

Lower Liffey World Heritage Reserve

Management Plan 2017 - 2022



www.tasland.org.au

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Front Image: TLC volunteers helping clear weeds photo by Chris Crerar

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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 (Fig. 1).

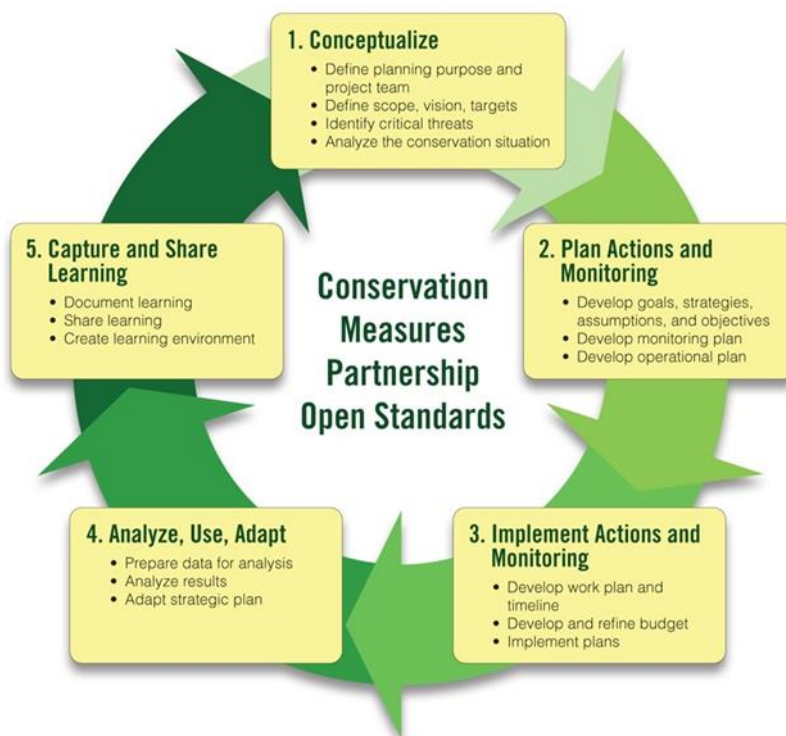


Figure 1 Open Standards adaptive management model, developed by the Conservation Measures Partnership

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.

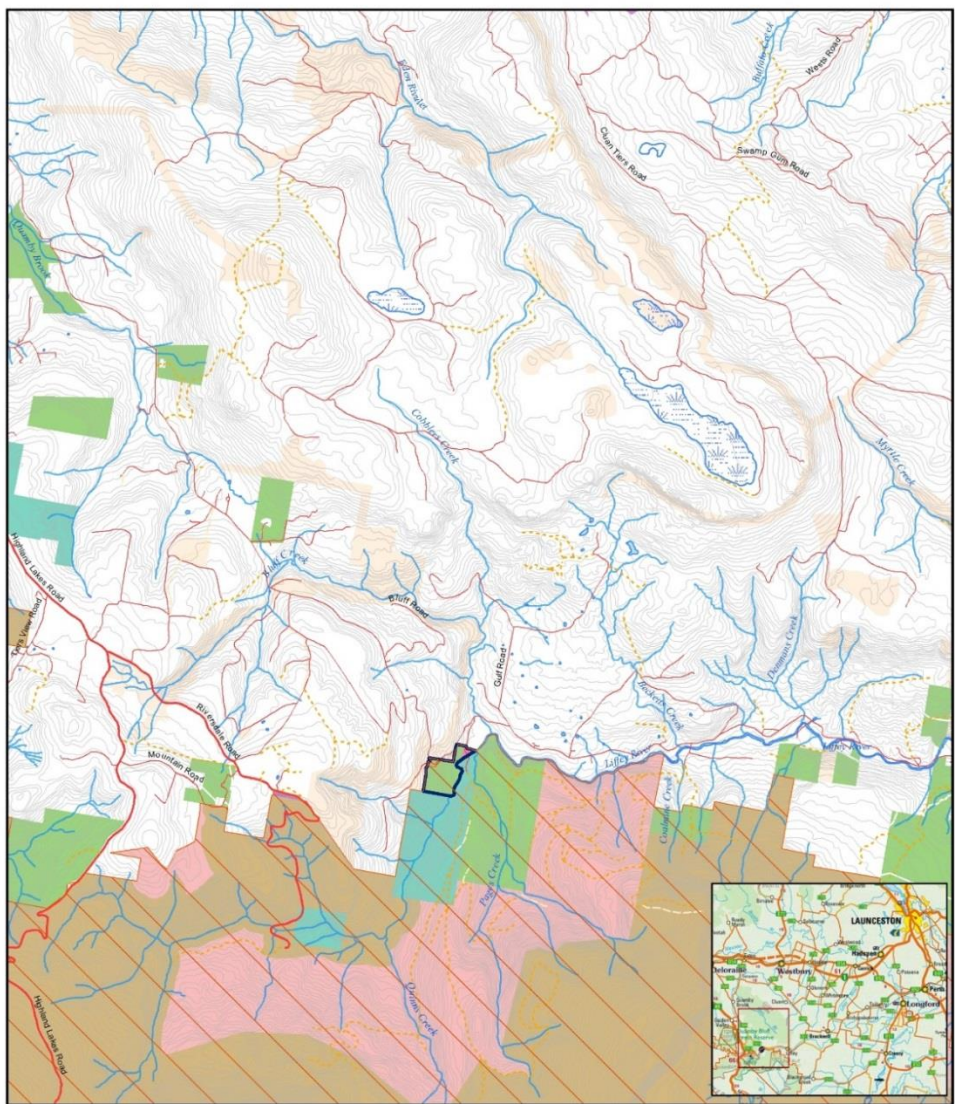
LOWER LIFFEY WORLD HERITAGE RESERVE MANAGEMENT OVERVIEW

VISION	Lower Liffey World Heritage Reserve is managed for its wet forest ecosystem
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CONSERVATION TARGET	GOAL
Wet forest ecosystem	Maintain or improve the 2016 condition of the forest
SOCIAL TARGET	GOAL
Community connection to the area	The community remain connected to the area
STRATEGIES	OBJECTIVES
Improve understanding of natural values	By 2020 species of conservation significance on the Reserve are identified and effectively managed
Access management	Community access is maintained and minimises known threats
Weed management	The number and extent of weeds is reduced over time
Fire management	Reduce the risk of fire
Community engagement	Casual camping remains in its current form Volunteer events are held as needed
Annual Reserve assessment	Exclude known threats, including fire, weeds and disease No new threats emerge from 2016

INTRODUCTION

The Lower Liffey World Heritage Reserve (the Reserve) is 14.76ha of regenerating wet eucalypt forest located approximately 42km south-west of Launceston. The Reserve lies within the Tasmanian Wilderness World Heritage Area and adjoins the Liffey Falls State Reserve (Figure 2).



Lower Liffey World Heritage Reserve - context

- | | |
|--------------------------|--|
| Lower Liffey WHA Reserve | State Reserve |
| Access Road | Public authority land within WHA |
| Arterial Road | Future Potential Production Forest |
| Vehicular Track | Informal Reserve on State Forest or Forestry Tas. managed land |
| Walking | Conservation Covenant (NCA) |
| World Heritage Area | Private land within WHA |
| Conservation Area | Other Private Reserve |

Drawn: March 2017
Data: background (C) LIST, client data TLC



Figure 2 Location of Lower Liffey World Heritage Reserve

The regenerating wet eucalypt forest on the Reserve contains one vegetation community under the TASVEG 3.0 classification (see Table 1 and Figure 3).

Table 1 Vegetation communities mapped at the Reserve (TASVEG 3.0)

Vegetation community	TASVEG code	Approx. Area (ha)	Conservation status (NCA 2002)
Brown-topped stringy-bark (<i>Eucalyptus obliqua</i>) wet forest	WOB	14.76	Not threatened

The Reserve provides suitable habitat for a wide range of plant and animal species typical of wet forest and rainforest in Tasmania and several threatened fauna species occur and are likely to utilise the Reserve given the available habitat (Table 2). A list of flora and fauna species identified by TLC staff and camera trapping is provided in the background report (Tasmanian Land Conservancy 2017).

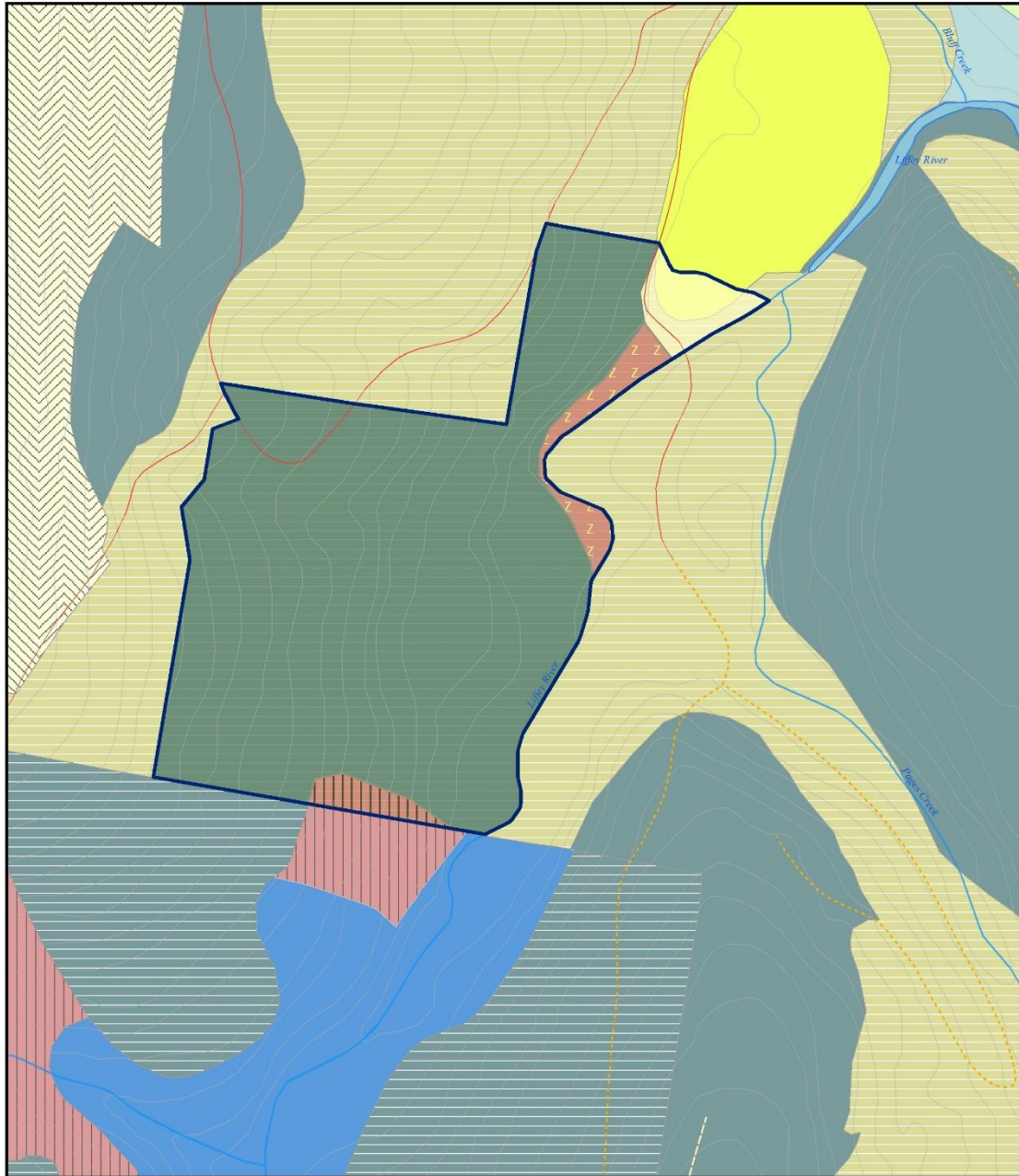
Table 2 Threatened species known and likely to utilise the Reserve

Species	Common name	Conservation Status (TSPA/EPBCA)#	Status/significance at the Reserve
FLORA			None recorded to date
FAUNA			
<i>Aquila audax fleayi</i>	Wedge-tailed eagle	e/EN	Suitable foraging habitat
<i>Accipiter novaehollandiae</i>	Grey Goshawk	e/-	Suitable habitat on the Reserve
<i>Dasyurus maculatus</i>	Spotted-tailed quoll	r/VU	Captured on camera traps
<i>Sarcophilus harrisii</i>	Tasmanian Devil	e/EN	Captured on camera traps
<i>Tyto novaehollandiae castanops</i>	Masked Owl	e/VU	Suitable habitat on the Reserve

listed on the Tasmanian *Threatened Species Protection Act 1995* (TSPA) and/or the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBCA).

A conservation covenant under the *Nature Conservation Act 2002* is registered over 13.7 ha of the Reserve, with an approximately 1 ha cleared area adjacent to the Liffey River being excluded (see Background Report).

This management plan outlines the management strategies needed to protect the Reserve. The plan is supported by a comprehensive background document about the Reserve, its acquisition and its special values (Tasmanian Land Conservancy 2017), which is available on the TLC website www.tasland.org.au.



Lower Liffey World Heritage Reserve - vegetation

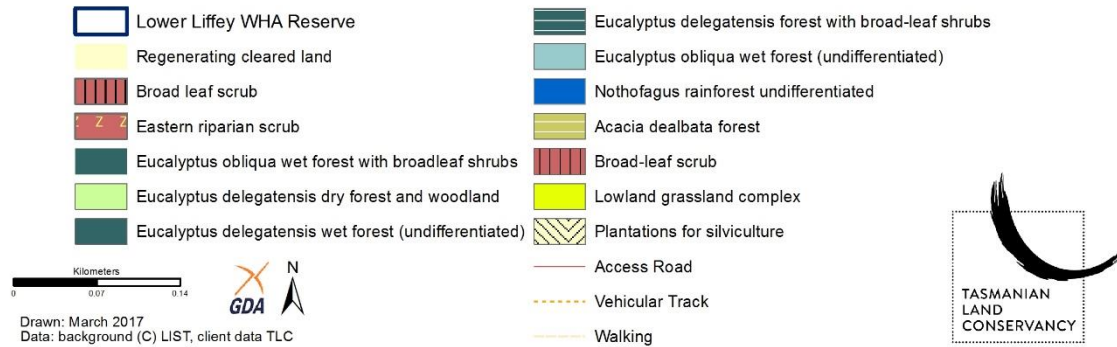


Figure 3 Vegetation communities, Lower Liffey World Heritage Reserve

CONSERVATION TARGET

Wet Forest Ecosystem

- Goals:** **Maintain or improve the 2016 condition of the forest;**
- Allow the natural succession of the vegetation toward the climax community of tall eucalypts with a rainforest understorey.**

Regenerating wet eucalypt forest occupies most of the Reserve, dominated by the TASVEG 3.0 community: brown-topped stringybark (*Eucalyptus obliqua*) wet forest (WOB).

Much of this forest community has been heavily logged in the past, with only relatively small areas on the lower slopes and the riparian zone along the Liffey River unaffected by logging. As a result, there are generally only scattered mature eucalypts in the canopy over an understorey dominated by early successional species.

Brown-topped stringybark to 25m in height is the dominant canopy species, with occasional gum-topped stringybark (*E. delegatensis*) and white gum (*E. viminalis*). The understorey is generally dominated by a mid-storey of mature silver wattle (*Acacia dealbata*), but there are also relatively open sites dominated by tree ferns (*Dicksonia antarctica*) and dogwood (*Pomaderris apetala*). The ground cover is dominated in most areas by a range of fern species.

Rainforest trees and shrubs are locally dominant in the riparian zone along the Liffey River (Eastern riparian scrub) and along some internal drainage lines, with a small area of tall, old growth myrtles (*Nothofagus cunninghamii*) in the un-logged forest along the river. A small area is regenerating cleared land next to the road bridge across the Liffey River.

Viability

Much of the wet forest is still regenerating following logging, with the primary colonising wattles dominant in many areas, but eucalypts established and growing well. Little management intervention is required and condition is expected to improve over time with weed control and natural succession toward the climax community of tall eucalypts with a rainforest understorey. Overall, the viability of the forest is rated as 'good'.

Key Environmental Attribute	Indicator
Vegetation condition	Floristic diversity, recruitment and structural complexity
	Extent of weeds
Fauna	Bird and mammal diversity and occupancy

Threats and management

The Reserve is accessed in the north-east corner by the Parks access road into the adjoining Liffey Falls State Reserve where cars can safely park. This facilitates easy access for picnics and camping on the cleared river flats of the Reserve where camp fires are often lit with casual stone surrounds (Figure 5). It is bisected in the north-west corner by the Forestry Tasmania unsealed Bogan Road where limited safe parking occurs.

There is a long history of people camping in this area, including those bringing dogs. The ease of public access creates the potential for fire escapes, weeds, illegal wood-cutting, tree fern harvest and rubbish dumping. However, most human activity is concentrated around the cleared area adjacent to the Liffey River and road, and the steep terrain effectively protects much of the Reserve. Small illegal plots for the cultivation of cannabis have been discovered on the Reserve since its acquisition, but not in recent times.

Fire

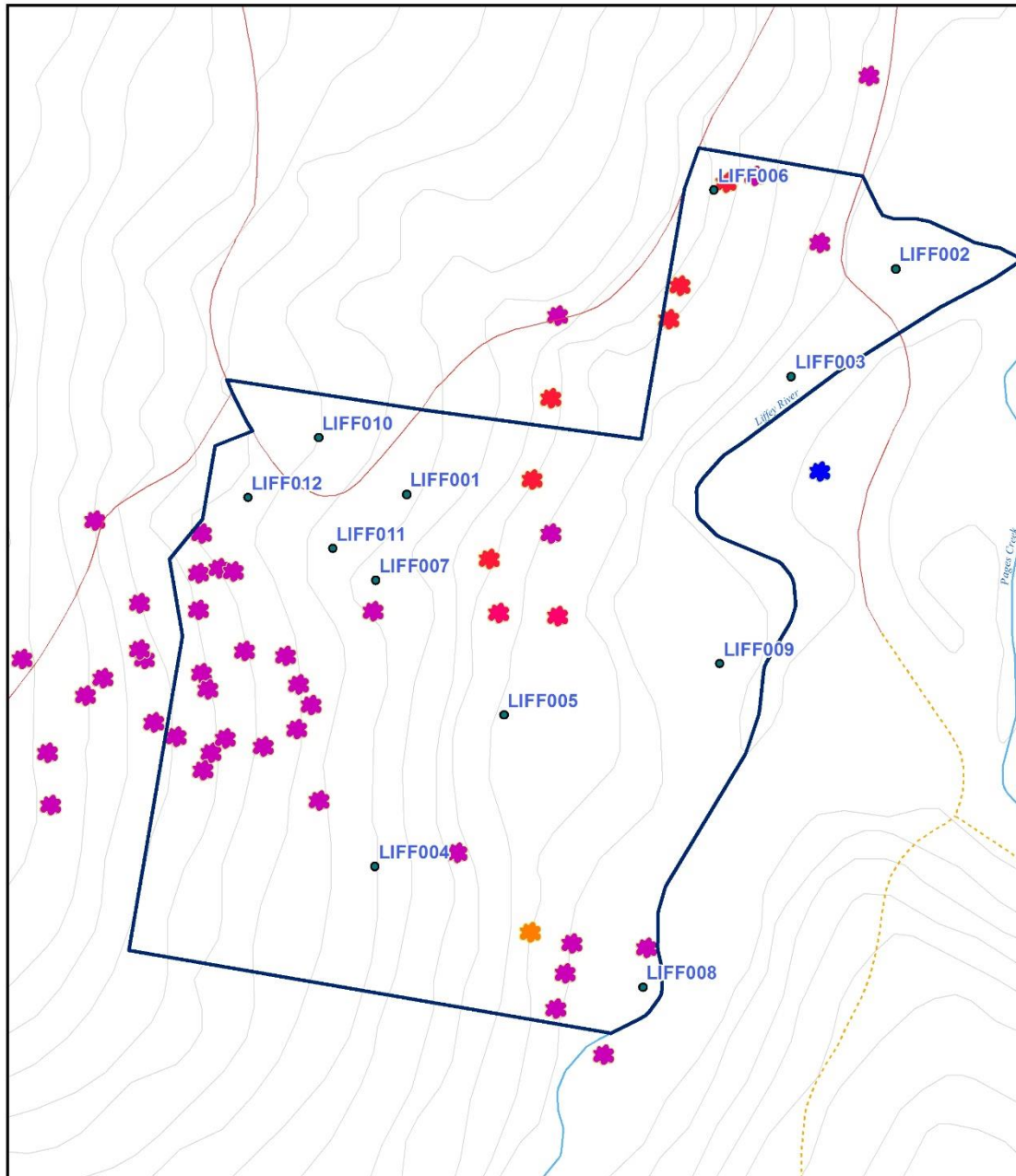
This Reserve is highly sensitive to fire and during dry summer conditions there is the potential for fires to escape from un-attended camp fires or as a result of arson. There is also an ongoing risk from wildfires in the broader landscape, as a result of arson, accidental ignition or natural ignition sources such as lightning.

Mitigation of fire threats revolves around ensuring low fuel loads in times of danger and encouraging people to be fire safe. Firewood collection for camp fires helps to keep fuel loads low in and around the camping area.

Weeds

Four environmental weed species are scattered throughout the Reserve (Figure 4): elderberry (*Sambucus nigra*); blackberry (*Rubus fruticosus*), foxglove (*Digitalis purpurea*) and Elisha's tears (*Leycesteria formosa*), plus an unknown plant similar to Ivy have been controlled. The Reserve contained scattered elderberry plants at the time of acquisition, but many have now been treated with herbicide, some ongoing recruitment from seed can be expected, and some plants have recovered from herbicide treatment. Scattered blackberry plants occur across the Reserve, while foxglove is present in drainage lines and areas with open canopy (e.g. where trees have fallen or roadsides). An individual Elisha's tears plant was detected and controlled in Dec 2015. All of these weed species are present throughout the broader landscape and are likely to persist for some time. TLC aims to control weeds on the Reserve annually.

Threat	Impact	Threat rating	Management strategy
Fire	Loss of species diversity and structural complexity	low	<ul style="list-style-type: none">• Access Management
Weeds	Displacement of native species Habitat modification Disruption of natural ecological interactions	medium	<ul style="list-style-type: none">• Weed management• Annual reserve assessment• Access management



Lower Liffey World Heritage Reserve - weeding and monitoring sites



Figure 4 Weed control and monitoring sites, Lower Liffey World Heritage Reserve

SOCIAL TARGET

Community connection to the area

Priority - Medium

Goal: The community remain connected to the area.

The TLC encourages connection to nature and strives to ensure its reserve networks are valued and supported in the community. This Reserve plays an important role for casual camping and as an access point to the adjacent Liffey Falls State Reserve which is a designated camping area, with all the associated services maintained by PWS (Figure 5). The area is also the start of the Lower Liffey Falls track, a 2.5 km walk culminating in the picturesque Liffey Falls and close to Bush Heritage's Oura Oura Reserve. The Reserve is situated immediately before the PWS camping area and is regularly used for car parking and as overflow for casual camping including by people with dogs. TLC is keen to accommodate these activities but is not intending to upgrade either parking or camping facilities and will undertake monitoring to ensure any detrimental activities are addressed. Specific events organised by TLC e.g. volunteer weeding will continue to build a connection to the Reserve on a regular basis.

Viability

Viability for this target is rated as good, with strong support for volunteer management events on the Reserve, and common usage (un-monitored) of the casual camping area.

Key Attribute	Indicator
Community involvement	Number of people attending events Estimated use of the camping area

Threats

Lack of understanding and appreciation of natural landscapes 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 area.

Threat	Impact	Threat rating	Management strategy
Lack of understanding or appreciation	Inappropriate use of the camping area (litter, wood cutting, damage to habitat, fire). Pets harassing wildlife.	Low	<ul style="list-style-type: none">• Access management• Community engagement

MANAGEMENT STRATEGIES

Improve understanding of natural values

Priority: Medium

Objectives: By 2020 species of conservation significance on the Reserve are identified and being effectively managed.

A number of threatened species are known or are likely to utilise the Reserve (see the Lower Liffey WHA Reserve Background Report 2017) and their presence could affect decisions about management, including joint decisions made with neighbours. Targeted surveys are needed to better identify natural values and priority species to ensure any specific management needs can be included in future planning.

Key actions:	Details
Targeted surveys for priority species	Surveys for threatened or priority species
Monitoring:	
Ecological monitoring	Ecological monitoring was installed in 2016 to improve knowledge of natural values and will be continued.

Access management

Priority: Medium

Objectives: People retain access but known threats are reduced.

The ease of public access within the Reserve creates the potential a range of threatening processes, including the introduction of fire, weeds, illegal wood-cutting or tree fern harvest, and rubbish dumping. Most human activity is concentrated around the flat, cleared area adjacent to the Liffey River and the road, and so these threats are likely to be concentrated in this area.

Signage to encourage responsible use and enjoyment of the area could be installed to increase people's understanding of their rights and responsibilities. Visitors to the Reserve should also be advised not to bring pets as a number of domestic and potential stray dogs were detected on monitoring cameras.

Some fencing has been undertaken along the road frontage in the north-east of the Reserve to prevent neighbouring stock from accessing the reserve. The majority of the Reserve area is steep, which restricts access and potential for habitat damage, however, illegal drug plots have already been found. Although the impacts appear to be low at present, this should be monitored in ongoing annual reserve assessments.

Key actions:	Details
Camping Area	Camping area is maintained but not upgraded given the range of facilities available nearby
Signage	Install and maintain signs indicating reserve status, no pets, damage to habitat and safe use of fire
Fencing	Employ if or when required
Monitoring:	
Annual reserve assessment	Monitor signs, fences, tracks and any evidence of recent illegal activities

Weed management

Priority: Medium

Objectives: The extent and abundance of weeds is reduced over time;

No new weed species establish on the Reserve.

Four environmental weed species occur on the Reserve: elderberry; blackberry, foxglove and Elisha's tears. All of these weed species are present throughout the broader landscape and are likely will to persist for some time. TLC has undertaken weed management annually since 2012 and aims to continue annual weed control into the future.

Key actions:	Details
Annual weed control	Removal of elderberry, blackberry, foxglove and Elisha's tears; record extent and abundance of any weeds found and any treatment that occurred
Implementing TLC's hygiene policy	Hygiene of equipment, boots, etc, especially when scouting through the entire Reserve.
Monitoring:	
Annual reserve assessment	Monitor for weeds Record extent and abundance of any weed species found

Fire management

Priority: Low

Objectives: Reduce the risk of fire

While fire can be a natural process, the TLC recognises the threat posed by unplanned fires to human life, property and the environment. Across its properties, TLC achieves these objectives by reducing fuel loads around infrastructure; maintaining access tracks for the purpose of firefighting where these are required; co-operating with neighbours, local councils, Parks and Wildlife Service and the Tasmania Fire Service (TFS) to prevent the spread of bushfires; and working closely with relevant experts, including the Tasmania Fire Service, fire ecologists, botanists and zoologists, to determine the fire regime prescriptions for hazard reduction and ecological maintenance. Most TLC reserves are also fuel stove only areas.

The TLC has limited capacity to influence the threat from fires started on the Reserve from camping or BBQs, the adjoining properties or wildfires in the broader landscape, but maintaining appropriate access for fire-fighting, working cooperatively with neighbours and engaging with the local community all assist in preventing unwanted fire, excluding it from the Reserve and minimising the impact on the Reserve if it does occur.

Key actions:	Details
Adhere to TLC fire policy	Undertake annual fire risk assessment, work co-operatively with neighbours and TFS to manage fire risks and control fires
Reduce likelihood of fire escaping from the casual camping area	Ensure low fuel loads in the casual camping area.
Signage	If required, install signage about fire use in the camping area only
Monitoring:	
Annual reserve assessment	Monitor for fire-related threats, risks and issues

Annual reserve assessment

Priority: High

Objectives: Known threats are reduced;

No new threats emerge from 2016

Annual reserve assessment is routinely conducted by TLC staff to identify any new or emerging threats that have the potential to reduce the viability of the targets, especially fire, weeds and rubbish.

The TLC recognises the importance of maintaining good relationships with neighbouring landowners and regularly communicates with neighbours about shared management issues and cooperative approaches to

regional land management issues such as livestock, feral animals, weeds and fire management. Neighbours are informed about any TLC management strategies or issues that have the potential to impact on their land. Co-operation with PWS, Forestry Tasmania and BHA will be maximised.

Key actions:	Details
Contact neighbours	Discuss issues of mutual interest
Monitoring:	
Annual reserve assessment	Track any new threats, monitor success of existing strategies

Community engagement

Priority: Low

Objective: Casual camping remains in its current form;

Volunteer events are held as needed

The Lower Liffey Reserve has been well used by the general public for decades and provides an appealing casual camping/picnic spot, as well as a starting point to the adjacent Liffey Fall walk. As there are better facilities for picnics and camping at the nearby Liffey Falls State Reserve there is no intent by the TLC to upgrade the existing casual camping area, but instead to allow existing casual use to continue as it has in recent years. The experience for users can be enhanced by appropriate signage. Regular volunteer events will continue as needed especially those focusing on weed removal.

Key Actions	Details
Communications	Develop and provide visitors with information, including signage on reserve values, use conditions, biosecurity protocols and seasonal constraints.
Community engagement	Hold events and foster interested groups through TLC communication channels, e.g. web, newsletter, blog, public events etc. to support and protect the Reserve
Monitoring	
Visitor numbers	No of events, activities and visitors participating in these [Estimates of users of the casual camping area?]



Lower Liffey World Heritage Reserve - vegetation

-  Lower Liffey WHA Reserve
-  Casual parking area (TLC)
-  Casual parking/camping area (TLC)
-  Designated Parks camping/picnic area
-  bridge (Parks)
-  Access Road
-  Vehicular Track
-  Walking

Meters
0 30 60

Drawn: March 2017
Data: background (C) LIST, client data TLC



Figure 5 Camping and picnic areas, Lower Liffey WH Reserve

MANAGEMENT PLAN PROCESS

Management Plan Status

The final draft of this Plan was reviewed by the TLCs Science Council and approved in October 2017. As part of the Open Standards adaptive management process, progress on target viability, management effectiveness and our understanding of biology and social impacts will be kept current.

Management Responsibilities

TLC staff undertake the 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 Plan. Relevant experts will be sought to provide advice where needed and wherever possible, the TLC will work 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 has no 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 Tasmania Parks and Wildlife Service, Forestry Tasmania, DPIPWE and Bush Heritage Australia (who manage the nearby Oura Oura Reserve). The Private Land Conservation Program may help to monitor the status of the conservation values identified in the covenant. These stakeholders may be involved with practical implementation of 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 be the basis for annual work plans and budgets. This plan will be reviewed at regular intervals not exceeding every two years and these reviews may lead to minor amendments to the plan. However, as the plan is based on our best current knowledge, if major changes occur at any time we will review the plan earlier and amend accordingly.

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 its adoption in December 2017.

REFERENCES

Tasmanian Land Conservancy (2017). Lower Liffey World Heritage Reserve Background Report. Tasmanian Land Conservancy, Sandy Bay, Tasmania.

ACRONYMS AND ABBREVIATIONS

BHA	Bush Heritage Australia
DPIPWE	Tasmanian Government Department of Primary Industries, Parks, Water and Environment
EPBC Act	<i>Australian Environment Protection and Biodiversity Conservation Act 1999</i>
IUCN	International Union for Conservation of Nature
NC Act	<i>Tasmanian Nature Conservation Act 2002</i>
NVA	Natural Values Atlas database (DPIPWE)
PWS	Tasmania Parks and Wildlife Service
TASVEG	Tasmanian Vegetation Monitoring and Mapping Program (TASVEG 2.0, 19 February 2009)
TFS	Tasmania Fire Service
TLC	Tasmanian Land Conservancy
TSP Act	<i>Tasmanian Threatened Species Protection Act 1995</i>
UTAS	University of Tasmania