TASMANIAN LAND CONSERVANCY

Daisy Dell Reserve

Background Report

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Front Image: Daisy Dell wetland © Chris Crerar

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Acknowledgements

The Tasmanian Land Conservancy acknowledges the traditional owners of the Daisy Dell Reserve and Cradle Valley region. We pay respect to elders past and present and acknowledge today's Tasmanian Aboriginal community.

The purchase of the Daisy Dell Reserve was made possible by the vision of Peter C. Sims OAM and Dr John Wilson OAM, and the donation of significant funds towards the purchase by Peter and John and other adjoining landholders: Dr Megan Clark AC, Trent Hutchinson and Dr Gary Clark.

A public fundraising campaign raised the remaining funds needed to secure the purchase of this Reserve and its long-term management. Our sincere thanks go to the many donors that contributed to this campaign and their incredible generosity. As part of the fundraising effort a discovery day held on site in February 2017 attracted 80 visitors, and its success was due to the many volunteers who helped showcase the property especially: Peter Sims and John Wilson, Sib and Keith Corbett, Erin Harris, Nick Clarke and Will Kruimink. We also particularly thank John Davies for his invaluable contributions towards flora surveys and vegetation mapping of the new Daisy Dell Reserve including recording new populations of the rare mountain purplepea (*Hovea montana*), and members of the Central North Field Naturalists who assisted with establishing ecological monitoring on the Reserve in 2018.

BACKGROUND

The Tasmanian Land Conservancy

The Tasmanian Land Conservancy (TLC) is a non-profit, non-political, private organisation that works towards achieving sustainability and biodiversity conservation in Tasmania.

TLC 2050 Mission

In partnership with other organisations, communities, individuals and governments, the TLC will:

- *Take a lead role in building a landscape scale approach to conservation including a world-class system of reserves*
- *Demonstrate excellence in management for nature conservation.*
- *Contribute to Tasmania becoming a centre for knowledge for nature conservation and planning.*
- *Develop and implement innovative mechanisms for nature conservation.*
- *Provide opportunities and mechanisms for communities and individuals to achieve nature conservation.*
- *Demonstrate organisational leadership through exceptional governance, a positive working environment and financial sustainability.*

This background report, and particularly the Daisy Dell Reserve management plan and the implementation of the strategies and actions within it, including monitoring and reporting, contribute to the TLC achieving its mission.

INTRODUCTION

Fundraising Campaign

The Reserve was purchased by the TLC in 2017, following significant financial support toward its acquisition by adjoining landholders and a public fundraising campaign (Appendix 1) to secure the remaining funds necessary. The public campaign commenced in November 2016 with a target of $490,000 ($230,000 to complete purchase and $260,000 for long-term management into the TLC Foundation). Over 720 people contributed financially to the campaign. The three neighbours; Megan Clark and Trent Hutchinson, Peter Sims and John Wilson, and Gary Clark all donated significant towards purchase, totally $230,000 between them. The David and Jennie Sutherland Foundation also generously donated to the project with a significant gift. An event held at Launceston's Design Centre on 29 September 2017 celebrated the success of the campaign. Both Peter Sims and John Wilson, and Gary Clark's property are gifted to the TLC in their Wills and will build on the existing reserve.

Location and Context

The Daisy Dell Reserve (the Reserve) is 104.9 ha of land nestled between Moina and the Cradle Valley in north-west Tasmania. The Reserve is situated on the Cradle Mountain Road about 8.6 km north-west of the Cradle Mountain village and approximately 14 km east of the TLCs Vale of Belvoir Reserve.

The Reserve adjoins the *Iris Farm Private Nature Reserve* (287 ha), as well as other private properties being managed primarily for conservation. It is also adjoined by an informal reserve on State Forest, formerly designated as a reserve called 'Stormont', which in turn connects with the Black Bluff and Vale of Belvoir Conservation Areas (see Figure 1).

To the northeast, another area of public land containing Bridal Veil Falls is designated as 'future potential production forest', but due to the steep topography, may remain as land managed for conservation.

To the southwest is the iconic Cradle Mountain-Lake St Clair National Park and Tasmanian Wilderness World Heritage Area, flanked by the Dove River Conservation Area and further areas of 'future potential production forest'.

Access

The Reserve has approximately 675 m of direct frontage to Cradle Mountain Road along its southern boundary. A legally gazetted road reserve bisects the property from south-west to north-east, and two formed all-weather vehicle tracks pass through the Reserve from Cradle Mountain Road – one providing access to Iris Farm Reserve (via the north-west corner) and the other providing access to an adjoining property to the north-east (via the north-east corner). A legal right-of-way is now in place (see Figure 2).

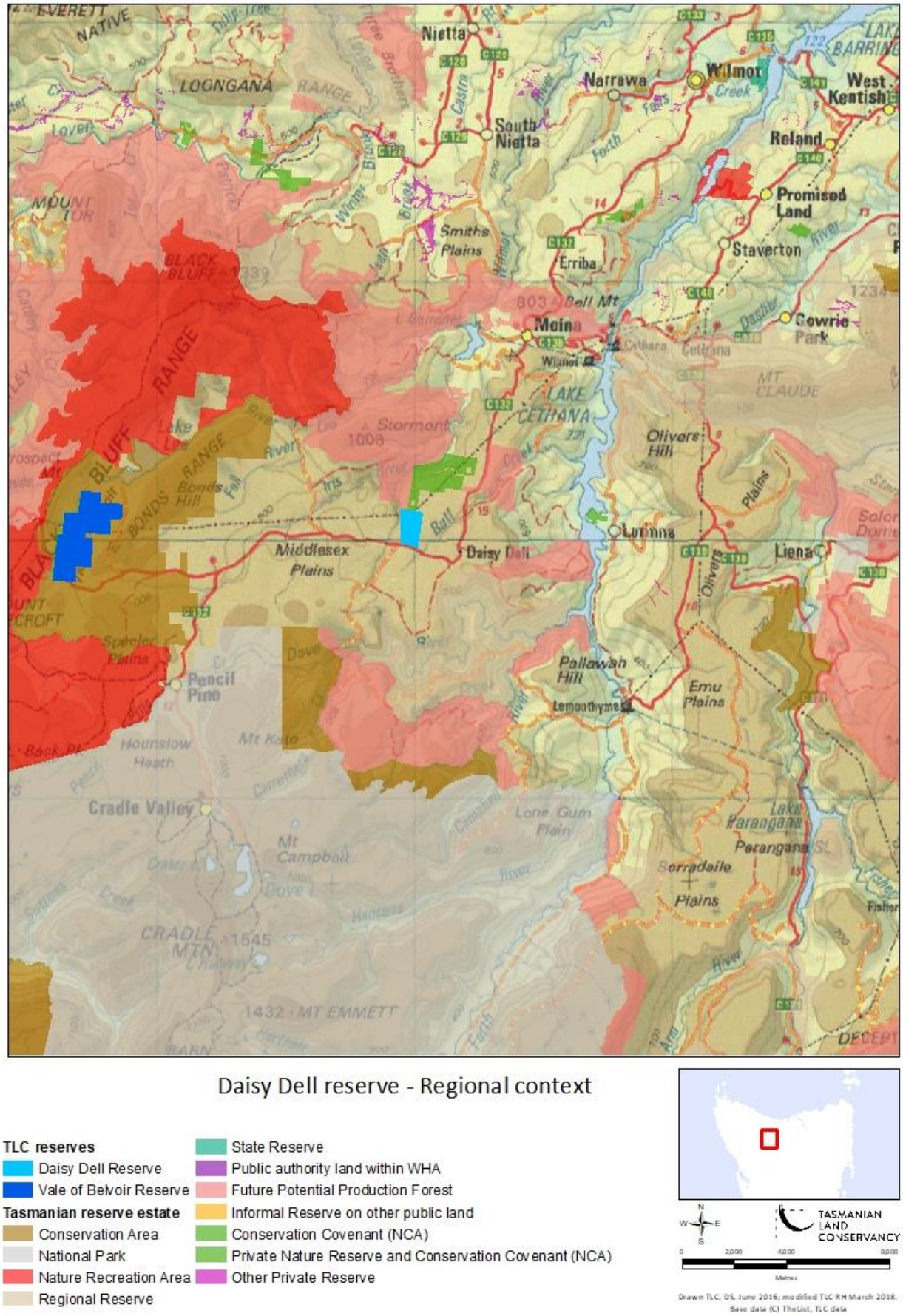


Figure 1 Location and context of Daisy Dell Reserve

Legal Status

Daisy Dell Reserve is private freehold land in a single title (PID 3131591; C/T Volume 119439 Folio 2). The Reserve meets the objectives of the International Union for Conservation of Nature (IUCN) Category IV – Habitat/species management area, the primary objective of which is to maintain, conserve and restore species and habitats.

A conservation covenant under the *Nature Conservation Act 2002* will be registered over most of the Reserve. The covenant will require the owner of the Reserve to manage the land for conservation and to prevent degradation of its natural values. An area of land may be excluded from the covenant to provide for future building or placement of built infrastructure on the site. A small shelter constructed by D Stuart on the SW corner of the wetlands will need to be assessed in relation to the covenant.

Several species listed as threatened under Australian and Tasmanian legislation occur on the Reserve and a range of other threatened species may occupy or utilise the Reserve. Constraints may apply to activities which could adversely affect these species. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) is the Australian Government's key piece of legislation to protect threatened species and ecological communities. In Tasmania the *Threatened Species Protection Act 1995 (TSPA)*, *Nature Conservation Act 2002*, and *Forest Practices Act 1985* provide protective mechanisms for threatened species and ecological communities.

Several Aboriginal cultural sites such as mia-mia and shelter trees are known to exist or have existed, however these have not been formally registered on the Tasmanian Aboriginal Heritage Site Register to date. The adjacent Iris Farm Reserve has nine sites registered by Aboriginal Heritage Tasmania.

High voltage transmission lines pass through the north-west corner of the Reserve and the corridor through which they pass is subject to a Statutory Easement 60 m wide under Section 11 of the *Electricity Wayleaves and Easements Act 2000*. The easement has been cleared and will continue to be maintained for access to the electricity assets.

Stakeholders

Key stakeholders include:

- Neighbouring landowners especially Iris Farm Private Nature Reserve and others who contributed funds toward the purchase of the Reserve;
- the Private Land Conservation Program (DPIPWE), which administers conservation covenants in Tasmania;
- Local Tasmanian Aboriginal communities and Aboriginal Heritage Tasmania; and
- TLC supporters.

The TLC seeks to engage with all interested parties when preparing reserve management documents.

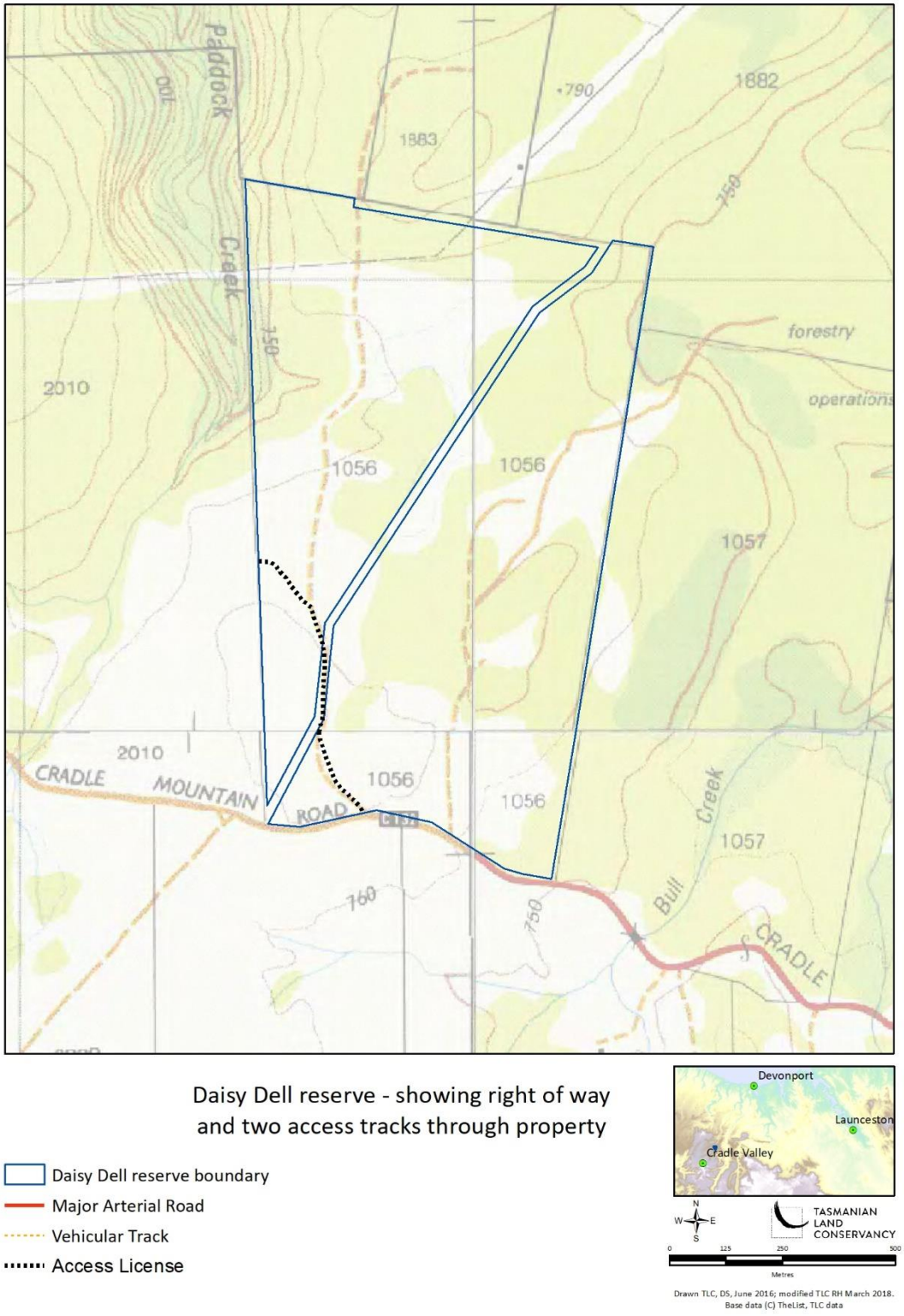


Figure 2 Daisy Dell Reserve – right of way and access tracks

CULTURAL VALUES AND HISTORY

This area features part of an ancient highway linking the ochre mines of Mt Vandyke (tarerneemer) and the Gog Range (tongnunggerlare) to the west, with the open grasslands of Daisy Dell, Middlesex, (moweverlinneloweler) the Vale of Belvoir (lelarere or loweweleee) and Surrey Hills (tonenengy)(Plomley 2008; Ryan 2012, Appendix 3). It is thought that these areas were used for summer hunting and also for access by neighbouring nations to some of the most important ochre mines on the island for ceremonial purposes. Based on the Aboriginal knowledge of detailed use of fire as a landscape management tool, frequent low intensity fires are likely to have been used each year to maintain both access and green pick for the favoured herbivores across this ancient walking route.

The local clan was Noeteeler – one of several clans in the 'North Nation' that stretched from the ochre mines in the east, to Surrey Hills in the west, and down to the coast. They had traditional rights over the resources of the area, but evidently other clans and nations had reciprocal rights.

Physical evidence of the use of the area was discovered by John Wilson and Peter Sims when surveying the area:

> *"In 2009 when clear-felling and plantation developments were imminent on this and an adjoining property, Peter and I stumbled upon the fragile remains of an Aboriginal mia-mia on a slight mound on the northern perimeter of the wetlands. The mia-mia was confirmed by elders of the local Six Rivers Tasmanian Aboriginal Community and the Liapoota Aboriginal Community, and together we called for the area to be fully assessed for Aboriginal heritage before any logging and land-disturbances occurred and for the Aboriginal heritage values to then be protected. Unfortunately, the mia-mia and a nearby shelter tree were destroyed by racists/vandals soon after our discovery was made public, which was devastating to us."*

This act of vandalism was reported in the local paper but unfortunately, all that remains of this unique element of history is a photo (Kempton 2009; Figure 3). The mia-mia was sited such that it gave an excellent commanding view of the closely grazed marsupial lawn.

Early European settlers are likely to have used the Aboriginal paths and highways to access these sub-alpine pastures for their own domestic stock, and likely used similar burning practices to manage the native pastures as well. The first major European settlement in the area was the Middlesex Plains property – comprising 4 square miles or just over 1000 hectares - which was granted to the Van Diemen's Land Company in the early 1800's. The company has changed hands several times but still retains extensive rights over the property. These properties predominately ran cattle, as the region provided good summer grazing. Homesteads were established in the area: the Daisy Dell Station and Middlesex Plains Station (Haygarth 1998). These homesteads are still standing: the Daisy Dell Station

homestead is situated just south east of the Reserve and is now occupied by the NW Hounds and Hunters Club.

The other key industry in the area was logging. A number of mills were established and produced a range of solid wood products, mainly from the highly prized gumtop stringy (E. *delegatensis*) but also other eucalypts and rainforest species.

The old Daisy Dell Oval, earlier known as Shinbark Oval, just encroaches on the southwest corner of the property. This was the site of many matches between families from the farms at Wilmot and in the logging industry. Unfortunately, when the Cradle Mountain Highway was upgraded in the 1970s, the route ran straight through the oval, and also destroyed a locally celebrated large Aboriginal shelter tree called the Count Strezleki Tree.

Figure 3 Aboriginal mia-mia found by John Wilson and Peter Sims in the northeast corner of the grassy wetlands in 2009. It is likely that this structure was close to two hundred years old.

Management History

The open grassy area to the south and middle of the Reserve has been used as grazing lands for native herbivores since time immemorial and more recently by introduced herbivores such as rabbit and fallow deer. The area has not been grazed by domestic stock since at least 2007. Due to the harsh winter climate and the prevalence of native herbivores, it is unlikely that settled horticulture was

practiced but fire would have been used as a management tool throughout the area's history: first by Aboriginal 'fire-stick farming', then by graziers seeking green pick for their introduced stock.

Selective logging of the forests and woodland has occurred in the area and in the past 35 years, timber for wood chipping and firewood has been harvested from the area, with most firewood collection concentrated near the highway.

Apart from the mia-mia, no other surviving Aboriginal structures are known in the area, although there is evidence of past habitation in hollow tree shelters and rock overhangs.

CLIMATE

Daisy Dell is part of an extensive sub-alpine plateau at around 800m asl, where snow can be encountered any time of the year. It is well-known for its impenetrable fogs and cold drizzly days (John Wilson pers. Com. 2017

The Reserve has a temperate climate and experiences a prevailing westerly air flow. It lies midway between the nearest Bureau of Meteorology weather stations at Cradle Valley (Waldheim), 13.3 km away at 900m asl, and Moina, 7 km away at 640m asl. Monthly rainfall data is available for both stations, but monthly temperature data is only available for Cradle Valley (see tables 2-3).

Table 1 Weather statistics, Cradle Valley (95005) and Moina (91064)

Statistic	Cradle Valley (96005)	Moina (91064
Average annual rainfall (mm)	2842	1825
Average rainy days	246	220
Average maximum temp. (0C)	10.5	13.9
Average minimum temp. (0C)	2.8	3.4

Table 2 Average monthly rainfall

Rainfall (mm)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Station no. 96005 (Cradle Valley – Waldheim)												
Mean	148.8	120.5	148.1	204.1	276.4	272.3	315.7	301.7	269.4	252.4	205.1	183.6
Median	137.3	102.9	133.4	194.2	265.0	264.8	289.2	301.8	250.6	236.1	198.9	165.1
Station no. 91064 (Moina)												
Mean	78.0	91.3	92.8	133.2	167.7	195.2	238.7	224.7	178.0	152.1	122.2	109.2
Median	66.0	83.5	78.1	125.6	151.3	198.0	226.7	218.1	170.6	139.6	114.1	98.3

Table 3 Monthly mean, max. and min temperatures recorded at station no. 96005 (Cradle Valley Waldheim)

Temperature (0C)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	16.6	17.0	14.4	10.8	7.9	5.1	4.6	4.9	7.5	10.5	12.8	15.2
Highest Daily	30.0	30.57	25.1	20.07	17.8	11.1	11.5	12.7	17.9	19.9	22.0	27.0
Lowest Daily	4.0	4.4	4.03	1.92	0.03	-1.3	-0.2	-1.5	-1.0	1.0	2.7	2.8

NATURAL VALUES

Geology, Geomorphology and Soils

The Reserve (Figure 2) lies on Tertiary basalt, resulting in relatively fertile and well drained soils. The high point of the Reserve is on a knoll in the south of the property, at about 775 m asl, and the low point is in the Weaning Paddock Creek ravine near the north-west corner, at about 725m asl. The terrain is almost flat through the centre of the Reserve with relatively gentle slopes elsewhere, except in the ravine in the north-west corner, where steep grades of up to 1:1.5 occur.

Hydrology

Moorlands in the central north of the Reserve form the catchment divide between small creeks draining west into Weaning Paddock Creek, and those draining eastwards into Bull Creek. Despite the naturally well drained nature of soils derived from basalt, these areas have developed a marshy character, probably with organic enrichment due the sphagnum. This character, combined with the flat topography, encourages frequent, harsh frosts and limits tree survival. This area provides a steady, filtered supply of water to the creeks throughout much of the year.

Unfortunately, these seasonally wet areas have been damaged by large heavy vehicle traffic that have left deep ruts, resulting in a changed hydrology and probably vegetation communities as well. The areas are regenerating from the damage, but the hydrological damage will take many decades or longer to heal naturally.

Weaning Paddock Creek drains to the north via the Iris River and thence into Lake Gairdner. This impoundment also captures the Lea River and both rivers are diverted to the Wilmot Power Station that discharges into Lake Cethana, with overflow draining into the Wilmot River. Small areas to the east of the Reserve drain via ephemeral creek-lines into Bull Creek, which then flows northeast via Bridal Veil Falls into Lake Cethana.

Vegetation

The Reserve contains a range of vegetation types, including temperate rainforest communities, dry and wet eucalypt forest, threatened highland *Poa* grasslands, sedgelands and wetlands (see Table 6 and Figure 3).

Highland *Poa* grasslands occur in the south west corner, contiguous with the quite expansive Daisy Dell Oval grasslands that are rich in threatened grassland herbs such as *Leucochrysum albicans* var *tricolor* and *Rhodanthe anthemoides*. These areas may require management to prevent encroachment and conversion to shrubland, with associated loss of species diversity and habitats (J. Davies, *pers. comm.*).

These grasslands give way to *E. delegatensis* woodlands (DDE) with grassy understorey in the south, but gradually becoming richer in shrubs and with a denser canopy until in the northern areas, the understorey is rich in broadleaf shrubs and the canopy is closed. The woodlands are richer in *E. dalrympleana* than *E. delegatensis,* but as the canopy closes, *E. delegatensis* dominates and is accompanied by an increasing proportion of rainforest species such as *Nothofagus cunninghamii* and *Phyllocladus asplenifolius.* All of these woodlands and forests have been repeatedly selectively logged, and disturbed by timber-getting, including for firewood.

In the lower lying western side of the Reserve, the forests are dominated by old growth *Nothofagus* and have a variable mid-storey of *Leptospermum*, *Acacia* and diverse broadleaf shrubs. Occasional emergent eucalypts attest to the size of the original old-growth eucalypts that would have dominated the upper canopy prior to logging.

The vegetation in the open areas in the mid north of the property is controlled by drainage of both water and frost, and although they have been mapped in the past as wetlands, they are remapped here as the 'rare' moorland community Highland grassy sedgeland. These areas are quite unusual, in that they are seasonally inundated, but are convex, rather than concave. As mentioned in the hydrology section, they provide a steady outflow to the creeks.

Table 6. Vegetation communities mapped at Daisy Dell Reserve (TASVEG 3.0)

Vegetation community	TASVEG code	Approx. Area (ha)	Conservation status (NCA 2002)
Eucalyptus delegatensis dry forest	DDE	54.8	Not threatened
Eucalyptus delegatensis wet forest over *Leptosperum*	WDL	5.3	Not threatened
Eucalyptus delegatensis wet forest over rainforest	WDR	14.6	Not threatened
Highland *Poa* grassland	GPH	7.3	threatened
Highland grassy sedgeland	MGH	9.6	rare
Tall *Nothofagus* rainforest	RMT	14.2	Not threatened
Easement for infrastructure	FPE	1.5	Not threatened

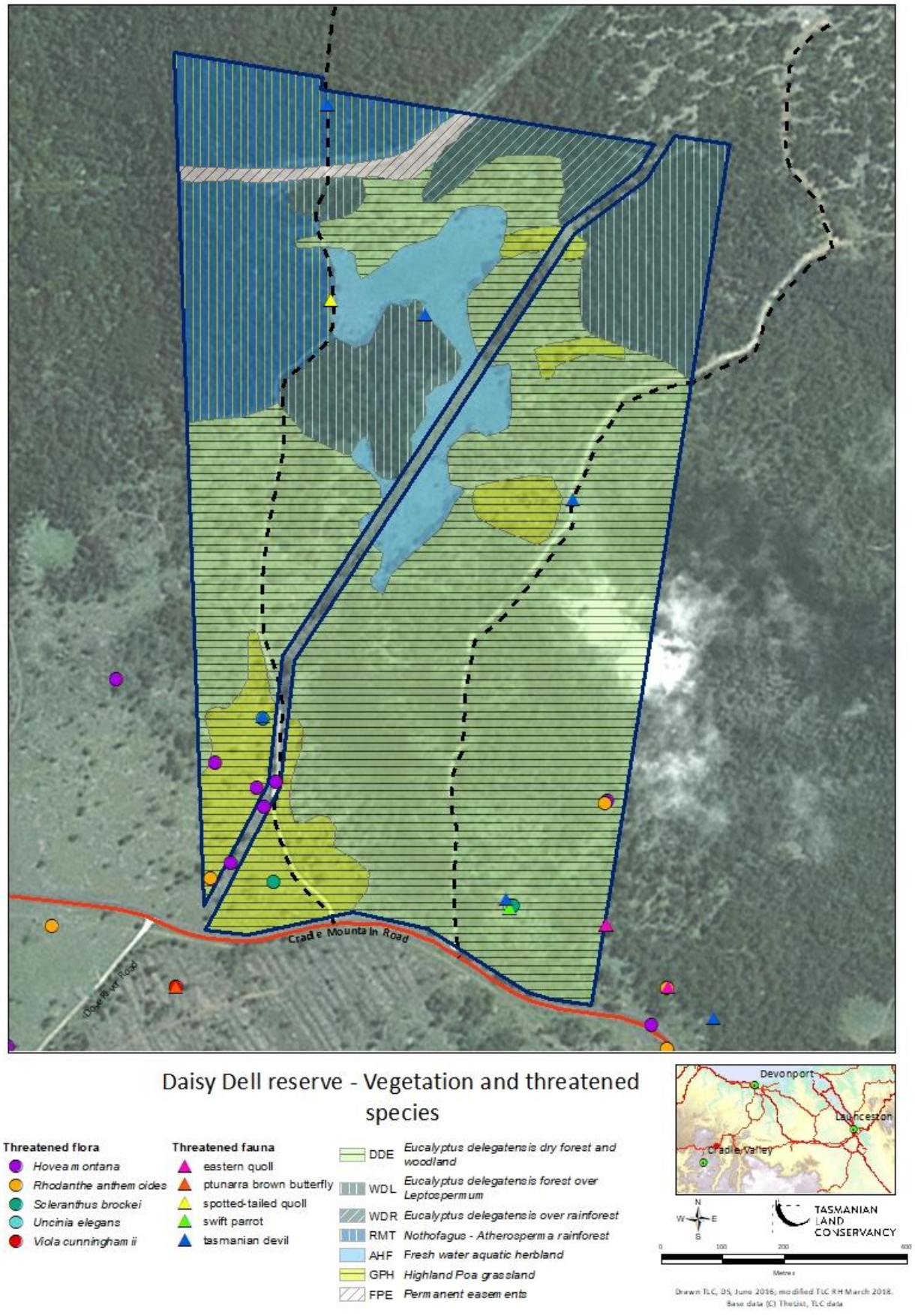


Figure 3 Vegetation and threatened species records on and near Daisy Dell Reserve.

Flora

A dedicated flora and vegetation mapping survey was undertaken at Daisy Dell by botanist John Davies in March 2017. In addition, twelve flora monitoring transects were established in February 2018 as part of TLC's long-term ecological program (Fig 4).

As would be expected from a reserve that contains such a diversity of habitat types, Daisy Dell supports a wide range of flora species. Surveys to date have recorded a total of 161 vascular plant species from 46 families (see Appendix 2). This includes five species listed as rare under the Tasmanian *Threatened Species Protection Act 1995,* and 14 introduced taxa.

No surveys have been undertaken for non-vascular species, but the wet forest and sedgeland areas of the Reserve provide excellent habitat for mosses and liverworts, which require moist environments. There are also a diversity of fungi and slime moulds present on the property.

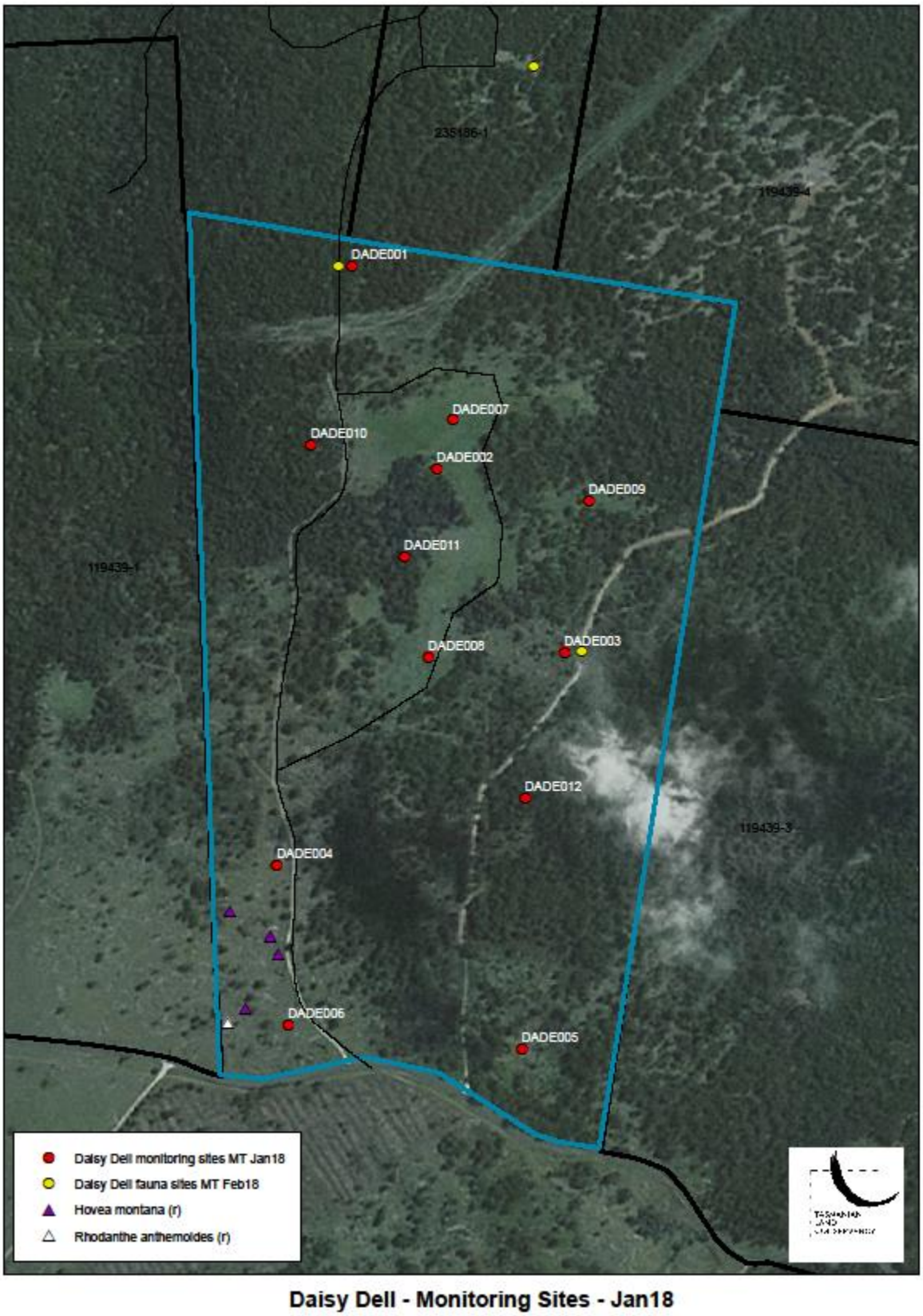
Fauna

Fauna surveys undertaken at Daisy Dell to date include two deployments of camera traps and opportunistic records during site visits. Invertebrate traps were installed in February 2018, however the results of these surveys are not yet available.

Camera trapping identified 11 species of mammals, including the threatened carnivorous spotted-tailed quoll and Tasmanian devil as well as Bennett's wallabies, Tasmanian pademelons, wombats, echidnas and brush-tailed possums (Appendix 2). Daisy Dell is likely to provide habitat for a range of smaller mammals not detected by the cameras, such as the swamp rat and dusky antechinus as well as insectivorous micro-bats.

Twenty-four species of birds have been recorded by CNFN ornithologist R Donaghey, however, these have mostly been incidental observations and no targeted surveys have been undertaken for this group. The property would provide year-round habitat, however, many nectivorous, frugivorous and insectivorous species may occur as seasonal or opportunistic migrants during the warmer months. Examples of this strategy include the altitudinal migrant flame robin, and the threatened swift parrot, which was recorded on site in small flocks during February 2018.

Despite no targeted surveys, three of Tasmania's eleven frog species have been recorded calling at the site, including the endemic *Crinia tasmaniensis.* Only one species of reptile, the glossy grass skink *Pseudomoia rawlinsoni,* has been recorded, however tiger and copperhead snakes *Notechis scutatus* and *Austrelaps superbus* are frequently observed on the neighbouring Iris Farm Reserve.



Daisy Dell - Monitoring Sites - Jan18

Figure 4 Long-term ecological monitoring sites installed on Daisy Dell Reserve in Jan 2018.

Threatened and Priority Species

Threatened species known or predicted to occur within 10 km are listed in Table 5, along with their known habitat associations and likelihood of occurrence at the Reserve. These species lists are based on the results of field surveys at the Reserve, as well as searches of the Tasmanian *Natural Values Atlas* (https://www.naturalvaluesatlas.tas.gov.au/, searched 18/02/2018) and the *Protected Matters Search Tool* (http://www.environment.gov.au/epbc/protected-matters-search-tool, report generated 21/02/2018). Two threatened vegetation communities, five threatened flora and five threatened fauna species have been recorded on site to date.

Highland grasslands and sedgelands in Tasmania typically support a high abundance of marsupial herbivores and this in turn supports high populations of Tasmania's threatened marsupial carnivores. Grasslands and grassy woodlands on the Reserve also have the potential to support populations of the vulnerable ptunarra brown butterfly (*Oreixenica ptunarra* subsp. *ptunarra*) and tussock skink (*Pseudemoia pagenstecheri*), as well as a range of threatened herbs, orchids and shrubs.

Table 5 Threatened species recorded or with the potential to occur at Daisy Dell Reserve

Scientific name	Common name	Conservation status*	Likelihood of occurrence
FAUNA			
BIRDS			
Aquila audax subsp. fleayi	Tas. wedge-tailed eagle	end., e, E	**Recorded on site** Unlikely to breed on site but provides foraging and roosting habitat.
Accipiter novaehollandiae	grey goshawk	e	**Recorded on site** Possibly able to breed on site and provides foraging and roosting habitat.
Lathamus discolor	swift parrot	e, CE	**Recorded on site**. Unlikely to breed on site but would provide post-breeding foraging and roosting habitat.
Tyto novaehollandiae subsp. castanops	masked owl	end., e, V	**Possible.** Suitable foraging habitat present, potentially suitable breeding habitat although large hollows are limited.
MAMMALS			
Dasyurus maculatus subsp. maculatus	spotted-tailed quoll	r, V	**Recorded** on site. Suitable foraging and breeding habitat is present, and the connectivity of the site to other areas of vegetation is critical to this wide-ranging species.
Sarcophilus harrisii	Tasmanian devil	end., e, E	**Recorded** on site. Suitable foraging and breeding habitat is present, and the connectivity of the site to other areas of vegetation is critical to this wide-ranging species.
Dasyurus viverrinus	eastern quoll	e	**Likely to occur**. Suitable foraging and breeding habitat is present, and there are records of the species adjacent to the eastern property boundary.
REPTILES			
Pseudemoia pagenstecheri	tussock skink	v	**Possible**: suitable habitat exists in grassland areas, species recorded within locality.
INVERTEBRATES			

Oreixenica ptunarra subsp. ptunarra	ptunarra brown butterfly	E	**Possible.** Preferred *Poa* substrates are limited but not absent. There is a record of the species adjacent to the property, between Cradle Mountain and Dove River Roads.
FLORA			
SHRUBS			
Hovea montana	mountain purplepea	r	**Recorded** on site**.**
Muehlenbeckia axillaris	matted lignum	r	**Likely.** There are records of the species approximately 500m west of the reserve, and potentially suitable habitat on site.
Rhytidosporum inconspicuum	alpine appleberry	e	**Possible.** Potentially suitable habitat present, and species is inconspicuous. There are several records of the species in heath approximately 4 km to the west of the reserve.
GRASSES AND SEDGES			
Australopyrum velutinum	velvet wheatgrass	r	**Recorded** on site.
ORCHIDS			
Pterostylis pratensis	Liawenee greenhood	v, V	**Possible.** Potentially suitable habitat in areas of highland grassland. The closest record of the species is approx. 7 km to the southwest.
HERBS AND GROUNDCOVERS			
Rhodanthe anthemoides	chamomile sunray	r	**Recorded** on site, in grassland areas in the south-west corner of the reserve, and on the south-eastern reserve border in grassy woodland in 1998.
Scleranthus brockiei	mountain knawel	r	**Recorded** in grassy woodlands along the south-east border.
Uncinia elegans	handsome hooksedge	r	**Recorded** in grassy woodland in the south-west of the reserve.
Brachyscome radicata	spreading daisy	r	**Possible**. Suitable habitat in highland grassland and grassy woodlands in the south of the reserve. The species has been recorded approx. 7 km to the southwest of the reserve.
Viola cunninghamii	alpine violet	r	**Likely.** Suitable habitat in grassland areas and numerous records in the locality, including directly across from the reserve on Cradle Mountain Road.
Colobanthus curtisiae	Curtis' colobanth	r, V	**Possible.** Inconspicuous species, easily missed. Potentially suitable habitat in grassland and grassy woodland habitats in the south of the reserve.
Leucochrysum albicans subsp. tricolor	grassland paperdaisy	e, E	**Possible**. Suitable habitat in highland grassland and grassy woodlands in the south of the reserve. Known population at the Daisy Dell Oval and the Vale of Belvoir Reserve 14 km to the west.
Thismia rodwayi	fairy lanterns	r	**Possible.** Potentially suitable habitat occurs within *E. delegatensis* wet forest. The species has been recorded approx. 2 km NE from the reserve

***end.** – endemic; **r,v,e** – rare, vulnerable and endangered under the Tasmanian Threatened Species Protection Act 1995; **V, E, CE** – vulnerable, endangered and critically endangered under the Australian *Environment Protection and Biodiversity Conservation Act 1999*

Pests, Weeds and Disease

Four species of introduced mammal, the feral cat *Felis catus,* dog *Canis familiaris,* fallow deer *Dama dama* and rabbit *Oryctolagus cuniculus* have been recorded from the property. Although not yet detected, it is likely that black rat *Rattus rattus* and house mice *Mus musculus* also occur there.

Predation by feral cats is listed as a key threatening process under federal legislation, in recognition of the seriousness of the threat they pose to native fauna species. In addition to direct impacts, feral cats also compete with native carnivores and can transmit diseases to wildlife, humans and livestock. Cats are the primary host of the *Toxoplasma gouldii* and *Sarcocystitis* parasites, among others. Many marsupials appear to be particularly susceptible to toxoplasmosis, the disease which may result from infection with *T. gouldii,* with species such as the eastern barred bandicoot usually dying within 2-3 weeks of infection. At least two individual cats (one ginger, one tabby, see Image 1) are present on the reserve, with 13 detections in 288 camera trap nights to date, with most activity detected at monitoring site DADE001.

Image 1 Feral cats and domestic dogs detected on the property during monitoring surveys in January 2018.

Two large, un-collared dogs were detected on the Reserve on the 17th and 18th January 2018 (Image 1). Both were in good condition, and at least one has been identified as a pet from the neighbouring properties.

Introduced herbivores such as deer and rabbits can have profound impacts on the structure and diversity of native vegetation communities by increasing grazing and browsing pressure, as well as by trampling. When present in high densities, they can outcompete native herbivores for food resources. Rabbit densities have generally decreased since the introduction of calicivirus, but populations respond to seasonal conditions and can increase rapidly in response to vegetation growth. Fallow deer were introduced into Tasmania in the 1830s for hunting, but historically were limited to the Midlands and Great Lakes regions. The Daisy Dell area is well outside this traditional range and deer have only recently begun to be detected in the area. Deer were not detected on camera surveys, but scats and prints have been observed at the reserve. It is possible that they are not present all year round, retreating to more lowland areas in winter, though this is yet to be determined.

Fifteen introduced plant species have been recorded in surveys to date, mostly comprising pasture weeds, introduced grasses, flatweeds and clovers. Shining gum *E. nitens,* which has been introduced to Tasmania as a plantation species, has also been planted close to the entrance gate off Cradle Mountain Road. Spear thistles *Cirsium vulgare* have been removed each year since 2002 along the electricity easement. A single mature gorse *Ulex europaeus* was located and treated in late 2017. Ragwort *Senecio jacobaea* has been detected in the area, though not in the Reserve, in the last 3-4 years. Incursions of this species could therefore occur, particularly following disturbances such as wildfire.

There has been no report of diseases or pathogens such as root rot *Phytophthora cinnamomi,* myrtle rust *Puccinia psidii* or chytrid fungus *Batrachochytrium dendrobatidis* on the Reserve. As native ecosystems in many areas are under threat from weeds, pests and disease, strict hygiene practices should be implemented. These include ensuring that all vehicles, boots, clothes and equipment entering the property are clean, dry and free of seeds and soil.

Scientific Research Summary

Apart from species surveys undertaken through acquisition, no scientific research is known to have been conducted at Daisy Dell Reserve to-date.

MANAGEMENT PLAN OVERVIEW

This background document supports the Daisy Reserve Management Plan 2018-2022 (Tasmanian Land Conservancy 2018).

VISION	Daisy Dell Reserve is managed for its grassy wetland and highland grassland communities.

CONSERVATION TARGET	**GOAL**
Highland grassland and open woodland	The 2017 condition of the highland grasslands and open woodland is maintained or improved
Wetland ecosystem	The 2017 condition of the wetland ecosystem is maintained or improved
Sub-alpine forests	The 2017 condition of the sub-alpine forests is maintained or improved
SOCIAL TARGET	**GOAL**
People's connection to nature	People's connection to TLCs reserves and nature is maintained or enhanced
STRATEGIES	**OBJECTIVES**
Access management	Access to the property supports the values of the Reserve
Fire management	Minimise wildfire risk to the Reserve and to surrounding communities
Community engagement	Provide opportunities for people and communities to experience nature
Neighbour relations	Establish and maintain cooperative relationships with neighbours to address and manage mutual issues
Annual reserve assessment	Assess known threats and report any potential new threats immediately

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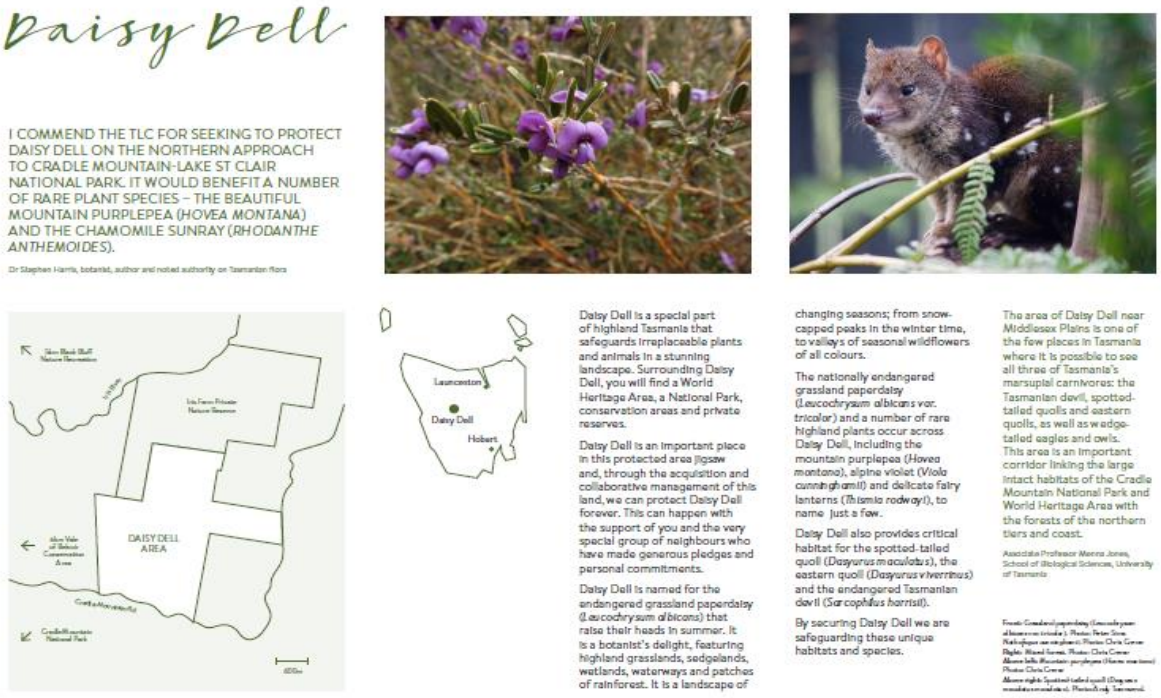
Acronyms and Abbreviations

CNFN	Central North Field Naturalists
DPIPWE	Tasmanian Government Department of Primary Industries, Parks, Water and Environment
EPBCA	Australian *Environment Protection and Biodiversity Conservation Act 1999*
IUCN	International Union for Conservation of Nature
NC Act	Tasmanian *Nature Conservation Act 2002*
NVA	Natural Values Atlas database (DPIPWE)
PWS	Tasmania Parks and Wildlife Service
TASI	Tasmanian Aboriginal Site Index - since replaced as Aboriginal Heritage Register (AHR)
TAHO	Tasmanian Aboriginal Heritage Office - now known as Aboriginal Heritage Tasmania (AHT)
TASVEG	Tasmanian Vegetation Monitoring and Mapping Program (TASVEG 3.0)
TFS	Tasmania Fire Service
TLC	Tasmanian Land Conservancy
TSPA	Tasmanian *Threatened Species Protection Act 1995*
TWWHA	Tasmanian Wilderness World Heritage Area
UTAS	University of Tasmania

Appendix 1: Fundraising Campaign Brochure



Appendix 2: Flora and Fauna Recorded on the Reserve in 2018

Table A 1 Flora species list

Family	Scientific name	Common name	*Conservation Status
Apiaceae	*Oreomyrrhis eriopoda*	australian caraway	
	Oreomyrrhis sessiliflora	carroty caraway	
Araliaceae	*Hydrocotyle hirta*	hairy pennywort	
	Hydrocotyle sibthorpioides	shining pennywort	
	Hydrocotyle tripartita	slender pennywort	
	Trachymene humilis	alpine laceflower	
	Trachymene humilis subsp. breviscapa	short alpine laceflower	
Aspleniaceae	*Asplenium bulbiferum subsp. gracillimum*	mother spleenwort	
	Asplenium flabellifolium	necklace fern	
Asteraceae	*Argyrotegium fordianum*	soft cottonleaf	r
	Argyrotegium mackayi	white cottonleaf	
	Brachyscome spathulata	spoonleaf daisy	
	Cassinia aculeata	common dollybush	
	Cirsium vulgare	spear thistle	i
	Coronidium scorpioides	curling everlasting	
	Cotula alpina	alpine buttons	
	Erigeron tasmanicus	tasman alpine fleabane	i
	Euchiton japonicus	common cottonleaf	
	Euchiton traversii	mat cottonleaf	
	Hypochaeris radicata	rough catsear	i
	Leptorhynchos squamatus	scaly buttons	
	Microseris lanceolata	highland yam daisy	
	Olearia algida	alpine daisybush	
	Olearia phlogopappa subsp. phlogopappa	coast dusty daisybush	
	Pappochroma bellidioides	hairy mountaindaisy	
	Rhodanthe anthemoides	chamomile sunray	r
	Senecio gunnii	mountain fireweed	
	Senecio minimus	shrubby fireweed	
	Solenogyne gunnii	hairy flat-herb	
	Xerochrysum subundulatum	orange paperdaisy	
Atherospermataceae	*Atherosperma moschatum*	sassafras	
Blechnaceae	*Blechnum pennamarina*	alpine waterfern	
Campanulaceae	*Wahlenbergia ceracea*	waxy bluebell	
	Wahlenbergia saxicola	mountain bluebell	
	Wahlenbergia sp.	bluebell	
Caryophyllaceae	*Colobanthus apetalus*	coast cupflower	
	Sagina sp.	pearlwort	
	Scleranthus biflorus	twinflower knawel	
	Scleranthus brockiei	mountain knawel	r

Family	Scientific name	Common name	*Conservation Status
Cyperaceae	*Carex breviculmis*	shortstem sedge	
	Carex gaudichaudiana	fen sedge	
	Carex inversa	knob sedge	
	Carex polyantha	river sedge	
	Carex raleighii	alpine sedge	
	Isolepis ?crassiuscula	alpine clubsedge	
	Isolepis ?montivaga	mountain clubsedge	
	Lepidosperma sp.	swordsedge	
	Schoenus apogon	common bogsedge	
	Uncinia elegans	handsome hooksedge	r
Dennstaedtiaceae	*Histiopteris incisa*	batswing fern	
	Hypolepis rugosula	ruddy groundfern	
Dicksoniaceae	*Dicksonia antarctica*	soft treefern	
Dryopteridaceae	*Polystichum proliferum*	mother shieldfern	
Elaeocarpaceae	*Aristotelia peduncularis*	heartberry	
Ericaceae	*Acrothamnus hookeri*	mountain beardheath	
	Acrothamnus montanus	snow beardheath	
	Epacris gunnii	coral heath	
	Gaultheria hispida	copperleaf snowberry	
	Leptecophylla juniperina	pinkberry	
	Leucopogon pilifer	trailing beardheath	
	Richea acerosa	slender candleheath	
	Trochocarpa gunnii	fragrant purpleberry	
Fabaceae	*Bossiaea cordifolia*	western bossia	
	Bossiaea cordigera	wiry bossia	
	Hovea montana	mountain purplepea	r
	Pultenaea juniperina	prickly beauty	
	Ulex europaeus	gorse	i
Gentianaceae	*Gentianella diemensis subsp. diemensis*	tasmanian snowgentian	
Geraniaceae	*Geranium potentilloides*	mountain cranesbill	
	Geranium sp.(brevicaule?)	cranesbill	
Goodeniaceae	*Velleia montana*	mountain velleia	
Gunneraceae	*Gunnera cordifolia*	tasmanian mudleaf	
Haloragaceae	*Gonocarpus micranthus*	creeping raspwort	
	Gonocarpus micranthus subsp. micranthus	creeping raspwort	
	Gonocarpus serpyllifolius	alpine raspwort	
	Myriophyllum sp.	watermilfoil	
Hymenophyllaceae	*Hymenophyllum peltatum*	alpine filmyfern	
Hypericaceae	*Hypericum japonicum*	matted st johns-wort	
	Hypericum sp.	st johns-wort	
Iridaceae	*Diplarrena latifolia*	western flag-iris	
	Diplarrena moraea	white flag-iris	

Family	Scientific name	Common name	*Conservation Status
	Libertia pulchella	pretty grassflag	
Juncaceae	*Juncus articulatus*	jointed rush	i
	Juncus astreptus	rigid rush	
	Juncus sp.	rush	
	Luzula densiflora	dense woodrush	
	Luzula sp.	woodrush	
Lamiaceae	*Ajuga australis*	australian bugle	
Linaceae	*Linum catharticum*	white flax	
	Linum marginale	native flax	
Lycopodiaceae	*Lycopodium fastigiatum*	mountain clubmoss	
Myrtaceae	*Eucalyptus dalrympleana*	mountain white gum	
	Eucalyptus delegatensis	gumtopped stringybark	
	Eucalyptus gunnii	cider gum	
	Eucalyptus nitens	shining gum	i
	Eucalyptus rodwayi	swamp peppermint	
	Leptospermum lanigerum	woolly teatree	
Nothofagaceae	*Nothofagus cunninghamii*	myrtle beech	
Oleaceae	*Notelaea ligustrina*	native olive	
Onagraceae	*Epilobium billardiereanum subsp. Billardiereanum*	robust willowherb	
Oxalidaceae	*Oxalis magellanica*	snowdrop woodsorrel	
Phyllanthaceae	*Poranthera microphylla*	small poranthera	
Pittosporaceae	*Billardiera longiflora*	purple appleberry	
	Pittosporum bicolor	cheesewood	
Plantaginaceae	*Gratiola nana*	matted brooklime	
	Plantago paradoxa	hairtuft plantain	
	Plantago sp.	plantain	
	Veronica calycina	hairy speedwell	
	Veronica gracilis	slender speedwell	
Poaceae	*Agrostis ?parviflora*	smallflower bent	
	Agrostis capillaris	bentgrass	i
	Agrostis stolonifera	creeping bent	i
	Aira caryophyllea	silvery hairgrass	i
	Aira praecox	early hairgrass	i
	Aira sp.	hairgrass	i
	Amphibromus recurvatus	dark swampgrass	
	Anthosachne scabra	rough wheatgrass	
	Anthoxanthum odoratum	sweet vernalgrass	i
	Australopyrum velutinum	velvet wheatgrass	r
	Deyeuxia innominata	nameless bentgrass	
	Deyeuxia monticola	mountain bentgrass	
	Deyeuxia sp.	bentgrass	
	Dichelachne inaequiglumis	loose plumegrass	
	Holcus lanatus	yorkshire fog	i

Family	Scientific name	Common name	*Conservation Status
	Lachnagrostis lacunarum	tarn blowngrass	
	Lachnagrostis sp.	blowngrass	
	Microlaena tasmanica	tasmanian ricegrass	
	Poa ?hiemata	soft snowgrass	
	Poa gunnii	gunns snowgrass	
	Poa labillardierei	tussockgrass	
	Poa sieberiana	grey tussockgrass	
	Poa sp.	tussockgrass	
	Rytidosperma laeve	smooth wallabygrass	
	Rytidosperma nitens	shiny wallabygrass	
	Rytidosperma penicillatum	slender wallabygrass	
	Rytidosperma sp.	wallabygrass	
Podocarpaceae	*Phyllocladus aspleniifolius*	celerytop pine	
Polygonaceae	*Acetosella vulgaris*	sheep sorrel	i
	Persicaria sp.	waterpepper	
Proteaceae	*Bellendena montana*	mountain rocket	
	Grevillea australis	southern grevillea	
	Hakea microcarpa	smallfruit needlebush	
	Lomatia tinctoria	guitarplant	
	Orites diversifolia	variable orites	
	Telopea truncata	tasmanian waratah	
Ranunculaceae	*Ranunculus pascuinus*	pressed-hair buttercup	
	Ranunculus sp.	unidentified buttercup	
	Ranunculus triplodontus	threetooth buttercup	
Restionaceae	*Empodisma minus*	spreading roperush	
Rosaceae	*Acaena echinata*	spiny sheepsburr	
	Acaena montana	mountain buzzy	
	Acaena novae-zelandiae	common buzzy	
	Malus pumila	apple	i
	Rubus gunnianus	alpine raspberry	
Rubiaceae	*Asperula gunnii*	mountain woodruff	
	Asperula sp.	woodruff	
	Coprosma nitida	mountain currant	
	Galium sp.	bedstraw	
Scrophulariaceae	*Euphrasia sp.*	eyebright	
Violaceae	*Viola betonicifolia*	showy violet	
	Viola cleistogamoides	shy violet	
	Viola hederacea	ivy-leaf violet	
Winteraceae	*Tasmannia lanceolata*	mountain pepper	

***end.** – endemic; **r,v,e** – rare, vulnerable and endangered under the Tasmanian Threatened Species Protection Act 1995; **V, E, CE** – vulnerable, endangered and critically endangered under the Australian *Environment Protection and Biodiversity Conservation Act 1999*

Table A 2 Fauna species known on the reserve 2018

Common name	Scientific name	Conservation status*	Record type
BIRDS			
black currawong	*Strepera fuliginosa subsp. fuliginosa*	end.	calling
black-headed honeyeater	*Melithreptus affinis*	end.	calling
blue wren or superb fairy wren	*Malurus cyaneus subsp. cyaneus*		calling
blue-winged parrot	*Neophema chrysostoma*		sighted, calling
crescent honeyeater	*Phylidonyris pyrrhopterus*		calling
eastern spinebill	*Acanthorhynchus tenuirostris*		calling
forest raven	*Corvus tasmanicus subsp. tasmanicus*		sighted, calling
green rosella	*Platycercus caledonicus*	end.	sighted
grey goshawk	*Accipiter novaehollandiae*	e	calling
grey shrike-thrush	*Colluricincla harmonica subsp. strigata*	end.	calling
laughing kookaburra	*Dacelo novaeguineae*		calling
little wattlebird	*Anthochaera chrysoptera subsp. tasmanica*	end.	calling
masked lapwing	*Vanellus miles*		sighted
spotted pardalote	*Pardalotus punctatus*		calling
striated pardalote	*Pardalotus striatus subsp. striatus*		calling
superb fairy-wren	*Malurus cyaneus*		sighted
swift parrot	*Lathamus discolor*	e, CE	sighted, calling
Tasmanian thornbill	*Acanthiza ewingii*	end.	calling
Tasmanian wedge-tailed eagle	*Aquila audax subsp. fleayi*	end., e, E	sighted
tawny frogmouth	*Podargus strigoides subsp. strigoides*		sighted
welcome swallow	*Hirundo neoxena*		sighted, calling
yellow wattlebird	*Anthochaera paradoxa*	end.	sighted
yellow-tailed black cockatoo	*Calyptorhynchus funereus subsp. xanthanotus*		calling
yellow-throated honeyeater	*Lichenostomus flavicollis*	end.	calling
MAMMALS			
brushtail possum	*Trichosurus vulpecula*		scats
common wombat	*Vombatus ursinus*		sighted
dog	*Canis familiaris*	i	sighted
fallow deer	*Dama dama*	i	scats, prints
Feral cat	*Felis catus*	i	sighted
European rabbit	*Oryctolagus cuniculus*	i	Scats
red-necked wallaby	*Macropus rufogriseus*		Sighted
Short-beaked echidna	*Tachyglossus aculeatus*		sighted
spotted-tailed quoll	*Dasyurus maculatus*	r, V	sighted
Tasmanian devil	*Sarcophilus harrisii*	end., e, E	sighted
Tasmanian pademelon	*Thylogale billardierie*		sighted
AMPHIBIANS			

Common name	Scientific name	Conservation status*	Record type
brown tree frog	*Litoria ewingii*		calling
common eastern froglet or brown froglet	*Crinia signifera*		calling
Tasmanian froglet	*Crinia tasmaniensis*	end.	calling
REPTILES			
glossy grass skink	*Pseudomoia rawlinsoni.*		sighted

***end.** – endemic; **r,v,e** – rare, vulnerable and endangered under the Tasmanian Threatened Species Protection Act 1995; **V, E, CE** – vulnerable, endangered and critically endangered under the Australian *Environment Protection and Biodiversity Conservation Act 1999*

Appendix 3: Aboriginal Place Names

In Plomley (2008), relevant place names are listed as:

Surrey Hills	tone.nen.gy
Hampshire Hills	ning.her.ner/ par.teen.no
St. Valentine's Peak	nar.tone.no
Vale of Belvoir	le.lare.re/ lowe.wel.lee
Gog or Magog	tongnunggerlare
Vandyke	tar.er.neem.er.re/ tarerneemer

The Liapoota Aboriginal Corporation also provide the following place name:

Daisy Dell Duckpond	keem.buka.purra