

# The Big Punchbowl Reserve

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## Management Plan



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# The Big Punchbowl Reserve Management Plan 2015 - 2020

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Front Image: Aerial view of the Big Punchbowl Reserve © Glenys Jones

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# Adaptive 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 as shown in Figure 1.



Figure 1 Open Standards adaptive management model, developed by the Conservation Measures Partnership (CMP).

## Conservation Action Planning

This management plan represents 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 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.

## Implementing Management Strategies

Strategies to mitigate the threats to conservation targets are assessed for their feasibility and prioritised according to 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 are 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 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 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 management plans. The status of conservation targets, trends in ecological indicators and outcomes of reserve management activities are communicated to the TLC Board and TLCs Science Council, stakeholders and the community through a range of regular communication channels including an annual report.

# Overview

VISION	The Big Punchbowl Reserve is managed for its wetland and woodland values and to enhance the Moulting Lagoon Ramsar site.
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CONSERVATION TARGETS	GOALS
Wetland Complex	The 2014 condition of the wetlands and their threatened species are maintained or improved
Coastal Woodland	The condition of the woodland flora and fauna community is improved from 2014
Moulting Lagoon	Maintain or improve 2014 conservation values of Moulting Lagoon
SOCIAL TARGETS	GOALS
Community Engagement	Community are engaged with the Reserve and region
Indigenous Values	The indigenous values of the reserve are known and protected.
STRATEGIES	OBJECTIVES
Site development plan	Conservation targets are not degraded by recreational use of the reserve
Community engagement	Reserve visitation over 100 people/year (TBA)
Weed management	By 2017 existing weeds are controlled
Feral pest management	By 2020, impacts from feral pests are reduced
Fire Management	No unauthorised fires start on the reserve
Improve understanding of fauna	By 2020, species of conservation significance are managed effectively
Protect Indigenous Values	By 2017, indigenous values are known and better protected
Strengthen regional capacity	Management strategies are shared regionally whenever possible Reserve derived income supplements reserve costs by 5% annually and contribute to the Freycinet community
Build Resilience to Climate Change	The impact of climate change on conservation targets is being addressed

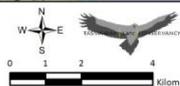
# Introduction

The Big Punchbowl Reserve is located on Tasmania's Freycinet Peninsula adjoining the internationally recognised Moulting Lagoon Ramsar wetland and immediately opposite TLCs Long Point Reserve (Fig. 2). It is a 244 hectare mosaic of wetlands, heath, woodlands and saltmarsh containing a number of threatened vegetation communities and nationally and internationally threatened plant and animal species (Fig 3, Table 1). The reserve contains an important suite of woodland birds, breeding raptors and old growth *Callitris* and *Xanthorrhoea* species and provides refuge and shelter for waterbird and shorebird species dependant on the Moulting Lagoon wetland ecosystem.



**Big Punchbowl**  
- reserve context in Moulting Lagoon

-  Big Punchbowl Reserve
-  Long Point Reserve
-  Ramsar wetland

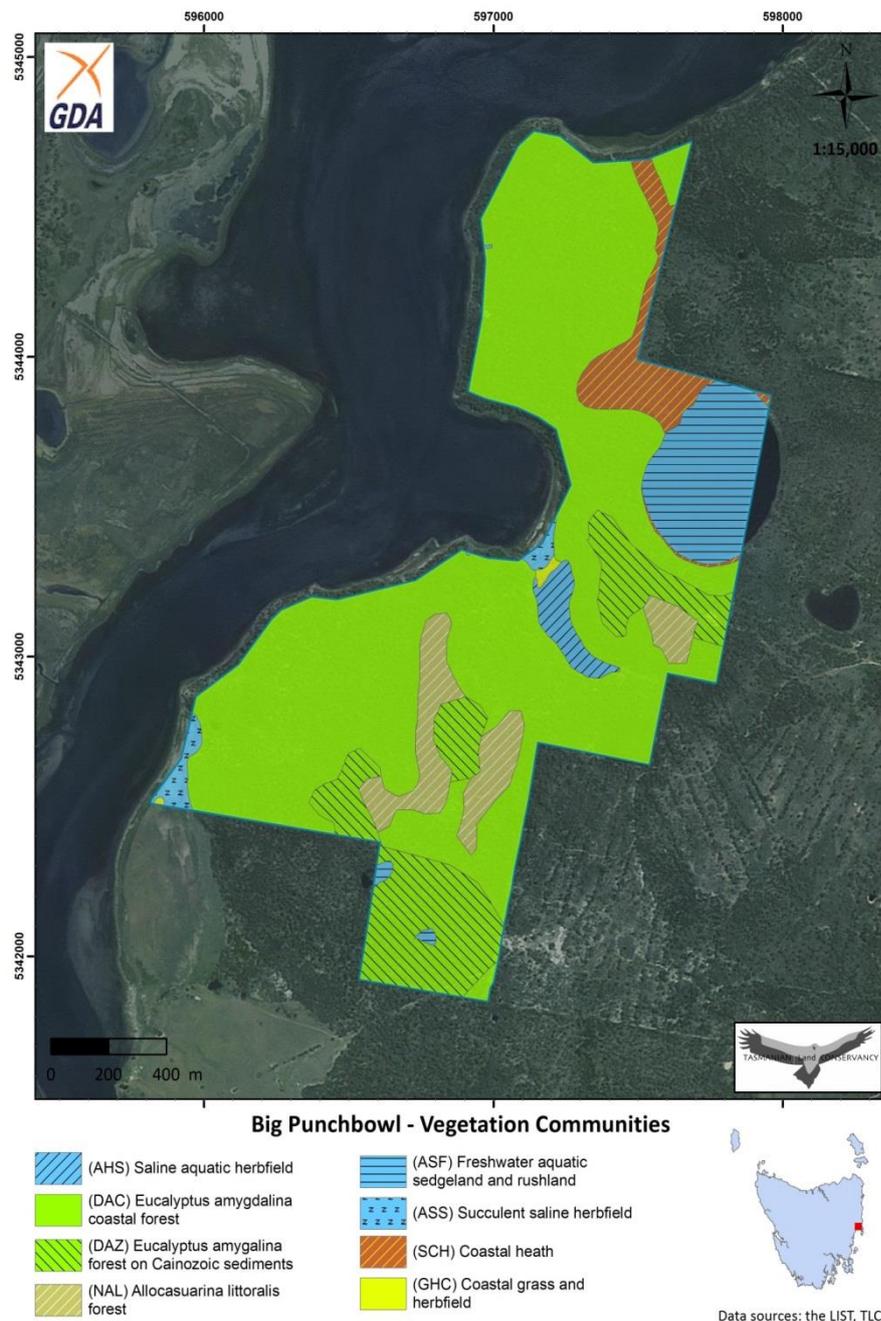


Drawn TLC. NAME, DATE, base data (C) TheList. Client data TLC

**Fig 2 Location of The Big Punchbowl Reserve and proximity to TLCs Long Point Reserve.**

Due to its east coast location the area was under increasing pressure of clearance, subdivision, development and ongoing degradation wrought by wood gathering, pests, weeds and disease. The TLC acquired the property in July 2015 and a covenant has now been prepared under the *Nature Conservation Act 2002* to protect its natural values in perpetuity.

This plan outlines the management strategies needed to protect this important reserve. A background document containing comprehensive information about the reserve, its acquisition and its special values (Tasmanian Land Conservancy 2015) is available on the TLC web site [www.tasland.org.au](http://www.tasland.org.au).



**Fig 3 Vegetation communities on The Big Punchbowl Reserve.**

**Table 1 Threatened and conservation significant species on The Big Punchbowl Reserve.**

Species	Scientific name	Confirmed #	EPBCA	TSPA	IUCN
Flora					
herb hairy brooklime	<i>Gratiola pubescens</i>	Yes	-	v	-
Tasmanian velvet bush	<i>Lasiopetalum micranthum</i>	Yes	-	r	-
Juniper wattle	<i>Acacia ulicifolia</i>	Yes	-	r	-
Fauna					
Tasmanian devil	<i>Sarcophilus harrisii</i>	Yes	EN	e	Endangered A2be+3e
Spotted-tailed quoll	<i>Dasyurus maculatus</i>	Yes	VU	r	Near threatened
Green and gold frog	<i>Litoria raniformis</i>	No	VU	v	A2ae
Australasian bittern	<i>Botaurus poiciloptilus</i>	Yes	EN	-	Endangered C1
Wedge-tailed eagle	<i>Aquila audax fleayi</i>	Yes	EN	e	-
White-bellied sea-eagle	<i>Haliaeetus leucogaster</i>	Yes	-	v	-
Masked owl	<i>Tyto novaehollandiae castanops</i>	No	VU	e	-
Swift parrot	<i>Lathamus discolor</i>	No	EN	e	Endangered C2a(ii)
New Holland mouse	<i>Pseudomys novaehollandiae</i>	No	-	v	Vulnerable C1+2a(i)
Tasmanian Chaostola skipper	<i>Antipodia chaostola leucophaea</i>	No	EN	e	-

# confirmed: Yes sighted since acquisition, otherwise species recorded in the NVA,  
 EPBCA: Listed as endangered EN or vulnerable VU under the Commonwealth *EPBC Act 1999*,  
 TSPA: Listed as endangered e, vulnerable v or rare r under Tasmania's *TSP Act 1995* ,  
 IUCN Red List codes <http://www.iucnredlist.org/technical-documents/categories-and-criteria>

# Conservation Targets

## Wetland Complex

*Priority: High*

**Goal: The 2014 condition of the wetlands and their threatened species are maintained or improved**

The Big Punchbowl wetland, Barney Ward's Lagoon plus several smaller wetlands on the reserve are important ecologically and form part of the more extensive Moulting Lagoon wetland complex. Many of these wetlands are ephemeral and their values can change seasonally or on a long term basis due to environmental conditions. The Big Punchbowl is a wetland of sub-regional significance (Dunn 2002) with its very characteristic circular formation known as a deflation hollow and bare sediment perimeter denuded of vegetation due to its wet/dry cycle. Freshwater aquatic sedgeland and rushland and succulent saline herbland comprise its main vegetation types, and fauna such as Australasian bittern, green and gold bell frog and a host of waterfowl and aquatic invertebrate are known to occur there on a seasonal basis.

### Viability

The viability of the wetlands are rated as good from previous surveys carried out by Dunn (2002), Mowling and Dunn (2011), Smith (1998) and Prahalad and Jones (2013). We will integrate that work into our ongoing monitoring to assess trends over time.

Key Environmental Attribute	Indicator
Vegetation condition	Floristic diversity
Fauna	Fauna occupancy and abundance

### Threats and management

Threats to the wetlands have been identified as cats, duck shooting, deer, domestic stock and wildfire (in extreme conditions). Of these, only cats has been rated as a medium threat: all others are low.

Feral cats predate birds, including eggs and young, plus the smaller mammals using the wetlands and furthermore pose a disease risk. Whilst neither these feral pests, nor deer are likely to be eradicated working only at a local level, plans are being put in place to manage them in the wider landscape. TLC is working in partnership with other on either regional or statewide plans to address both cats and deer.

Neighbouring sheep access the coastal saltmarsh and fallow deer use Barney Ward's Lagoon as a watering point. Both these species pug the sediments, foul the water and browse on succulent native vegetation and grasses. Small infestation of weeds such as gorse and thistle invade and degrade wetland values and unplanned fires in extreme weather conditions may denude wetlands of habitat or vegetation needed for breeding or refuge.

Threat	Impact	Threat rating	Management strategy
Feral cats	Predation and disease	medium	<ul style="list-style-type: none"> <li>• Feral pest management</li> </ul>
Inappropriate fire	Loss of vegetation during extreme conditions	low	<ul style="list-style-type: none"> <li>• Fire management</li> <li>• Site development plan</li> <li>• Strengthen regional capacity</li> </ul>
Stock, Fallow deer	Uncontrolled stock and fallow deer degrade vegetation/soil values	low	<ul style="list-style-type: none"> <li>• Feral pest management</li> <li>• Site development plan</li> </ul>

## Coastal Woodland

### Priority: Medium

#### Goal: The condition of the woodland flora and fauna community is improved from 2014

The coastal woodlands of The Big Punchbowl Reserve contain threatened vegetation communities dominated by black peppermint and black sheoak, plus areas with Oyster Bay pine and grasstrees *Xanthorrhoea australis*. Some significant stands of mature and senescing white gum and threatened flora such as *Gratiola pubescens*, *Lasiopetalum micranthum* and *Acacia ulicifolia* are scattered throughout. Flora surveys have refined the mapping of vegetation communities and improved species knowledge. There is a suspicion from the prevalence of isolates of phytophthora from soil (Taylor, 2014), and a restricted understorey species diversity, that this root rot fungus has already spread throughout the reserve. Nevertheless there are still susceptible species such banksia and grasstrees extant.

Fauna surveys are ongoing with camera traps capturing a range of mammal species including threatened Tasmanian devil and spotted-tailed quoll and a diverse compliment of woodland birds and breeding raptor species. Lesser known fauna such as New Holland mouse and the Chaostola skipper may occur on the reserve but have yet to be positively identified.

### Viability

Rated as good, despite the legacy of wood cutting, many tracks and phytophthora. The status of the indicators are yet to be determined and therefore trends will be better quantified over time.

Key Environmental Attribute	Indicator
Vegetation condition	Floristic diversity
	Structural complexity
	Extent of weeds
Fauna	Fauna occupancy and abundance
	Productivity of breeding raptors

## Threats and management

Threats have been identified as cats, deer, domestic stock, unplanned fires, weeds, phytophthora, firewood collecting and recreational overuse. Of these, only recreational overuse has been rated as a medium threat: all others are low.

People using the Reserve – both authorised and unauthorised, have the potential to strip firewood and light fires, disturb shy nesting raptors and spread root rot fungus. The key strategy to deal with this is a site development plan to outline where, how and when the Reserve is accessed.

Fire is a potential threat to the woodland and woodland species. Dating branches whorls on existing banksia trees indicates that the most recent fire on the reserve was 35 years ago. Fire-sensitive species such as Oyster Bay pine and sheoak need adequate time between fires to set seed for the next generation.

Phytophthora occurs on the reserve and there is suspicion that it has already reduced the floral diversity of the woodland. It is likely this root-rot disease will continue to be spread by mobile fauna and that this could be exacerbated by the unregulated movement of people.

Threat	Impact	Threat rating	Management strategy
Recreational overuse	Firewood cutting, fire, disturbance and spreading disease	medium	<ul style="list-style-type: none"><li>• Site development plan</li></ul>
Inappropriate fire regime	Potential loss of some key species eg Callitris, if fire frequency is too short	low	<ul style="list-style-type: none"><li>• Fire management</li></ul>
Pests and weeds	Loss of native habitat and condition, degradation to Ramsar values	Low	<ul style="list-style-type: none"><li>• Weed management</li><li>• Neighbour relations</li><li>• Site development plan</li></ul>

## Moulting Lagoon Ramsar site

*Priority: Medium*

**Goal: Maintain or improve 2014 conservation values of Moulting Lagoon**

Unusually for a management plan, we include the region as a conservation target here. The TLC now owns either side of Moulting Lagoon's outlet to the sea, and we are intending to work with the public manager (Parks and Wildlife Service) to increase conservation outcomes for the region. The TLC intends to explore the potential for a marine protected area in at least parts of the Lagoon.

Moulting Lagoon Game Reserve is one of ten Ramsar sites (wetlands of international significance) listed in Tasmania, satisfying five of nine listing criteria and supporting a large number of waterbirds at key stages of their life cycles and several shorebird species listed on The Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA) (Parks and Wildlife Service 2003). The full site

ecological character description<sup>1</sup> can be viewed on <http://www.environment.gov.au/resource/moulting-lagoon-ramsar-site-ecological-character-description>. The geomorphology of the region is significant, nine threatened plant species occur, and the estuaries and coastal wetlands have long been recognised as essential nursery areas for a myriad of marine species.

### Viability

The viability of the target has rated as good, using Mowling and Dunn (2011), and Prahalad and Jones (2013).

Key Environmental Attribute	Indicator
Bird habitat	Annual bird count (and using the Limits of Acceptable Changes as noted in Moulting Lagoon Ramsar Site Ecological Character Description)

### Threats and management

TLCs conservation management of The Big Punchbowl Reserve should enhance Moulting Lagoon's regional values, however, cats and duck shooting and lack of knowledge are considered to have the biggest potential impacts on the Ramsar values.

Threat	Impact	Threat rating	Management strategy
Cats	Direct predation on nesting birds	medium	<ul style="list-style-type: none"> <li>Feral pest management</li> </ul>
Duck shooting	Loss of species and potential indirect effects	low	<ul style="list-style-type: none"> <li>Enhance regional capacity</li> </ul>
Lack of knowledge	Dis-connect with the target	low	<ul style="list-style-type: none"> <li>Community engagement</li> </ul>

# Social Targets

## Community connection to the landscape

*Priority: Medium*

**Objective: Community are engaged with the Reserve and region**

The TLC encourages connection to the landscape as an end in itself, and to ensure that reserve networks are valued and supported in the community. Access to this reserve and the ability to use it as a base to explore the region is a goal for all of our reserves, and for reserves generally.

We also aim to foster a community volunteer relationship with this Reserve. Where possible the TLC will enlist the help of the community to assist with onsite reserve activities such as assessment and monitoring, weed mapping and preservation of indigenous sites to deepen connection with the landscape as well as to enjoy the reserve and the Moulting Lagoon region.

### Viability

Viability for this target is rated as good, from events already held on the reserve, including a successful Open Day held early 2015.

Key Attribute	Indicator
Community involvement	No of events, activities and visitors

### Threats

The lack of knowledge, understanding and appreciation of this landscape are the primary threat to achieving this objective. This may arise from a lack of, or poor communication with stakeholders or the lack of opportunities for the wider community to become, or remain, engaged with the TLC.

Threat	Impact	Threat rating	Management strategy
Lack of knowledge	Lost opportunities to better understand and manage the reserve	Low	<ul style="list-style-type: none"><li>• Community engagement</li><li>• Strengthen regional capacity</li></ul>

## Indigenous Values

*Priority: Medium*

**Goal: The indigenous values of the reserve are known and protected.**

No built structures or sites of European significance are known on the Reserve and the previous cultural pursuits of duck shooting, honey production and wood collecting are no longer allowed. The indigenous values, however, are poorly documented although it is known that the reserve and its immediate surroundings were a significant resource for Tasmania's Aboriginal people. The waterfowl, fish and shellfish in Moulting Lagoon were harvested for food and stone artefacts, including sharpened flakes and heavier core-stone-like pieces have already been identified on the reserve (Corbett 2015). Stands of Melaleuca for spear making and a range of coastal plants for food or for weaving are still plentiful.

### Viability

Yet to be formally assessed but suspected as high due to the location of the reserve as a resource to Aboriginal people.

Key Attribute	Indicator
Identification of indigenous sites / uses	Sites or values known and being protected

### Threats

Potential loss and decay of indigenous sites or resources due to lack of information.

Threat	Impact	Threat rating	Management strategy
Natural and induced loss and decay	Site disturbance and loss or deterioration of values due to poor site knowledge and protection	low	<ul style="list-style-type: none"><li>• Access management</li><li>• Indigenous preservation</li></ul>

# Management Strategies

## Site development plan

*Priority: High*

**Objective: Conservation targets are not degraded by recreational use of the reserve**

A draft site development plan has been developed that addresses access to the property, parking and hygiene protocols (for phytophthora), use and timing for use of tracks to limit raptor breeding disturbance, camping, fire and fencing. This addresses most of the issues presented by recreational overuse, or 'loving it to death'.

It will be implemented and updated as our knowledge of the reserve, its threats and use becomes more complete over time.

Key Actions	Details
Road / track / infrastructure work	Upgrade and rationalise access, internal roads and tracks. Upgrade and install camping facilities as per plan. Install signage as needed to regulate use and biosecurity.
Biosecurity protocols	Implement TLC biosecurity procedures to minimise the likelihood of introduction or new or spread of existing pests, weeds or disease especially Phytophthora on the reserve. This includes a wash station at the reserve entry point and walker use of designated tracks.
Fencing	Fencing for straying livestock on boundaries and the coastal strip.
Key Monitoring Activities	Details
Visitor impacts	Note impacts as part of the annual reserve assessment,
Productivity of breeding raptors	Nest checks during breeding season and reserve assessment

## Community engagement

*Priority: High*

**Objective: Reserve visitation over 100 people/year (TBA)**

The TLC encourages visitors, especially supporters, to its reserves. Given this reserve's accessibility and proximity to Freycinet Peninsular and the wider Moulting Lagoon area, it is likely to be a popular destination for supporters and the local community. Visitors must be aware of reserve values, biosecurity protocols and conditions that apply to use and enjoyment of the Reserve. A site development plan will help to manage visitor impacts.

<b>Key Actions</b>	<b>Details</b>
Communications	Develop and provide visitors with information on reserve values, use conditions, biosecurity protocols and seasonal constraints.
Community engagement	Hold events and foster bushwalkers and other interested groups through TLC communication channels, eg web, newsletter, blog, public events etc. to support and protect the reserve
<b>Key Monitoring Activities</b>	<b>Details</b>
Visitor numbers	Monitor visitor numbers and activities via a neighbouring landholder or designated point for obtaining property keys.

## Weed Management

*Priority: Low*

**Objective: By 2017 existing weeds are controlled**

Although weeds are not extensive on the reserve, control is needed in a timely and effective manner before they spread further. Small infestations of gorse have already been identified and treated and annual monitoring and follow-up is underway.

<b>Key Actions</b>	<b>Details</b>
Weed management	Ensure weed management is ongoing and any new outbreaks are identified and treated in a timely manner
<b>Key Monitoring Activities</b>	<b>Details</b>
Annual reserve assessment	Scout for any new threats, and assess success of existing management strategies.

## Feral pest management

*Priority: Medium*

**Objective: By 2020, impacts from feral pests are reduced**

The two feral pests of most importance on the Reserve are cats and deer. TLC is working across all of our reserves to monitor and understand the population dynamics of both species, but beyond that, the strategies are quite different.

A feral deer strategy is already being developed in collaboration with other stakeholders on the Freycinet Peninsula - Parks and Wildlife Service, Bush Heritage Australia, conservation landholders – with a view to regional eradication.

Feral cats, however, are considered more difficult to deal with, and presently no effective eradication or even control techniques are known for region with no borders (ie anywhere but quite small islands). This is particularly true for areas with a human population that keep cats as pets. As such, our current strategy is just to monitor cats uses camera traps, and monitor control strategies and efforts from other stakeholders nationally and internationally to be in the best position to act when control techniques become more effective.

<b>Key Actions</b>	<b>Details</b>
Feral pest plan	Implement and refine plan for culling fallow deer (and reduction of feral cats and rabbits) in collaboration with stakeholders as noted.
<b>Key Monitoring Activities</b>	<b>Details</b>
Feral pest incidence	Camera traps, and implementation actions and timelines identified in the feral pest plan

## **Fire Management**

*Priority: low*

**Objectives: No unauthorised fires start on the reserve**

TLC recognises the threat posed by unplanned fires on The Big Punchbowl Reserve to human life, reserve values and the wider Freycinet area. Fire sensitive vegetation such as the Oyster Bay pine requires fire regimes longer than its seed setting period to survive. The TLC will implement the restrictions of a fuel stove only policy except at designated sites, and will work closely with Parks and Wildlife Freycinet staff and the Tasmanian Fire Service to prevent the spread of unplanned fires into this area (see neighbour relations).

<b>Key Actions</b>	<b>Details</b>
Fire management prescriptions	Implement fire prescriptions and work with others to prevent outbreak and spread of fire
<b>Key Monitoring Activities</b>	<b>Details</b>
Map fire sensitive areas	Ensure assets sensitive to fire are mapped and information provided to PWS Freycinet staff and TasFire in case of emergency.
Fire danger	Monitor the fire index rating on the Tasmanian Fire Service web site and associated outlets, to ensure preparedness
Fire boundaries	Map fire incidence and boundaries if fire occurs

## Improve understanding of fauna

*Priority: Medium*

**Objective: By 2020, species of conservation significance are managed effectively**

While much is known already, targeted surveys and additional on-ground work is needed to better identify species of conservation significance and their management needs. Several additional threatened species values have been identified since acquisition. This information is needed to better inform reserve activities such as seasonal closure or re-routing of tracks, identification of visitor amenities and recreational activities.

Key Monitoring Activities	Details
Targeted surveys	Additional surveys are required to determine occurrence of New Holland mouse, chaostola skipper, green and gold frog and Australasian bittern and their specific management needs
On-ground assessment	Improve site knowledge of Tasmanian devil and spotted-tail quoll including den sites and of habitat usage of woodland dependant bird species and breeding raptor species

## Protect Indigenous values

*Priority: low*

**Objective: By 2017, indigenous values are protected**

TLC's understanding of these values is quite low, but we have good relations with key stakeholders, and shall rely on them to help us increase the understanding.

Key Actions	Details
Record and protect indigenous values	Seek advice from Aboriginal experts on procedures for identification of sites and artefacts, and their protection and interpretation needs.
Key Monitoring Activities	Details
To be advised	Seek advice from the Aboriginal community

## Strengthen regional capacity

*Priority: High*

**Objective: Management strategies are shared regionally whenever possible**

**Objective: Reserve derived income supplements reserve costs by 5% annually and contribute to the Freycinet community**

Wherever possible or appropriate, policies, procedures or management actions can be shared or coordinated across neighbouring properties in a strategic way. This is particularly important given that one of our

conservation targets is the Ramsar site, and that there are swathes of other reserved areas in the local region. Stakeholders of note in this region are the Parks and Wildlife Service, Bush Heritage Australia and nearby conservation landholders. They may also be custodians of important knowledge which can help the TLC protect sensitive sites and conservation of the area more widely.

We are also interested in extending conservation management into Moulting Lagoon to help protect fish nurseries and marine values. The concept of a Marine Protected Area for at least parts of the lagoon will be explored.

Moreover, the TLC strives to provide social and cultural benefits to the broader community. A robust Freycinet community will enhance the TLCs long term vision to support healthy communities to underpin healthy landscapes. An ecosystem services framework has been used by TLC as a way to structure thinking around income generation from reserves that provides an environmentally rigorous way to consider a range of options and potential impacts.

By annually recording expenditure by TLC and revenue generated in the local area, we can identify our financial contribution from conservation activities to the local community.

<b>Key Actions</b>	<b>Details</b>
Neighbour liaison	Ensure neighbours are consulted regarding TLC's intentions and activities including those involving Moulting Lagoon.
Explore synergies and connections with neighbours	Seek opportunities to enhance the local economy through TLC activities or other ecosystem service enterprises
Marine Protected Area	Explore potential to have a marine protected area declared over Moulting Lagoon especially the sector adjoining TLCs two reserves
<b>Key monitoring activities</b>	<b>Details</b>
Track revenue from conservation activities	Report annually on TLC expenditure and revenue generated from conservation in the Freycinet community

## **Build Resilience to Climate Change**

*Priority: low*

**Objective: The impact of climate change on conservation targets is being addressed**

Climate change is pervasive, global in impacts and unmanageable at a local level. The TLC recognises its responsibility to try and address climate change and takes several general approaches to this:

- Seeks to enhance the carbon carrying capacity of its reserves
- Participates in carbon markets and seeks to develop more options for payment for ecosystem services
- Seeks to develop resilience in reserve's ecosystems and species

- Seeks to understand and aid adaption pathways for ecological targets.

Key actions to implement most of these approaches lie outside of each reserve, however implementation of other reserve strategies such as fire, weed, and disease management will help increase the resilience of conservation targets to threats.

Long-term monitoring on the reserve is essential to identify any change in extent or condition of conservation targets and when remedial recovery actions are needed.

Key Monitoring Activities	Details
Condition of conservation targets	Install and maintain long-term ecological monitoring of conservation targets to inform management and trigger intervention if needed.

# Management Plan Process

## Management Plan Status

The final draft The Big Punchbowl Reserve Management Plan was reviewed by the TLCs Science Council before being submitted to the TLC Board for approval. As part of the Open Standards Adaptive Management process, information on progress on conservation management actions, threat abatement and management effectiveness monitoring, will be kept current.

## Management Responsibilities

TLC is responsible for management of the reserve. This includes the co-ordination of contractors, consultants and volunteers where they are required to implement the management actions outlined in this Management Plan. Relevant experts from the TLC Board and Science Council will also be requested to provide advice and guidance where needed. Wherever possible, the TLC works with neighbours to manage cross-tenure threats. The TLC will endeavour to act as a good neighbour to all parties and, where possible, undertake co-operative or complementary management where both parties seek a similar outcome (e.g. weed control and fire management). The TLC will 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, an endowment fund that seeks to use 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 to this plan are the Tasmanian Parks and Wildlife Service Freycinet District, DPIPWE and the Commonwealth for the Moulting Lagoon Ramsar site. The Private Land Conservation Program will monitor the status of the conservation values identified in the covenant. These major stakeholders will be involved with practical implementation of these management actions and any monitoring or adaptive changes needed.

## 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 plan identifies a range of conservation targets, threats, strategies and key actions based on our best current knowledge but these may change over time as our information improves. In implementing the adaptive management process identified by the TLC's Reserve Management Policy, progress towards meeting the objectives of this plan will be reviewed at regular intervals not exceeding every two years, with a full review of the plan no earlier than five years and no later than ten years from the date of its adoption.

## References

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- Threatened Species Section (2008) Listing Statement New Holland Mouse *Pseudomys novaehollandiae*, Department of Primary Industries and Water.
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## Acronyms and Abbreviations

DPIPWE	Tasmanian Government's Department of Primary Industries, Parks, Water and Environment
DSEWPC	Commonwealth Government's Department of the Sustainability, Environment, Water, Population and Community
EA	Environment Australia
EPBC Act	<i>Australian Environment Protection and Biodiversity Conservation Act 1999</i>
IUCN	International Union for Conservation of Nature
MPA	Marine Protected Area
NC Act	<i>Tasmania's Nature Conservation Act 2002</i>
NRM	Natural Resource Management
PWS	Parks and Wildlife Service, Tasmania
Ramsar	a wetland of international significance as designated by the Ramsar Convention
STTDP	Save The Tasmanian Devil Program, DPIPWE
TLC	Tasmanian Land Conservancy
TSP Act	<i>Tasmania's Threatened Species Protection Act 1995</i>