

Daisy Dell Reserve 2018-2022

Management Plan



Tasmanian Land Conservancy (2018). Daisy Dell Reserve Management Plan 2018-2022. Tasmanian Land Conservancy, Tasmania, Australia.

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Front Image: Spotted-tailed quoll in Daisy Dell rainforest © Heath Holden

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Reserve Management Framework

Adaptive Management

The TLC demonstrates excellence in adaptive management for nature conservation by adopting the *Open Standards for the Practice of Conservation*, which is an international system of adaptive management developed by the Conservation Measures Partnership (<http://cmp-openstandards.org>). The *Open Standards* provides a guide to planning and implementing conservation actions and incorporates a model of adaptive management as shown in Figure 1.

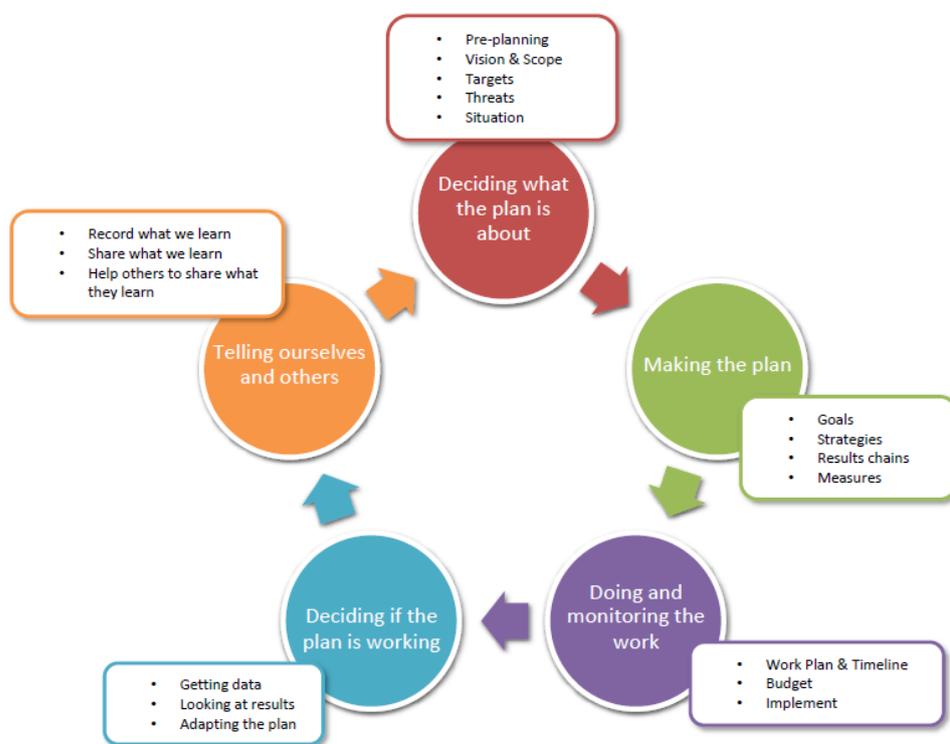


Figure 1 Open Standards adaptive management model used in healthy country planning

This management plan represents the outcomes of the first and second stages of the *Open Standards* adaptive management model (Figure 1). Conservation targets have been selected that describe broad ecosystem classes or habitat types, and ecological indicators are selected for each target and used to monitor changes in their condition. Threats to each of the targets are identified, and these are prioritised depending on the extent, severity and irreversibility of their impact.

Implementation of Management Strategies

Strategies to mitigate the threats to conservation targets are assessed for their potential impact on the threat/target combination and the feasibility (time, staffing, funding, ethical) of implementing the strategy.

Work plans are developed annually to implement the management strategies and to record the specific activities to be undertaken, their timing and the resources required. Work plans also allocate budgets, allowing the TLC to plan ahead to ensure appropriate capacity to deliver reserve management activities.

Ecological parameters are also considered when scheduling works, to ensure that projects are undertaken when they are most likely to succeed. Progress against activities in the work plan is reviewed annually and used to amend the ensuing year's work plan as necessary.

Monitoring and Evaluation

The TLC implements a monitoring and evaluation strategy across all of its permanent reserves. Monitoring of specific ecological indicators for each target enables the collection of scientifically robust information on the status and trends of these conservation targets. Measuring the effectiveness of management strategies/actions is also critical for ensuring successful long-term management of the targets.

Four types of monitoring are conducted on TLC Reserves at intervals from 1 to 5 years:

- **Long-term ecological monitoring** measures the ecological viability, condition or health of the targets assessed against established baselines with trend data providing early warning of deleterious changes to the conservation targets. This information allows mitigation measures to be implemented.
- **Change detection analysis** using remote sensing GIS data, assesses changes in surrounding land cover that could signal threatening process from the surrounding areas. Where this is identified, the TLC works with neighbouring landholders to develop local or regional mitigation strategies.
- **Management effectiveness evaluation** provides data on the effectiveness of management, using indicators specific to each management strategy.
- **Annual reserve assessments** are undertaken to identify any new or emerging threats which then trigger early management interventions.

Reporting, Adapting, Communicating

Annual reports for each Reserve are prepared. The results obtained from the monitoring program are used to adapt and direct on-ground works programs and update annual work plans and reserve management plans. This information is communicated to the TLC Board and the TLC's Science Council, stakeholders and the community through a range of regular communication channels including on www.tasland.org.au.

The ongoing success of the plan: implementation, management effectiveness and the health of our targets are monitored and reported, and management actions and the plan itself amended and adapted as needed.

Daisy Dell Reserve Management Overview

VISION	Daisy Dell Reserve is managed for its grassy wetland and highland grassland communities.
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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 is maintained or enhanced.
STRATEGIES	OBJECTIVES
Access management	Access to the Reserve supports the values of the Reserve
Fire management	Minimise wildfire risk to the Reserve and to surrounding communities and ecological burning enhances the conservation targets.
Community engagement	Provide opportunities for people 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

Introduction

This management plan is supported by a comprehensive background report containing maps and information about the Reserve, its acquisition and special values (Tasmanian Land Conservancy 2018, www.tasland.org.au).

Context and natural values.

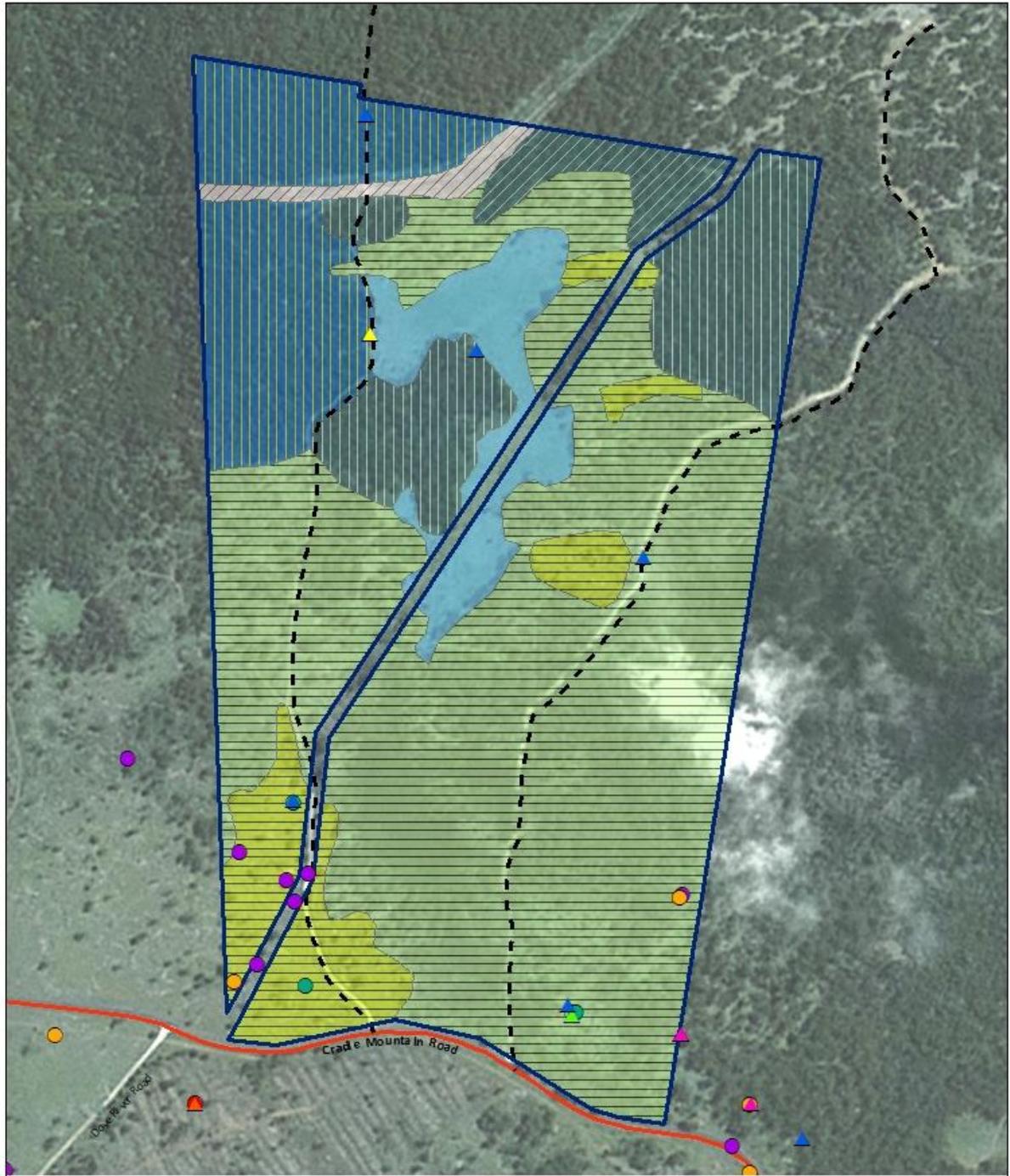
Daisy Dell Reserve (the Reserve) is situated at the northern end of the sub-alpine Central Plateau, close to the iconic Cradle Mountain National Park and approximately 14 km east of the TLC's Vale of Belvoir Reserve (Fig. 2). It adjoins the *Iris Farm Private Nature Reserve* (287ha) and has a variety of reserves nearby, as well as other private properties being managed primarily for conservation.

This area forms part of an ancient Aboriginal highway linking the open grasslands of Daisy Dell, Middlesex, the Vale of Belvoir and Surrey Hills where it is understood that frequent low intensity fires helped maintain access to the area and green pick for the herbivores (Plomley 2008; Ryan 2012). More recently, the site has been subject to grazing by introduced stock and firewood and timber harvesting, though these threats have waned during the last decade.

Unlike much of the Central Plateau, the Reserve's geology is basalt, which lends a different character to the vegetation. In the catchment divide between Weaning Paddock Creek to the west and Bull Creek to the east, an unusual marshy area has developed that provides a steady supply of filtered water to the creeks.

The Reserve comprises a variety of habitats which support a range of native and threatened plant and animal species (Fig 2). The forests range from closed rainforest in the northwest, through closed wet forest to open woodland in the south. The southwest corner forms part of the Daisy Dell grasslands that are over 100 ha in extent, rich in threatened grassland species, and generally in good condition. Two threatened vegetation communities, five threatened flora and five threatened fauna species have been recorded on site to date. Key threatened values include over 7.3 ha of Highland *Poa* grassland, 9.6 ha of Highland grassy sedgeland, significant populations of *Hovea montana*, three threatened bird species including swift parrot and Tasmanian devil and spotted-tail quoll populations.

Weeds mainly comprise pasture weeds and introduced grasses, with the exception of shining gum (*Eucalyptus nitens*), an introduced plantation species which has been planted near the Reserve's southern entrance. There are no known occurrences of introduced pathogens such as root rot, myrtle rust or chytrid fungus.



Daisy Dell reserve - Vegetation and threatened species

- | | | |
|------------------------------|--------------------------|--|
| Threatened flora | Threatened fauna | DDE <i>Eucalyptus delegatensis</i> dry forest and woodland |
| <i>Hovea montana</i> | eastern quoll | WDL <i>Eucalyptus delegatensis</i> forest over <i>Leptospermum</i> |
| <i>Rhodanthe anthemoides</i> | ptunarra brown butterfly | WDR <i>Eucalyptus delegatensis</i> over rainforest |
| <i>Scleranthus brookei</i> | spotted-tailed quoll | RMT <i>Nothofagus - Atherosperma</i> rainforest |
| <i>Uncinia elegans</i> | swift parrot | AHF Fresh water aquatic herbland |
| <i>Viola cunninghamii</i> | tasmanian devil | GPH Highland <i>Poa</i> grassland |
| | | FPE Permanent easements |



Drawn TLC, DS, June 2016; modified TLC RH March 2018.
Base data (C) TheGIS, TLC data

Figure 2 Location of Daisy Dell Reserve, Cradle Valley in mid-northern Tasmania and its conservation values

Conservation Targets

Highland grasslands and open woodland

Priority – high

Goal: The 2017 condition of the highland grasslands and open woodland is maintained or improved.

Description

Highland Poa grassland (GPH), listed under the NCA, occupies a small area in the south-west of the property, and is contiguous with a much larger area on the neighbouring property, and across the road in what is locally known as the Daisy Dell Oval. This area contains grassland and such iconic highland grassland species such as *Rhodanthe anthemoides* and *Leucochrysum albicans* var. *tricolor* in quite high densities.

Flanking and grading into this is open woodland, dominated by *E. dalrympleana*, but classified as dry *E. delegatensis* forest (DDE). This woodland grades into a more closed forest structure, becoming richer in the *E. delegatensis* to the northeast. Some areas of the woodland have been heavily cut over, probably for firewood. The entire forested area has been picked over for many decades for sawlogs to supply local mills as well.

These grasslands may require active management to be maintained, else they may disappear under shrub, tree or sedge encroachment. The grassy woodland considered as part of this conservation target may also benefit from active disturbance. Controlled use of fire may be the best tool to achieve this.

Viability and current status

The Highland grasslands and open grassy woodlands are currently in good condition though management may be required to improve their condition. The indicators of vegetation condition of the grasslands include floristic diversity, which is at the lower end of the range for highland grasslands in good condition, and the structural composition is a compromised by the presence of excessive shrubs (Table 2). As knowledge builds, the assessment of health and the associated management requirements of these indicators may change.

Table 1 Viability and health indicators for highland grasslands and open woodlands target on Daisy Dell Reserve

Key ecological attribute	Indicators
Vegetation extent	Area (from remote imagery)
Vegetation condition	Floristic diversity
	Recruitment
	Structural complexity
Nested fauna	Relative mammal abundance
	Mammal diversity

Grassy Wetlands

Priority – high

Goal: The 2017 condition of the grassy wetlands is maintained or improved.

Description

The wetland area in the mid-north of the property acts like a sponge as it captures water during the wetter times of year and releases it slowly - giving a longer base flow to the creeks draining out of it. Unusually for a basalt soil, it retains the water and prevents tree and shrub establishment – presumably due to very high levels of organic matter, including slowly decomposing sphagnum.

Mapped as Highland grassy sedgeland (MGH), it is often referred as an ephemeral wetland. It also has some characteristics of a marsupial lawn, as the vegetation is very closely cropped by the resident macropods.

Viability and current status

The grassy wetlands target is categorised as good condition at present. There is probably little that active management can do to improve the condition of this target, but it does require time for the vehicle ruts - a legacy of past vehicle use - to rehabilitate and the original topography to be re-instated. Several viability indicators (Table 22) have been selected to assess trends in the health/condition of the target. It is possible that as climate change reduces the periods of waterlogging, that tree invasions will start to occur. If this occurs, TLC will decide on whether or not attempt to manage this change.

Table 2 Viability and health indicators for grassy wetlands target on Daisy Dell Reserve

Key ecological attribute	Indicators
Vegetation extent	Area (from remote imagery)
Vegetation condition	Floristic diversity
	Recruitment
Nested fauna	Relative mammal abundance
	Mammal diversity

Sub-alpine Forests

Priority – medium

Goal: The 2017 condition of the sub-alpine forests is maintained or improved.

Description

The subalpine forests at the northern end of the property comprise two distinct vegetation communities: various facies of *Eucalyptus delegatensis* forest, and a range of rainforest communities. These have been lumped as a single target, subalpine forests, as their management needs and current condition are similar.

Both communities have been selectively logged, removing the characteristic tall straight trees that would once have featured as part of their structure. The *E. delegatensis* wet forest has four dense structural layers: *E. delegatensis* as the overstorey, with some *E. dalrympleana* mid-layers with such tall shrubs as *Pittosporum bicolor*, *Cassinia aculeata* and *Coprosma nitida*, grading down to smaller shrubs and groundcovers. The rainforest in the northwest of the Reserve still has a few large eucalypt overstorey trees, but is now dominated by myrtle beech *Nothofagus cunninghamii* and a wide range of other wet/rain forest species such *Leptospermum lanigerum* and *Phyllocladus aspleniifolius*. The ground cover is open and dominated by mosses, liverworts and ferns, with the sparse shrubs layer commonly found in rainforests. Cider gums *E. gunnii* and swamp peppermint *E. rodwayi* occur on the fringes of these forest types, particularly the *E. delegatensis* forest. These species are more tolerant of frost and waterlogging than the other eucalypts present.

Both communities are fire sensitive. Wildfire would cause a shift from wet to dry sclerophyll characters within *E. delegatensis* forest, and therefore wildfire is not compatible with the maintenance of its current condition. Rainforest species have little fire tolerance and this community would also be likely to shift to a sclerophyllous vegetation community if burnt.

Viability and current status

The sub-alpine forest is categorised as very good condition at present. Little to no management intervention is required to maintain the target in its present condition, and indeed to improve it. Several viability indicators (Table 2) have been selected to assess trends in the health/condition of the target.

Table 2 Viability and health indicators for sub-alpine forest target on Daisy Dell Reserve

Key ecological attribute	Indicators
Vegetation extent	Area (from remote imagery)
Vegetation condition	Floristic diversity
	Recruitment
	Structural complexity
Nested fauna	Relative mammal abundance
	Mammal diversity

Threats and Management

Unauthorised and indiscriminate access in the past has led to a variety of ecological problems including timber felling in the woodlands and vehicle wheel ruts in the Daisy Dell wetlands. Controlling access will address these issues and benefit the neighbouring properties that are managed primarily for conservation.

Shrub invasion in the grasslands will reduce the habitat's suitability for some of the threatened grassland species. Although a relatively slow process, over time this reduces the area and the condition of the grassland, by outcompeting grassland flora species. Consideration should be given to the use of controlled burning or other active disturbance to manage shrub invasion into the grasslands.

Wildfire will adversely affect the condition of the wetland, grassland, woodland and dry eucalypt forest if intensity, frequency or seasonal timing is incompatible with the ecological requirements of these vegetation communities. Any fire may cause ecological shifts in rainforests and wet eucalypt forests. Prudent management would seek to control fire across the entire property to burn only those areas that would benefit from fire, and work with regional stakeholders to develop and implement a regional fire strategy to manage wildfires at the landscape level.

Few environmental weeds occur on Daisy Dell, however gorse, ragwort and thistles have been detected in small numbers and occur nearby with potential for introduction of these and other weed species. Adherence to the TLC's Hygiene Policy will help to mitigate these threats, as will access control. Table 5 summarises the threats to Daisy Dell Reserve and their ranking.

Table 5 Summary of threats directly affecting targets and the risk rating for each threat

Threats	Targets	Grassy wetland	Highland grassland and open woodland	Sub-alpine forest
Unauthorised access		medium	medium	low
Shrub invasion or loss of floral diversity		low	medium	N/A
Wildfire		medium	low	high
Weeds and pathogens		low	low	low

Social Targets

People’s Connection to Nature

Priority - medium

Goal: People’s connection to TLC’s reserves and nature is maintained or enhanced.

The TLC encourages connection to nature so that its reserve networks and the environment more widely are valued and supported by the community, and this philosophy underpins much of the TLC’s work. People’s connection is promoted across TLC’s entire reserve estate, not just one single reserve, thus the viability of this target will be determined collectively. Generally, our approach to community engagement is to provide guided supporter trips to the region or research, volunteer and education opportunities on the Reserve. Given its close proximity, it is likely that future opportunities to connect with Daisy Dell Reserve are wherever possible combined with the Vale of Belvoir Reserve.

Viability

Viability of this target is measured across the TLC’s conservation estate, not just singularly on Daisy Dell.

Key Attribute	Indicator
Community involvement (across all TLC reserves)	Number and range of events Number of people attending the Reserve

Threats and Management

The primary threat to community connection to the landscape comes from a loss of, or lack of knowledge and empathy about the landscape, what it contains and its stories. Ensuring that the community develop connections to the natural landscape, through direct exposure and the sharing of knowledge and culture will, in part, help address this threat.

Management Strategies

Strategy priority rankings are:

- Very high – is feasible and cheap, works for a high ranked target and against a highly impacting threat. These instances are rare.
- High – is feasible, but could be costly or difficult to implement, works for a medium ranked target and against a highly impacting threat. These instances are quite uncommon.
- Medium – is feasible, but could be costly or difficult to implement, works for a low-medium ranked target and against a medium impacting threat. These instances are not uncommon and are typically the result of lower ranked threats and targets, rather than feasibility issues.
- Low – is likely to be a product of low ranked threats on low ranked targets with medium – low feasibility. Many strategies are likely to fall in this category and may be considered routine actions: necessary, but with long-term benefits that are difficult to discern in the short term.
- Abandon – has problems with feasibility and should not be pursued.

Table 6 Threats and management strategies for Daisy Dell Reserve

Threats	Management Strategy	Priority
Unauthorised access	Access management	medium
Shrub invasion and loss of floral diversity	Fire strategy	medium
Wildfire	Fire strategy	medium
Existing and potential new threats (e.g. weeds, diseases) increasing	Annual reserve assessment	medium
Loss of connection/ knowledge	Encourage people’s connection to nature	medium

Fire

Priority: Medium

Objective: Manage fire to maximise the condition of the conservation targets and safety of people and assets

The aim of this strategy, in line with TLC's Fire Management Policy, to protect human life and property from fire, and to maintain or enhance the natural diversity of species and vegetation communities through appropriate fire regimes.

The grasslands, being to a degree an artefact of human management, may benefit from fire. Fire is being used successfully in other TLC Reserves to maintain or improve the condition of vegetation communities that are dependent upon disturbance. At Daisy Dell Reserve, the use of fire will be explored for the grassland/woodland target to reduce shrub invasion and maintenance of the diverse herb layer.

The rainforest and wet forest vegetation of the Daisy Dell Reserve is fire sensitive but not fire-prone, due to the typically wet understorey in rainforest. The potential for a fire to spread into rainforest or wet forest in very dry conditions is increasing as climate change increases the length, severity and frequency of the fire season.

Key actions	Details
Investigate fire needs for the highland grassland target	Assess the need and likely outcomes of planned burns within the highland grasslands
Work with fire agencies and stakeholders to develop a local fire response plan	Work with other stakeholders and fire agencies to develop a wildfire response plan to protect the natural values in the Daisy Dell region from wildfire. Work with neighbours to manage the local threat of wildfires.

Access Management

Priority: Medium

Objective: Access to the property supports the values of the Reserve

This strategy will see appropriate, authorised access that supports the values of the Reserve. Fencing and locked gates were installed in 2018 to prevent unauthorised access, and a system established with neighbours to allow access along rights-of-way. In the past there has been evidence of firewood collecting and vehicle access into the grassy wetlands, causing ruts. Managing access should reduce known threats including recreational vehicle use, unauthorised hunting, wood-cutting, vegetation harvesting and weeds.

Key actions	Details
Maintain the condition of fences and gates to prevent unauthorised access	Undertake fence and gate maintenance as required Work with neighbours to manage appropriate, authorised access

Annual Reserve Assessment

Priority: Medium

Objective: Assess known threats and report any potential new threats immediately

The aim of this strategy is to assess the status of existing threats and identify any new threatening processes that have the potential to reduce the viability of the targets, e.g. the introduction of new weeds or diseases, and to assess the reduction in existing threats. If a potential threat becomes an active threat to a conservation target then a management strategy is developed to mitigate its impact.

Key actions	Details
Annual reserve assessment	Document observations of any changes, e.g. new fire, timber removal, visitation impacts, and of any emergent new threats for future observation/treatment. Report immediately. Work with neighbours to detect any potential threats

Encourage People's Connection to Nature

Priority: Medium

Objective: Provide opportunities for people to experience nature

The TLC encourages visitation to its reserves and recognises the importance of natural places to human wellbeing. The Community Engagement Strategy applies across the TLC reserve estate, and indicators of success are measured collectively. Each reserve, however, does have different attributes in terms of community engagement, and the strategy's implementation and intent varies accordingly.

Science, volunteer and research activities are encouraged on the Daisy Dell Reserve and in the region generally. Groups such as the Central North Field Naturalists were actively involved in the ecological monitoring undertaken in February 2018, and we aim to foster this collaboration in the future.

TLC encourages all visitors to our reserves to take measures to ensure that weeds and pathogens, such as phytophthora, are not introduced or spread through the environment.

Key actions	Details
Community engagement	Provide opportunities for the community to engage with, and form a connection to, the landscape through activities such as guided or independent supporter trips, research, volunteering and education Work with neighbours to encourage appropriate community connections to the landscape

Management Plan Process

Management Plan Status

The final draft Daisy Dell Reserve Management Plan was reviewed by the TLC's Science Council before being approved by the TLC Board. As part of the Open Standards adaptive management process, information on progress on management strategies, threat abatement and management effectiveness is kept current and informs annual work plans and the review of this management plan.

Management Responsibilities

TLC's staff are responsible for undertaking the management of the reserve. This includes the co-ordination of contractors, consultants and volunteers where they are required to implement the activities outlined in this Management Plan. Relevant experts from the TLC Board and Science Council may also provide advice and guidance where needed. Wherever possible, the TLC works with neighbours to manage cross-tenure threats and endeavours to act as a good neighbour to all parties. Where possible, TLC undertakes co-operative or complementary management where both parties seek a similar outcome (e.g. weed control and fire management) and undertake every endeavour to ensure that management of this reserve does not have a detrimental impact on the surrounding area.

Long-term management costs will be met through the TLC Foundation, and through relevant partnerships and grant opportunities as they become available.

Stakeholder Involvement

The major land management stakeholders for the Daisy Dell Reserve are Forestry Tasmania, Parks and Wildlife Service and neighbouring landholders. These major stakeholders will be informed about management strategies addressing cross-tenure threats and the outcomes of monitoring. The Private Land Conservation Program will monitor the status of the conservation values identified in the covenant.

Management Plan Review

This document will guide on-ground management of the Reserve over the coming years and be the basis to develop annual work plans and budgets. The plan identifies a range of conservation targets, threats, strategies and actions based on our best current knowledge but these may change over time as our information grows and monitoring can better inform our activities. Progress will be reviewed annually and may lead to amendments to the plan.

A full review of the plan will occur at a time no earlier than five years and no later than ten years from the date of adoption of this plan.

References

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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
NCA	Tasmanian Nature Conservation Act 2002
NVA	Natural Values Atlas database (DPIPWE)
PWS	Tasmania Parks and Wildlife Service
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
UTAS	University of Tasmania