

Blue Tier Reserve

2017 - 2022

Management Plan



Tasmanian Land Conservancy (2017). Blue Tier Reserve Management Plan 2017-2022. Tasmanian Land Conservancy, Tasmania, Australia.

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Front Image: Lichen and moss © Andrew Townsend

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Reserve Management Framework

The TLC aims to demonstrate excellence in management for biodiversity conservation and has adopted the *Open Standards for the Practice of Conservation*, which is an international system of adaptive management developed by the Conservation Measures Partnership (<http://www.conservationmeasures.org>). The *Open Standards* provides a guide to planning and implementing conservation actions and incorporates a model of adaptive management (Fig. 1).



Figure 1 Open Standards adaptive management model, developed by the Conservation Measures Partnership *Open Standards*

This management plan represents the outcomes of the first three stages of the Open Standards adaptive management model. Conservation targets have been selected that describe broad ecosystem classes or habitat types. Ecological indicators are selected for each target and used to monitor changes in their condition. Threats to each of the targets are then identified, along with the factors that contribute to the threats, and these are prioritised depending on the extent, likelihood and severity of the impact of these threats to the conservation targets. Strategies to manage these threats are developed, with consideration given to the environmental, social and economic feasibility of each strategy.

Implementation of Management Strategies

Strategies to mitigate the threats to conservation targets are assessed for their feasibility and prioritised according to the likelihood and extent of mitigating the threat, the resources required and the resources available to implement the strategy.

Five-year work plans are developed 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.

Monitoring and Evaluation

The TLC implements a monitoring and evaluation strategy across all of its permanent reserves. Monitoring of specific ecological indicators enables the collection of scientifically robust information on the status and trends of the conservation targets. Measuring the success of management actions is also critical for ensuring successful long-term management of the targets. Four types of monitoring conducted at intervals from 1 to 5 years:

- ***Long-term ecological monitoring*** establishes a baseline measure of ecological indicators and subsequently provides an early warning of deleterious changes in the conservation targets. The results of this monitoring allow reserve managers to develop mitigation measures and reduce future costs of remedial management.
- ***Annual reserve assessments*** are undertaken once per year by TLC reserve management staff across all permanent reserves to identify any new or emerging threats that have the potential to reduce the viability of the targets. Early identification of threats allows early management interventions to mitigate a threat.
- ***Management effectiveness evaluation*** provides land managers with information that is essential to determine the efficacy of management efforts. Data are collected on management inputs and biodiversity outputs, using indicators specific to measuring the success of each management strategy.
- ***Change detection analysis*** using remote sensing GIS data, is undertaken to assess the impact of management strategies on vegetation cover and changes in surrounding land cover that could indicate any 'leakage' – shifting of a threatening process from a reserve to surrounding areas. Where this is identified, the TLC works with neighbouring landholders to develop local or regional mitigation strategies.

Reporting and Adapting

The results obtained from monitoring are used to adapt and direct on-ground works and update annual work plans and reserve management plans. The status of conservation targets, trends in ecological indicators and outcomes of reserve management activities are communicated to the TLC's Board and Science Council, stakeholders and the community through a range of regular communication channels including an annual report.

Blue Tier Reserve Management Overview

<i>VISION</i>	Manage Blue Tier Reserve for its rainforest values
<i>CONSERVATION TARGET</i>	<i>GOAL</i>
Rainforest	The 2016 condition of the rainforest vegetation is maintained or improved over time
<i>SOCIAL TARGET</i>	<i>GOAL</i>
People's connection to rainforest	People's connection to rainforest is facilitated
<i>MANAGEMENT STRATEGIES</i>	<i>KEY ACTIVITIES</i>
Build resilience to climate change	Monitor ecological changes in the reserve
Reduce fire and other potential threats	Work with fire agencies to develop a regional fire management plan Restrict visitation and prevent development
Maintain people's connection to rainforest	Provide opportunities to experience adjacent rainforest reserves
Good Neighbour policy	Liaise with neighbours over shared management issues
<i>KEY ATTRIBUTE</i>	<i>INDICATOR</i>
Rainforest condition	Vegetation Extent and Condition – Area, floristic diversity, recruitment, structural complexity Sensitive Fauna – Simson's stag beetle range, mammal diversity
People's connection to rainforest	No of events in the wider Blue Tier Region
Reduce fire and other potential threats	Number of fire events Regional fire plan in place Annual reserve assessment identifies regional threats
Visitation	No unpermitted visitation or developments on the Reserve

Introduction

The forests of the Blue Tier region are a glacial refugium, with rainforest species dating back to 65 million years ago, when Australia was connected to the supercontinent of Gondwana and rainforests extensively covered the landmass. Myrtle beech rainforest (*Nothofagus cunninghamii*), Myrtle beech / Woolly tea tree rainforest (*Leptospermum lanigerum*), and wet forests crowned with Swamp gums (*Eucalyptus regnans*) have occupied these east-facing slopes since before the last ice age 18,000 years ago.

It provides 81.5 hectares of habitat for rare and threatened species, including the Eastern quoll (*Dasyurus viverrinus*), the Spotted-tailed quoll (*Dasyurus maculatus*) and the Tasmanian devil (*Sarcophilus harrisii*). Tasmania's largest endemic stag beetle, the Simson's stag beetle (*Hoplogonus simsonii*), is a nationally threatened species and is restricted exclusively to this region.

The rainforest canopy, with its old-growth tree hollows formed over hundreds of years, provides nesting habitat for a number of iconic birds including the Tasmanian masked owl (*Tyto novaehollandiae*) and the Yellow-tailed black cockatoo (*Calyptorhynchus funereus*).

Many species of the rainforest are small and inconspicuous with the most diverse groups of organisms to be found on the forest floor. Ferns, mosses and spectacular fungi thrive in the damp, dark, cool environment, and a multitude of invertebrates complete the cycle of breaking down leaf litter, returning nutrients to the ecosystem.

Managing Blue Tier Reserve

The Blue Tier Reserve was purchased by the TLC in 2012. The property is predominantly surrounded by undisturbed forest and rainforest, which limits the threats to the natural values of the property. However, a property on the northeast boundary of the Reserve was clear felled around 2007, which may result in an increase in the threats to the natural values (e.g. increased risk of fire, weeds and feral animals). The vegetation is currently in very good condition, although being fire sensitive, is at risk of degradation from fire.

This management plan is supported by a comprehensive background document about Blue Tier Reserve, its acquisition and its special values (Tasmanian Land Conservancy 2016, www.tasland.org.au).



TLC Blue Tier Reserve - location and local walking tracks

- TLC Blue Tier Reserve
- Access Road (2WD)
- Access Road, 4WD required
- Vehicular Track
- Indistinct walking track
- Formed walking track

N

TASMANIAN
LAND
CONSERVANCY

Scale **1:25,000**

Meters

0 120 240

GDA

Drawn: March 2012
Data: background (C) LIST, client data TLC

Figure 2 Location of Blue Tier Reserve, North East Tasmania

Conservation Target

Rainforest

Priority - high

Goal: *The 2016 condition of the rainforest vegetation is maintained or improved over time.*

Description

The rainforest on Blue Tier Reserve occupies almost 90% of the property (70.9 ha of 81.5ha total), and is relatively homogenous across its entire range. The remainder of the reserve is occupied by rainforest – wet *Eucalyptus regnans* forest (1.5ha) species interspersed with a predominantly tea-tree scrub (9ha). Within the ecological context of the surrounding landscape, the Blue Tier region is highly distinct as it is a relatively small island of rainforest of Gondwanan origin, within a sea of eucalypt forest of more modern Australian origin. These ecosystems are very different not only in their species composition but also their dynamics. The Blue Tier rainforest is very old and contains many large, mature trees with hollows that provide critical habitat for a variety of forest-dependent fauna. It also has a floristic diversity which is higher than is typical of myrtle rainforest.

The Blue Tier plateau provides a cool, wet habitat where rainforest is able to thrive during interglacial periods such as the world is currently experiencing. During glacial periods the rainforest contracts into the warm sheltered valleys of Pyengana, Goulds Country and the Ansons River. Hence, the Blue Tier Reserve is part of this transitional landscape and thus represents an unusual window into vegetation community history.

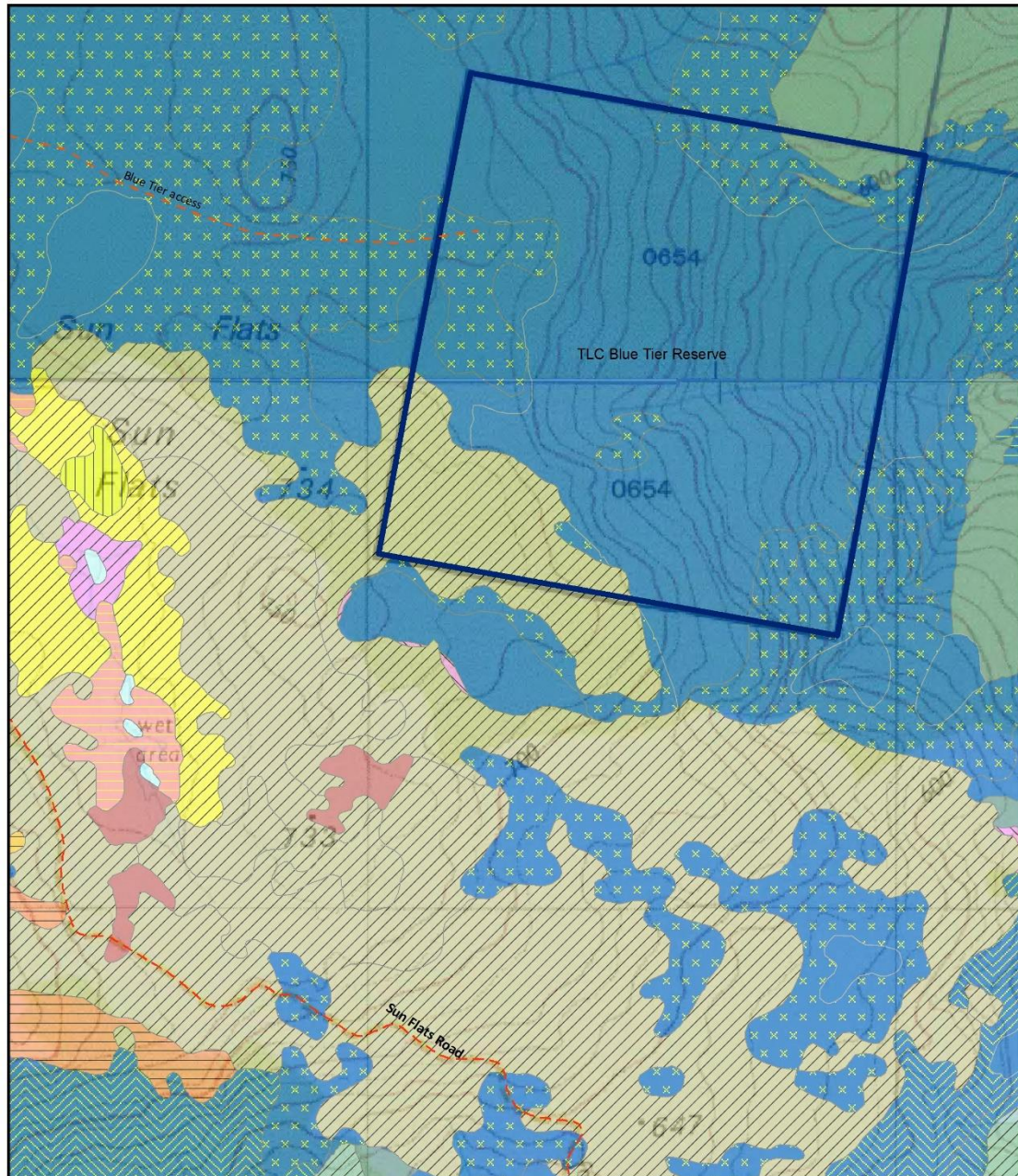
A number of species are endemic to the Blue Tier region or exist here at the margin of their range. Hundreds of species of lichens, mosses, liverworts and fungi occur on the property and although these species are still poorly known, they are a significant element of rainforest biodiversity.

A variety of forest-dependent threatened fauna occur in the Blue Tier region, including several endemic species of invertebrates such as Simson's stag beetle (*Hoplogonus simsoni*).

The forests of the Blue Tier Reserve store a high density of carbon and form part of the TLC's New Leaf Carbon project.

Viability and current status

The Blue Tier rainforest is in very good condition at present. Little to no management intervention is required to maintain the target in its present condition.



TLC Blue Tier Reserve - vegetation

- | | | |
|--|-----------------------------------|--|
| TLC Blue Tier Reserve | Highland low rainforest and scrub | Eastern alpine vegetation (undifferentiated) |
| Eucalyptus regnans forest | Leptospermum forest | Buttongrass moorland with emergent shrubs |
| Eucalyptus obliqua forest over rainforest | Subalpine heathland | Sphagnum peatland |
| Nothofagus rainforest undifferentiated | Melaleuca squamea heathland | Highland Poa grassland |
| Rainforest fernland | Leptospermum scrub | Water, sea |
| Nothofagus - Leptospermum short rainforest | Eastern alpine sedgeland | |



Drawn: March 2016
Data: background (C) LIST, client data TLC



Figure 3 TASVEG Vegetation communities on Blue Tier

Social Target

People's connection to rainforest

Priority - low

Goal: People's connection to rainforest is facilitated.

The TLC encourages connection to nature and to ensure its reserve networks and the environment generally are valued and supported in the community. However, due to the sensitivity of the Blue Tier Reserve the TLC will provide opportunities to experience the wider Blue Tier region, rather than the Reserve, unless for management or specific research purposes. The surrounding focal landscape provides a range of recreational, educational, research and volunteering opportunities including a network of walking and mountain bike trails, whereas the TLC's Reserve is difficult to access and no formalisation of tracks or structures are recommended.

Viability

Two supporter trips have already been conducted by TLC within the Blue Tier region – one in 2013 and one in 2015, with attendance increasing over time. The viability of this target is thus rated as very good, as the number of people visiting the area prior to the TLC's purchase was likely to be much lower.

Threats and management

There are no real threats to people's connection to the landscape apart from the lack and loss of knowledge/empathy and inability of the community to access this information or the general area.

Management Strategies

Build Resilience to Climate Change

Priority: Medium

Key Activities: Monitor ecological changes in the Reserve

Our aim in addressing climate change is to help the conservation target become more resilient to threats. Climate change is pervasive, global in impacts and unmanageable at a local level, however, the TLC recognises its responsibility to address climate change and approaches this by seeking:

- To develop resilience in reserve’s ecosystems and species
- To understand and aid adaption pathways for ecological targets
- To monitor to detect ecological changes in structure, condition and key species
- To participate in carbon markets and to develop more options for ecosystem services

Key actions to implement most of these approaches lie outside of each reserve, however, reserve strategies such as fire, weed and disease management help increase the resilience of the rainforest to threats. On Blue Tier Reserve, the most obvious impact of climate change is potential drying of the rainforest and surrounding vegetation communities and the increased frequency of severe fire weather. This is exacerbated by clear fell of the adjoining block to the northeast, which together increase the potential for fire entering the rainforest and killing the fire-sensitive species that dominate the vegetation. Long-term monitoring of the conservation targets may help to identify any change in their condition so remedial recovery actions can be deployed.

Key Action	Detail
Monitor changes in the rainforest	Install ecological monitoring to determine change in rainforest community health and condition
Attribute	Indicators
Vegetation extent and condition	Area (from remote imagery), floristic diversity, recruitment, structural complexity
Sensitive fauna	Range of Simson’s stag beetle, mammal diversity

Reduce Fire and other Potential Threats

Priority: High

Activity: Work with fire agencies to develop a regional fire management plan

TLC's Fire Policy is to manage fire in the landscape so that its impact on sensitive natural values (i.e. rainforest) is minimised and risks to human life and property are reduced. The rainforest vegetation of the Blue Tier is fire sensitive but not fire-prone, due to the typically wet understorey in rainforest. The potential for a fire to spread onto the property from neighbouring land in very dry conditions is increasing as climate change increases the length, severity and frequency of fire seasons. The potential for fires to spread onto the reserve is also increased by the clear felling of an adjoining privately owned block to the northeast where a dwelling may be built, due to drying edge effects and the potential for a more fire prone vegetation community to establish post-logging.

If a fire were to threaten the Reserve, the remoteness and difficult terrain would mean that it is unlikely that effective local control would be attempted or achieved. No specific fire management plan is in place for the Blue Tier Region, so its development is a high priority. This is best achieved by working with the Tasmanian Fire Service and Sustainable Timbers Tasmania to establish a regional plan containing regional processes.

Key Action	Detail
Work with fire agencies to develop a regional fire management plan	Work with stakeholders and fire authorities to develop a fire management plan to protect the Blue Tier rainforest values.
Restrict visitation and development	Reserve visitation is only for management activities or specific research and do not permit the development of tracks or facilities unless under exceptional circumstances.
Annual Reserve Assessment	Undertake an annual reserve assessment remotely to identify any rangeland threats.
Attribute	Indices
Reduce fire and other potential threats	Number of fire events Regional fire plan in place Annual reserve assessment identifies regional threats

Activity: Restrict visitation and development

Due to the sensitive rainforest values and its remoteness, the TLC will restrict access unless for reserve management or specific research and will not permit the development of tracks, structures of any type unless under exceptional circumstances. TLC encourages all visitors to ensure that weeds and pathogens, such as phytophthora, are not introduced or spread through the environment.

Key Action	Detail
Restrict visitation and development	Restrict access unless for reserve management or specific research and do not permit the development of tracks or facilities unless under exceptional circumstances.
Attribute	Indices
Visitation	No unpermitted visitation or developments on the Reserve

People's connection to rainforest is facilitated

Priority: Low

Visitation is not encouraged on Blue Tier Reserve due to its sensitive natural values and its remoteness. The TLC however encourages visits to the Blue Tier region where supporters can appreciate the rainforest values and where infrastructure already exists for recreational activities such as bushwalking, camping, mountain-bike riding and bird-watching, etc. Several successful TLC events have already been held here. A locally produced brochure about the Blue Tier region walks is available on the TLC website www.tasland.org.

Key Action	Detail
Peoples connection to rainforest is facilitated	Encourage events in the Blue Tier region but not on the reserve
Attribute	Indicator
Opportunities to experience rainforest	Number of events in the wider Blue Tier region

Good Neighbour Policy

Priority: Medium

Objective: Liaise with neighbours over shared management issues

The TLC recognises the importance of maintaining good relationships with neighbouring landowners and TLC staff facilitate cooperative approaches to regional land management issues such as feral animals, weeds and fire management. Sustainable Timbers Tasmania and the Tasmanian Parks and Wildlife Service manage the majority of land adjoining the Reserve and there is a private block adjoining the northeast corner. There is a potential for fires

Key Action	Detail
Good Neighbour Policy	Neighbours are aware of TLCs management activities and involved in shared management issues.

Management Plan Process

Management Plan Status

The final draft of the Blue Tier Reserve Management Plan was reviewed by the TLC's Science Council in 2017 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 will be kept current and inform annual work plans and review of the management plan.

Management Responsibilities

TLC 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 be requested to provide advice and guidance where needed and wherever possible, the TLC works with neighbours to manage cross-tenure threats.

Long-term management costs will be met through the TLC Foundation, an endowment fund that uses compounding interest to pay for the costs of the organisation, and by ongoing fundraising or through relevant partnerships and grant opportunities as they become available.

Stakeholder Involvement

The major land management stakeholders for the Blue Tier Reserve are Sustainable Timbers Tasmania, Tasmanian Parks and Wildlife Service and a private landholder. These stakeholders will be informed about management strategies addressing cross-tenure threats and the Tasmanian Government's 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 form the basis to annual work plans and budgets. The conservation targets, threats, strategies and actions are based on our best current knowledge but these may change over time as our information increases and monitoring can better inform our activities. In implementing the adaptive management process identified by the TLC's Reserve Management Policy, 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. Comments and feedback from the public can be received at any stage via the TLCs web site www.tasland.org.au.