvaceae	Malva parviflora	Marshmallow
*Oxalidaceae	Oxalis pes-caprae	Soursob

Papaveraceae	Fumaria capreolata	Fumitory
Plumbaginaceae	Limonium lobatum	Statice
*Poaceae	Avena fatua/barbata	Wild Oats Or Bearded Oat
Poaceae	Briza maxima	Blowfly Grass
Poaceae	Briza minor	Shivery Grass
Poaceae	Bromus species	Brome Grass
Poaceae	Ehrharta calycina	Veld Grass
Poaceae	Hordeum leporinum	Barley Grass
Poaceae	Lolium rigidum	Ryegrass
Poaceae	Pentameris airoides	False Hair Grass
Primulaceae	Lysimachia arvensis	Pimpernel
Scrophulariaceae	Zaluzianskya divaricata	Zed Weed

REFERENCES

Rick, Anne - *Lake Grace Bushcare Project Vegetation and Flora Survey*, 2022

CONSERVATION CODES FOR WESTERN AUSTRALIAN FLORA AND FAUNA
Last updated 3 January 2019, www.dpaw.wa,gov.au

Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the Biodiversity Conservation Act 2016.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:
T THREATENED SPECIES
Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act).
Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna.
Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora.
The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.
CR Critically endangered species
Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1) (a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.

EN Endangered species
Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.

VU Vulnerable species
Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the

Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora. Conservation codes for Western Australian flora and fauna

EXTINCT SPECIES

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act). Published as presumed extinct under schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for extinct fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for extinct flora.

EW Extinct in the wild species

Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

SPECIALLY PROTECTED SPECIES

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published

as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.

P PRIORITY SPECIES

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

2 Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

3 Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

[1] The definition of flora includes algae, fungi and lichens

[2] Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

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