

Conservation Action Plan
for parks and reserves managed by Parks Victoria
Wimmera

September 2018

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Disclaimer

This plan is prepared without prejudice to any negotiated or litigated outcome of any native title determination applications covering land or waters within the plan's area. It is acknowledged that any future outcomes of native title determination applications may necessitate amendment of this plan; and the implementation of this plan may require further notifications under the procedures in Division 3 of Part 2 of the *Native Title Act 1993* (Cwlth). The plan is also prepared without prejudice to any future negotiated outcomes between the Government/s and Traditional Owner Communities. It is acknowledged that such negotiated outcomes may necessitate amendment of this plan.

Every effort has been made to ensure that the information in this plan is accurate. Parks Victoria does not guarantee that the publication is without flaw of any kind and therefore disclaims all liability for any error, loss or other consequence that may arise from you relying on any information in the publication.

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Iterations

The first iteration of this plan was approved by Parks Victoria in September 2018.

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Approved Conservation Action Plan

To realise its vision — a world-class park service ensuring healthy parks for healthy people — Parks Victoria is committed to delivering works on the ground across Victoria’s park network to protect, conserve and enhance park values. It is our primary responsibility to ensure parks are healthy and resilient for current and future generations.

Parks Victoria acknowledges, respects and works closely with Traditional Owners and other Aboriginal communities and organisations across Victoria. We pay our respects to Elders past and present, and to emerging Aboriginal leaders.

Parks Victoria recognises the diversity of cultures, deep connections, rights and responsibilities that Traditional Owners have over the lands and waters covered by the Wimmera Conservation Action Plan. We recognise that the ancient landscape we see today has been modified over many thousands of years of occupation and influenced by the skills, knowledge and activities of generations of Aboriginal land managers. We also acknowledge the impacts of more recent land use and the impacts that introduced threats have had on this unique cultural landscape. The plan presented here is offered as a starting place for conversations with Traditional Owners on the importance of the nature and wildlife of this Country.

The plan focuses primarily on the first of Parks Victoria’s three strategic themes:

- Conserving Victoria's special places
- Connecting people and parks
- Providing benefits beyond park boundaries.

The plan is guided by *Protecting Victoria’s Environment – Biodiversity 2037*, Victoria’s plan to stop the decline of our native plants and animals. It is also guided by the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) and the *Flora and Fauna Guarantee Act 1988* (Vic.), which are the key pieces of Commonwealth and State legislation for the conservation of significant places, species and communities, and for the management of ecologically threatening processes.

The plan outlines Parks Victoria’s understanding of the major threats to nature and wildlife in this ancient and unique cultural landscape, and the potential actions that we can take together with Traditional Owners and other partners in caring for and improving the health of the Wimmera landscape.



Matthew Jackson
Chief Executive Officer
Parks Victoria

Summary

The Wimmera Parks Landscape includes dune systems supporting heathlands and mallee, dry forests and woodlands, and river and wetlands connecting the landscape. The reserve system creates stepping-stones across the landscape, connected by permanent and ephemeral waterways.

The Park Landscape includes: Little Desert National Park, Lake Hindmarsh Lake Reserve, Jilpanger Nature Conservation Reserve, Mount Arapiles – Tooan State Park, Tallageira Nature Conservation Reserve, Wimmera River Heritage Area Park, and 355 other reserves managed by Parks Victoria.

This Conservation Action Plan defines and prioritises conservation strategies for the Wimmera Landscape for the period to July 2023, and broadly describes the expected outcomes of these strategies. The plan outlines what can be realistically achieved to tackle the threats that pose the most risk to conservation assets. The Conservation Action Plan will support Parks Victoria in achieving our vision to:

Increase the resilience of natural assets in the Wimmera Park Landscape and maintain ecosystem services in the face of climate change and other stressors.

Parks Victoria is responsible for managing over four million hectares of Victoria’s most intact landscapes, and recognises the critical importance of working with Australia’s First Peoples to manage parks and reserves in a culturally sensitive and ecologically sympathetic way. The Wimmera landscape is significant to the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk peoples, who are traditionally and culturally associated with the area. They are represented by the Barengi Gadjin Land Council Aboriginal Corporation who have a co-operative management agreement with the State of Victoria. Parks Victoria appreciates the importance of long-term, respectful and meaningful partnerships with Traditional Owners; the opportunity to understand, share and celebrate Aboriginal cultural values; and need for greater accountability and responsibility for managing risks to Aboriginal cultural heritage. It is developing a robust agency-wide approach that provides a strong foundation for partnerships to grow and evolve, and become embedded in the way Parks Victoria works.

Parks Victoria’s Conservation Action Plans generally define and prioritise conservation strategies for five-year periods. However, Conservation Action Plans are also designed to evolve and adapt according to changes in circumstance and evidence. This particular version of the Wimmera Parks Landscape Conservation Action Plan may be revised before its scheduled review period to integrate traditional ecological knowledge and input from Traditional Owners, and to further capture their role in managing this highly biodiverse and culturally significant landscape in future conservation strategies. This Conservation Action Plan may assist in informing a future Joint Management Plan.

The development, implementation and review of the plan follows Parks Victoria’s cyclical ten-step conservation action planning process, which is based on an internationally recognised process developed by The Nature Conservancy. The plan covers the first seven steps in this process:

- 1 Scope planning, people and resources.
- 2 Identify conservation assets.
- 3 Assess the viability of conservation assets and set conservation outcomes.
- 4 Identify and assess threats to conservation outcomes.
- 5 Develop action options from situational analysis.
- 6 Assess and select preferred strategies and actions.
- 7 Set performance measures.

Six conservation assets have been identified in the Wimmera Park Landscape: Heathlands and Heathy Woodlands, Mallee and Broombush, Dry Forests and Woodlands, Freshwater Wetlands, Riverine Forests and Woodlands, and Saline Wetlands. Within each of these assets a range of nested assets, such as threatened species and important ecological assemblages, have also been identified.

The plan also identifies a range of key ecological attributes (components that are believed to best reflect the health of the asset). The plan describes their current condition (very good, good, fair, poor) and the trend in condition (improving, stable, declining), and sets the anticipated future condition of each key ecological attribute. These measures then allow the overall condition of each asset to be assessed. All the conservation assets are in fair condition.

The trends in condition are mostly improving, except in Riverine Forests and Woodlands which is stable. The desired future status of the majority of assets is fair to good, but is dependent on the implementation of all the listed strategies.

Ten threats to the conservation assets in the Park Landscape are identified in the plan. Five of these are considered key threats and are therefore the priority threats considered in this plan. They are:

- Total grazing and browsing pressure (by introduced and native animals).
- Predation by introduced species (foxes and feral cats).
- Fire regimes and management.
- Weed invasion.
- Alterations to natural hydrology.

The following conservation strategies will be undertaken to tackle these threats. They have been selected for their impact, feasibility and cost in achieving the desired conservation.

The following conservation strategies will be undertaken to tackle these threats. They have been selected for their impact, feasibility and cost in achieving the desired conservation.

- **Establish collaborative partnerships to support the sustained management and connectivity of assets** — implement working partnerships between Parks Victoria and restoration partners to improve the condition of assets across public and private land tenures to facilitate connected management across the fragmented landscape.
- **Management of total grazing pressure** — in partnerships with neighbours encourage species and structural diversity of native flora and habitats by reducing the total grazing pressure across the landscape.
- **Introduced predator control** — to increase the distribution and occurrence of predation-sensitive native fauna at high priority locations.
- **Fire management for healthy assets** — improve the structural diversity and distribution of vegetation growth stages in the fire associated vegetation communities, and protect values in ecosystems that are sensitive to inappropriate fire management.
- **Environmental weed management using a biosecurity approach** — to effectively manage priority weed species at relevant locations in partnership with neighbours, to encourage species and structural diversity of native flora and habitats.
- **Management of water dependent ecosystems** — to implement management interventions that will create ecosystems more resilient to the cumulative impacts of changes to natural hydrology and the effect of climate change.

For each strategy a results chain has been developed to help guide implementation and monitoring indicators. These chains test the ability of Parks management to achieve the conservation outcomes defined for each of the assets.

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Desert Banksia

1 Background

1.1 Adaptive management

Conservation action planning is an important component of Parks Victoria’s approach to adaptive management and evidence-based decision making. It utilises a collaborative approach to identify conservation priorities and develop strategies to address those priorities. These strategies are designed to achieve defined and measurable conservation outcomes once implemented.

Through conservation action planning, Parks Victoria identifies and focuses on strategies that target clearly defined elements of the natural environment (conservation assets) for which threats have been identified and where success can be measured. Understanding how to best use the resources available for conservation to achieve the greatest improvement in the overall health of ecosystems is a complex challenge for land managers.

Conservation experience, scientific understanding, local environmental knowledge, traditional ecological knowledge, and strategic thinking are all key components of successful conservation action planning.

The strategies identified in this conservation action plan are based on the best available knowledge and will enable specific operational activities to be implemented, monitored for success, and further refined. The plan complements the existing park management plans. Conservation strategies detailed in the park management plans have been reviewed during the conservation action planning process, and updated for inclusion where relevant.

The plan is intended to provide guidance to Parks Victoria staff for the management of conservation values, and also to articulate our conservation priorities and strategies to stakeholders, land management partners and the public.

1.2 Park landscapes

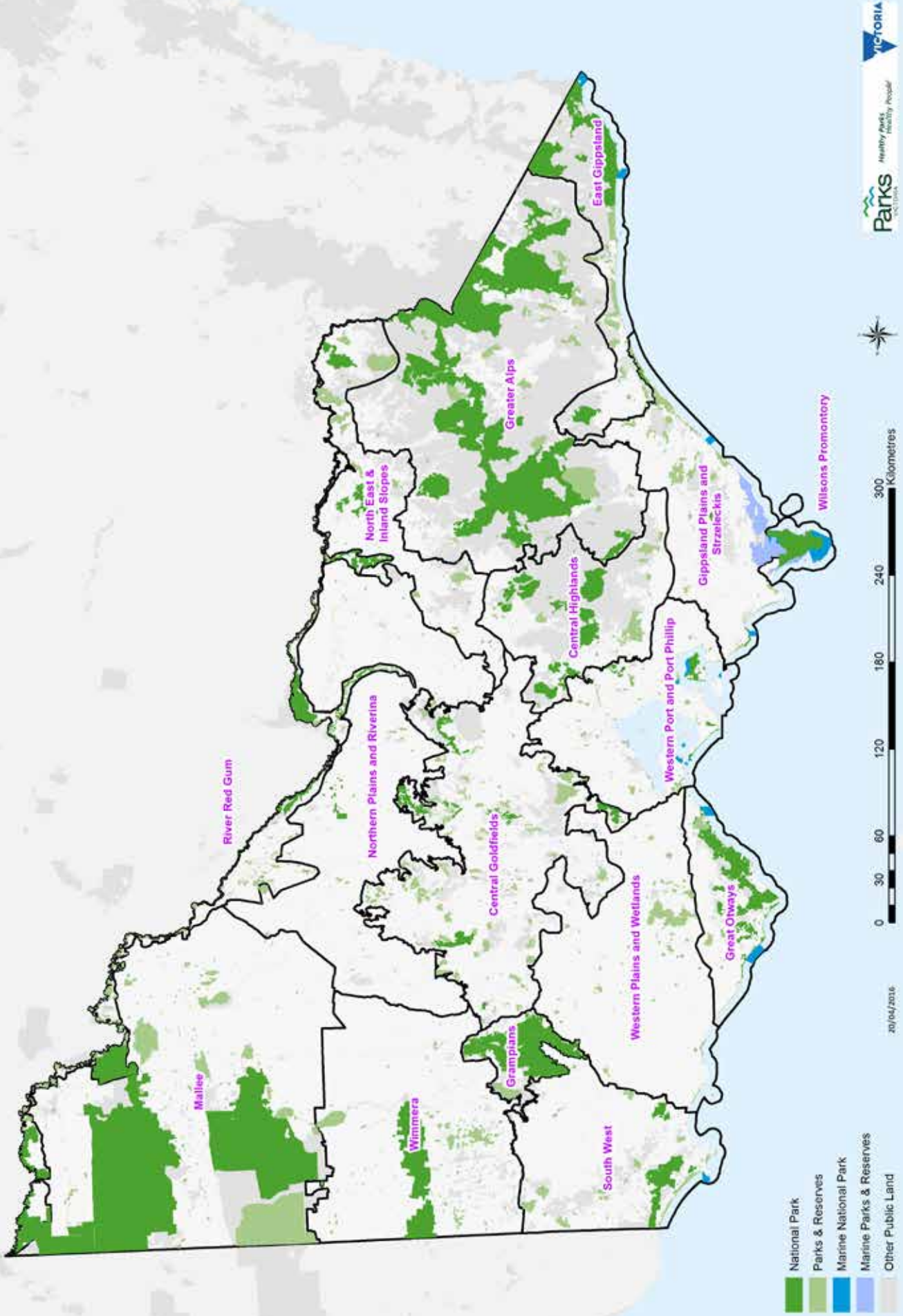
Parks Victoria is applying conservation action planning to parks and reserves in Park Landscapes, which are classified according to a combination of ecological attributes, land forms and administrative boundaries. They form a logical unit for conservation action planning and the delivery of specific operational activities in groups of parks and reserves. Parks Victoria has identified 16 park landscapes across Victoria (Figure 1.1).

1.3 Planning method

Parks Victoria is using the conservation action planning methodology developed by The Nature Conservancy. This methodology is based on the Open Standards for the Practice of Conservation developed by Conservation Measures Partnership, an international partnership of conservation organisations.

Parks Victoria’s approach to conservation action planning is suitable for planning conservation projects with joint management partners, in partnership with all stakeholders, for land managed by Parks Victoria. It is consistent with the approach used by numerous other agencies in Victoria managing conservation lands.

Figure 1.1 Parks Victoria's Park Landscapes.



The emphasis is on identifying the strategies that tackle threats which pose the greatest risk to priority conservation assets and key ecological attributes and that will contribute most to meeting the expected conservation outcomes.

Parks Victoria’s conservation action planning process involves a series of conservation action planning workshops, with participants from Parks Victoria and other organisations, and follows 10 sequential steps (Figure 11.2):

- 1 Scope planning, people and resources.
- 2 Identify conservation assets.
- 3 Assess the viability of conservation assets and set conservation outcomes.
- 4 Identify and assess threats to conservation outcomes.
- 5 Develop action options from situational analysis.
- 6 Prioritise conservation strategies.
- 7 Set performance measures.
- 8 Plan work.
- 9 Implement operational plans.
- 10 Adapt the conservation action plan and operational activities.

This Conservation Action Plan is an output of steps 1 to 7, and will provide directions for environmental conservation management for the next 15 years. After 5 years the plan will be reviewed, and progress will be evaluated against outcomes identified for the conservation assets, threat mitigation objectives and implementation of identified priority actions, in order to revise the plan.

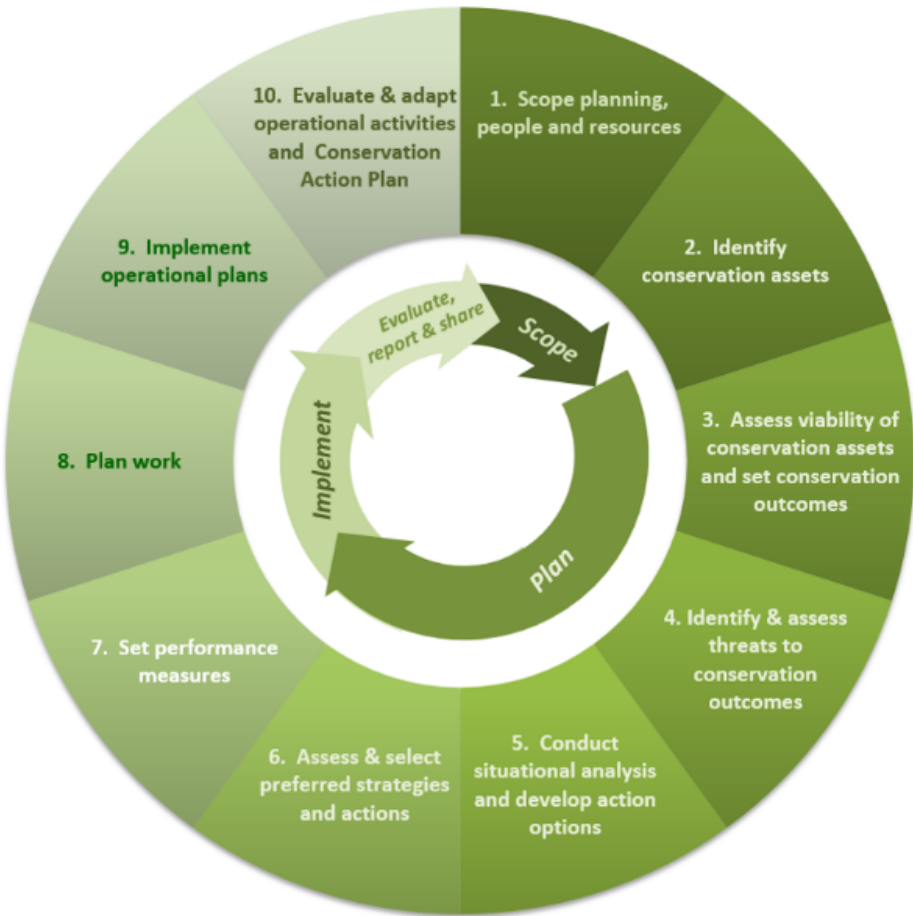


Figure 1.2 Parks Victoria's Conservation Action Planning: the 10-step process.



2 Scope

2.1 Geographic scope

The Wimmera Park Landscape Conservation Action Plan supports higher level planning for the Wimmera Landscape Unit in Western Victoria. It covers parks and reserves managed by Parks Victoria that protect over 198 000 hectares, including the Little Desert National Park and a large number of smaller reserves in the highly fragmented Wimmera Plain. These small reserves exist within a matrix of other public land and private land, much of which is used for agriculture.

Reserves are home to endangered plant and animal species and nationally significant wetlands, and protect thousands of significant cultural heritage places. These parks are also important recreational and tourism destinations. The planning area covers parks managed under the *National Parks Act 1975* (Vic.) that cover more than 139 000 ha, and 358 other parks and reserves managed under various other legislation covering more than 59 000 ha. (See Appendix A for a full list of reserves.) The Wimmera Park Landscape includes:

- Little Desert National Park
- Lake Hindmarsh Lake Reserve
- Jilpanger Nature Conservation Reserve
- Mount Arapiles – Tooan State Park
- Tallageira Nature Conservation Reserve
- Wimmera River Heritage Area Park
- 103 Wildlife Reserves
- 14 Flora Reserves
- 10 Flora and Fauna Reserves
- 2 Nature Conservation Reserves (not including Jilpanger)
- 26 Lake Reserves (not including Lake Hindmarsh)
- 181 Bushland Reserves
- 16 Natural Features Reserves (not including Wimmera River Heritage Area Park)
- 3 Historic Areas.

The Wimmera parks and reserves that make up the planning area each have their own particular history. Some were established as reserves to protect Malleefowl, before the establishment of the Little Desert National Park in the late 1960s and its subsequent expansion as a result of government decisions, including those arising from Land Conservation Council investigations. These include some forest and woodland areas that were previously used for timber harvesting or livestock grazing.

The Wimmera Park Landscape also covers significant riparian and wetland assets, including long stretches the Wimmera River (downstream of Glenorchy), MacKenzie River, Outlet Creek and Victoria's largest freshwater lake, Lake Hindmarsh ensuring public access to the majority of the river frontage. Much of this part of the landscape consists of a narrow linear reserve, surrounded by agricultural land.

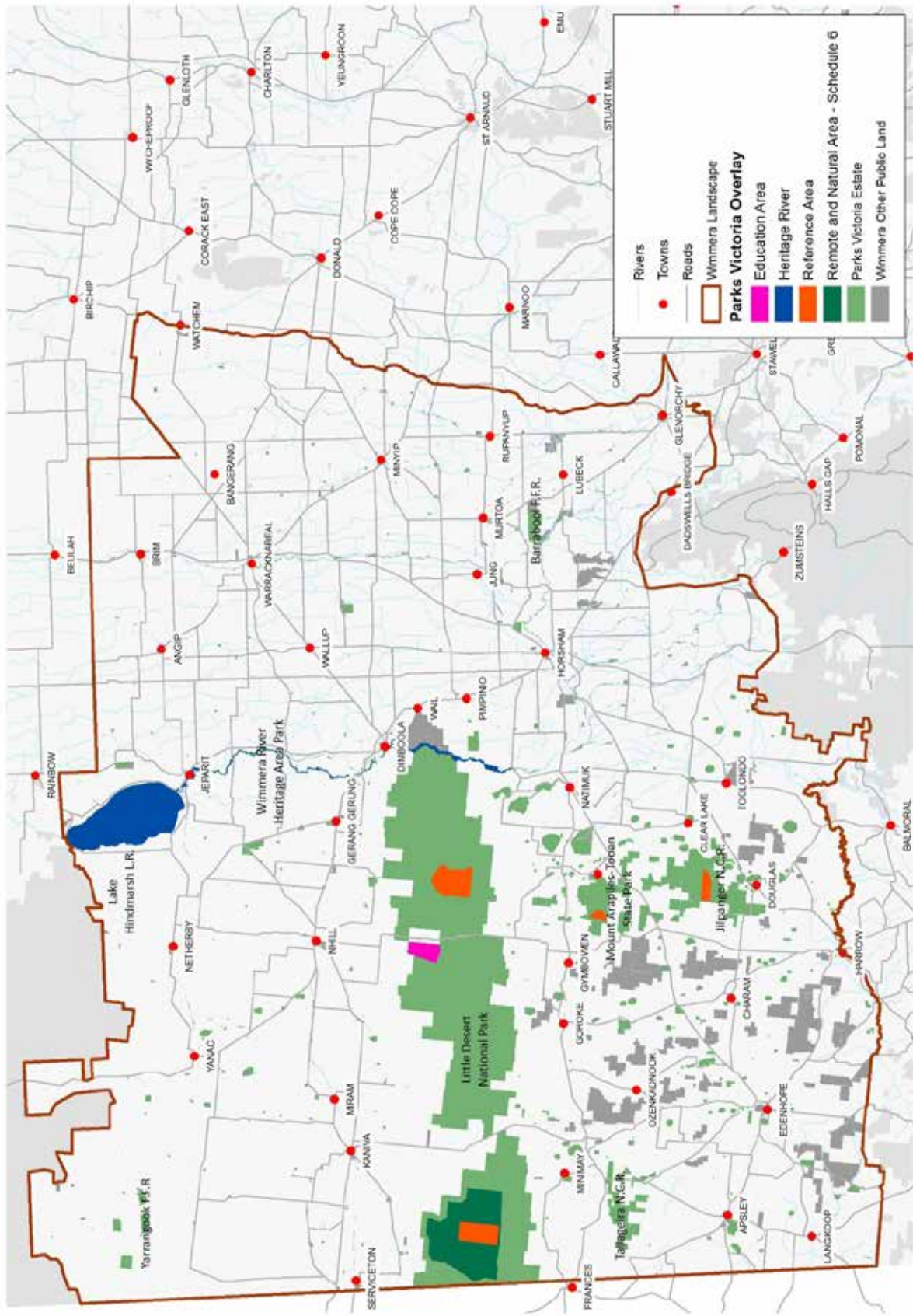


Figure 2.1 Geographic scope of conservation planning for the Wimmera Park Landscape.

Natural values of significance in this Park Landscape include:

- 13 nationally important wetlands
- diverse vegetation communities, including five nationally threatened ecological vegetation types Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions; Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia; Natural Grasslands of the Murray Valley Plains; Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.
- more than 24% of Victoria's known vascular plant species
- current or past occurrence of 80 nationally threatened fauna and flora species.

2.2 Cultural significance

The Wimmera Park Landscape is within the Traditional lands of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk peoples, who are represented by the Barengi Gadjin Land Council Aboriginal Corporation (BGLC). The Wotjobaluk Peoples, through BGLC as a Registered Aboriginal Party under the *Aboriginal Heritage Act 2006* (Vic.), have legislated authority for the protection and management of their cultural heritage. The recently released *Growing What is Good Country Plan — Voices of the Wotjobaluk Nations* (BGLC 2017) highlights traditional connections to Country and outlines Traditional Owner priorities for the coming years.

The Wotjobaluk Peoples have been part of this landscape for tens of thousands of years. Some of their traditional areas are now parks and reserves, each of which is extremely important for maintaining their cultural connections. Priority areas and actions include Barringgi Gadyin (the Wimmera River), which is the 'lifeblood' flowing through and linking the landscape together, and Gurru (the Wergaia language name for Lake Hindmarsh) that was part of a large traditional trading route. The *Growing What is Good Country Plan* notes the threat that altered water flows, and pest plants and animals are having on the condition of the river and lake systems, and the importance of restoring a continuous corridor of native vegetation along the length of the river. Little Desert National Park provides refuge for Lauan (Malleefowl) and opportunities to 'work in closely with partners and neighbours to re-create land management practices that heal country and go beyond the standard pest plant and animal control'. At Dyurrite (Mount Arapiles – Tooan State Park) important cultural sites such as quarries, rock art and shelters that provide evidence of thousands of years of use of the area. The Wimmera Park Landscape remains rich in tangible and intangible Aboriginal cultural heritage closely linked to traditional stories and embedded in customary access to and use of Country.

Traditional Owners are the custodians of a living cultural heritage. The forest, river, plants and animals are all part of Country and the cultural identity of Traditional Owners. Protecting, managing and enjoying the land are an important part of this connection, and Traditional Owner knowledge and perspectives are important in best practice land and natural resource management to bring benefits to both the parks and the whole community.

Supporting the inclusion of traditional ecological knowledge in land management practices can heal Country and help to achieve conservation outcomes, including environmental drivers such as cultural water flows and the rekindling of cultural burning practices.

The *Growing What is Good Country Plan* (BGLC 2017) highlights the importance of strengthening respectful partnerships to manage and care for Country together, particularly as managing public land evolves into joint management arrangements.

As part of more recent history, post-European contact, exploration and settlement of the land has left its own mark in the form of built structures, diverse past land uses, stories and connections. Everything that has happened in the past is part of the story of the Wimmera parks and reserves that continue today.

2.3 Cooperative management agreements

The native title settlement determination for the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk Peoples in 2005, led to the establishment of a cooperative management agreement associated with an Indigenous Land Use Agreement (ILUA) between the State of Victoria and the Barengi Gadjin Land Council Aboriginal Corporation (BGLC). The ILUA initiated a process to involve BGLC as partners in planning, management and works programs for certain lands within the determination area via the Winyula Council. The Wotjobaluk Peoples also assert interests in land outside the ILUA boundary. As the Winyula Council is not currently operational, interim co-management agreements are enacted on an annual basis.

Co-management is currently facilitated via quarterly meetings between BGLC, Parks Victoria and the Department of Environment, Land, Water and Planning (DELWP). Parks Victoria and DELWP provide a copy of all their programs to BGLC in the form of an engagement calendar, to enable BGLC to understand the entire program of work planned for the co-management area and choose what programs it wishes to be actively involved in as a partner, subject to its interest and capacity.

Under the *Traditional Owner Settlement Act 2010* (Vic.), discussion has started between the Victorian Government and the BGLC to negotiate a Traditional Owner Land Management Agreement that would allow the Wotjobaluk Peoples and the State of Victoria to jointly manage agreed national parks, conservation reserves and other Crown land when they are transferred to BGLC as Aboriginal Title. Parks Victoria is also in early discussions with BGLC about a partnership agreement that would outline shared goals and how the Parks Victoria and BGLC would work together.

2.4 Legislative and planning context

The majority (139 038 ha) of the Wimmera Park Landscape is reserved and managed under the National Parks Act, including the Little Desert National Park and Mount Arapiles – Tooan State Park. The Little Desert National Park also includes a Remote and Natural Area (15 681 hectares) designated under this Act.

The remainder of the Park Landscape consists of 358 parks and reserves covering 59 028 hectares, which are managed under various acts including the *Crown Lands (Reserves) Act 1978* (Vic.). The most significant of these for biodiversity conservation are Jilpanger NCR, Barrabool FFR, Lake Hindmarsh LR, Wimmera River HAP, Lake Natimuk and Natimuk Creek LR, Lake Ratzcastle LR, Meereek FR, West Wail FFR and Nurcoung LR.

Reference Areas have been set aside under the *Reference Areas Act 1978* (Vic.) in Little Desert National Park (two areas), Mount Arapiles – Tooan State Park, and Jilpanger NCR.

The Wimmera River between Polkemmet (10 km north-west of Horsham) and Wirrengren Plain has been proclaimed a Victorian Heritage River under the Heritage Rivers Act 1992 (Vic.) because of its significant environmental and social values.

2.5 Alignment with Regional Catchment Strategies

This plan aligns with a number of key assets from the Wimmera Catchment Management Authority's Regional Catchment Strategy (RCS), in particular: rivers and streams, wetlands, native vegetation, threatened plants and animals.

This plan will support the RCS objectives for these assets by:

- maintaining or improving the extent and quality of Riparian and Wetland conservation assets
- protecting and sustaining wetlands with recognised conservation significance
- improving the management of existing native vegetation classes
- demonstrating actions that will lead to improvement in the status of listed species
- integrating fire management to mitigate bushfire risk on public land, and maintain or improve the resilience of natural ecosystems.

2.6 Other sources of information

Information sources which have directly assisted and informed the preparation of this plan include the Little Desert National Park Management Plan (1996), Mount Arapiles – Tooan State Park: Mount Arapiles Management Unit Management Plan (1991), Dergholm State Park and Mt Arapiles – Tooan State Park (Tooan Block) Management Plan (1998), Wimmera Waterway Strategy 2014–2023 and Protecting Victoria’s Environment — Biodiversity 2037 (2017).

The Strategic Management Prospects (SMP) tool, which is a component of DELWP’s NatureKit, has also been used as a decision support tool, together with field-based evidence, to assist in identifying the relative priority of threats and actions. SMP outputs are focused on biodiversity and may need to be balanced with organisational and community priorities when implementing conservation strategies.

Where possible, traditional ecological knowledge has been taken into account in the plan, and opportunities to investigate and apply traditional ecological knowledge will be developed further in future iterations of the plan.

2.7 Participation

A series of conservation action planning workshops were held between 2011 and 2017 to support the planning process for the Wimmera Park Landscape Conservation Action Plan.

The success of the workshops drew from the great depth of experience of participants, including Parks Victoria, DELWP, Wimmera and Glenelg Hopkins Catchment Management Authorities, Deakin University, Trust for Nature, Barengi Gadjin Land Council, Conservation Volunteers Australia, Greening Australia and community stakeholders.



Malleefowl (Lauan)

3 Conservation assets

3.1 Methodology for identifying conservation assets

For planning and managing the terrestrial environment, Parks Victoria has classified conservation assets in its Park Landscapes according to similarities in biodiversity and natural values, and management drivers. The classification is based on the eight natural ecosystem types described in Victoria's previous *Biodiversity Strategy* (DSE 1998):

- Alps
- Coastal
- Dry Forest and Woodland
- Grassland
- Heathland
- Inland Waters and Wetlands
- Mallee
- Wet Forest and Rainforest.

Within each of these ecosystem types, a number of sub-ecosystems have also been identified, defined by groupings of Ecological Vegetation Classes and Divisions (EVCs and EVDs) (White 2012).

Conservation assets within the Park Landscapes have been identified by assigning ecosystems, sub-ecosystems and habitats from Parks Victoria's classification system, on the basis that they have similar ecological processes and threats.

Finer-scale assets that are an important focus of conservation efforts have also been identified, to help define each conservation asset more completely. These finer-scale or 'nested' assets are mostly species assemblages and communities, but may also include habitat features and ecosystem services. Individual species are aggregated with others if they co-occur across the landscape and have similar attributes that are important in determining their persistence in the landscape. Keystone species and rare, threatened or endemic species are also included as nested assets if they have unique conservation requirements.

3.2 Conservation assets of the Wimmera Park Landscape

Six ecosystems were identified for the Wimmera Park Landscape. Each conservation asset was also associated with numerous nested assets. The distribution of these six conservation assets is presented below (3.1). The component Ecological Vegetation Classes and Ecological Vegetation Divisions are listed in Appendix B.

- Heathlands and Heathy Woodlands – 120 736 ha
- Mallee and Broombush – 19 590 ha
- Dry Forests and Woodlands – 24 656 ha
- Freshwater Wetlands – 19 025 ha
- Riverine Forests and Woodlands – 7650 ha
- Saline Wetlands – 4645 ha

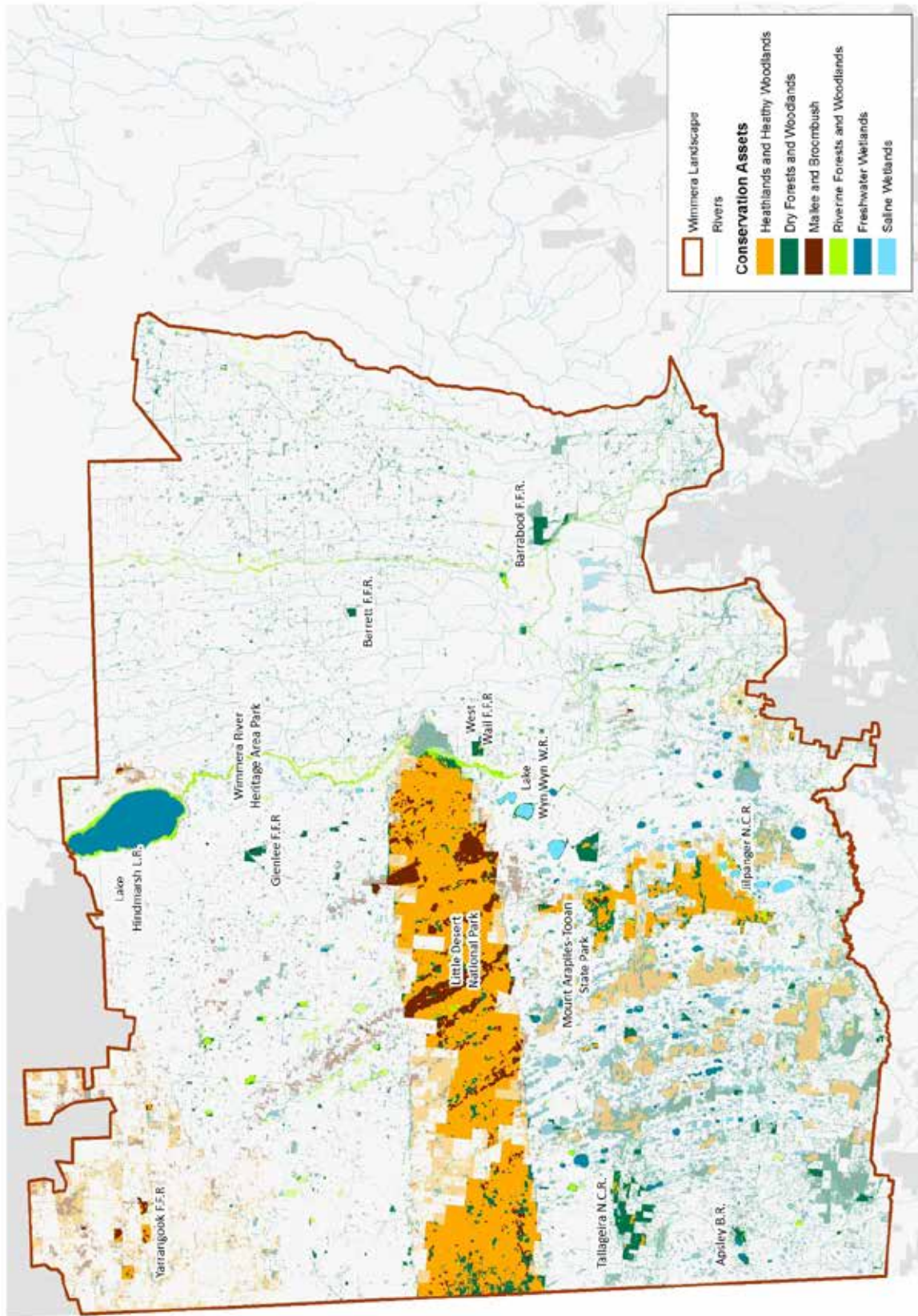


Figure 3.1 Conservation assets in the Wimmera Park Landscape.

4 Conservation outcomes

Conservation outcomes include setting conservation outcomes for each asset, and defining the conservation vision. The conservation vision is based on Parks Victoria's broader vision for conserving its special places, and is an aspirational statement that describes what the Park Landscape should be like in the future.

Conservation outcomes are derived from a comparison of the current and desired condition of the conservation asset overall (Where are we now? Where do we want to be?) and are articulated as SMART goals¹.

4.1 Viability

Assessing the overall health of a conservation asset involves identifying the critical factors required for its long-term viability, which are called the *key ecological attributes*. These include attributes of structure, composition and process related to the asset. An important characteristic of a key ecological attribute is that it must be readily measurable using one or more indicators. The current and desired condition of the attribute can then be assessed, and the overall viability of the asset assigned to a defined category.

The assessment of the viability (or overall health) of a conservation asset is a five-step process utilising key ecological attributes:

- 1 Identify a small number of key ecological attributes (typically 3–5) for each conservation asset.** Some common key ecological attributes are structure (e.g. remnant size or population abundance, distribution of communities, and configuration of patches or age class), composition (e.g. species diversity), and interactions and biotic and abiotic processes (e.g. hydrological regime or water quality).
- 2 Identify appropriate indicators for each key ecological attribute.** An indicator is a readily measurable parameter that can be used to assess the condition of the key ecological attributes. For example, the presence or absence of a particular habitat-sensitive species may be an appropriate indicator for species diversity or habitat condition.
- 3 Develop criteria for rating the current value of each indicator.** The development of criteria for rating the value of each indicator is an iterative process. It typically starts with a simplified qualitative assessment (e.g. many, some, few) and is progressively developed into more refined and measurable numeric values (e.g. 20% non-eucalypt species tree canopy cover in Semi-arid Woodlands). A value range for the indicator is defined to correspond with a ranking for poor, fair, good, and very good.
- 4 Rank the current and desired condition of each indicator to determine the overall viability of the conservation assets.** The final step in assessing the viability of the conservation assets is to rank the current condition of each indicator. The rankings used are poor, fair, good, and very good. Desired condition should be assessed over a 15-year period and should consider the role, if any, of management intervention to maintain long term viability.
- 5 Determine the overall viability of conservation assets.** The overall current and desired condition is determined for each conservation asset, using the condition rankings for key ecological attributes and their associated indicators. Each conservation asset is rated for the current and desired condition of its key ecological attributes and overall condition.

¹ Specific, Measurable, Achievable, Relevant, Time-bound

These key ecological attributes for each asset, including conservation outcomes and asset descriptions, are presented in the following pages, along with assessments of the current and desired status of each asset and its key ecological attributes. These attributes and outcomes have been used to guide the development and prioritisation of conservation strategies.

4.2 Vision

The conservation vision for the Wimmera Park Landscape is:

The resilience of natural assets in the Wimmera Park Landscape is increased and ecosystem services are maintained in the face of climate change and other stressors.

The Wimmera Park Landscape includes dune systems supporting heathlands and mallee, dry forests and woodlands, and river and wetlands connecting the landscape. The reserve system creates a network of stepping-stones across the landscape dispersed from the core conservation areas of Little Desert National Park, Mt Arapiles-Tooan State Park, and Jilpanger Nature Conservation Reserve, connected by the permanent and ephemeral waterways of the Wimmera River, the Natimuk Douglas Chain of Lakes, and the west Wimmera lake reserves. The fragmented nature of the Wimmera Park Landscape necessitates a collaborative approach with neighbours to provide connectivity between reserves and manage threats across boundaries. The current condition of the assets ranges from fair to good. The implementation of this plan will improve the quality of habitat and its capacity to support fauna populations.

The extensive sand ridges supporting the Mallee and Heath-dominated systems are in fair condition. The management of natural processes, especially fire management and the incursion of introduced predators, will ensure the continuing health of these systems and support the local native fauna to prosper.

The Wimmera River system has been highly modified. Whilst the upper reaches are heavily regulated, the river becomes increasingly ephemeral as it heads north to Lake Hindmarsh. The outlook for the unregulated riverine and lake ecosystems is less optimistic as they will receive insufficient water for periodic regeneration. The management of other threats including grazing pressure and weeds will allow these systems to evolve as the climate changes.

The dry woodlands remain as patches scattered throughout the reserve system, often restricted to small areas amongst the agricultural mosaic. The multitude of small woodland reserves can be a challenge to manage, as they require both the management of natural processes such as fire, and the management of other threats including grazing pressure and weeds.



Caspian Terns and Silver Gulls, Olivers Lake

5 Conservation asset descriptions

The following pages provide a description of the conservation assets within the landscape, along with the outcomes sought through management. The descriptions are set out in the following format, and definitions for the terms used are provided below.

Conservation asset name



Ecosystem or habitat type that is seen as the overarching value that is to be managed, including a description of the ecosystem or habitat type, its condition, predominant drivers of condition, and their effect on component nested assets.

Nested assets

Nested assets are a series of values that are present within the asset, or that rely on the asset for their health. These are often iconic species for the system, threatened species, ecological (fauna) assemblage and species of particular note. Comprehensive lists of species held on national and Victorian databases are used to inform the selection of nested assets.


Condition

This sets out the key ecological attributes, indicators for those attributes, the current condition and trends in condition of the attribute, and the anticipated future status. An example is shown below.

Key ecological attribute	Indicator	Current condition	Current trend	Condition goal
Ground-dwelling mammals: diversity and extent	Species richness and occupancy of suitable habitat	Fair		Good
Vegetation structure and composition	Percentage shrub cover and distribution	Fair		Good

Conservation outcomes

This statement reflects the key ecological attributes of the asset and includes key improvements in asset viability that will achieve the desired conservation outcome. An example is shown below.

Coastal Grassy Woodland	Current condition	Desired trend	Condition goal
In the 15 years to 2032, maintain critical habitat features (e.g. vegetation structure), functions (e.g. hydrology, water quality and quantity) and connectivity of riparian and in-stream ecosystems to provide habitat and refugia.	Poor		Good

Trends are indicated as follows: Improving  Stable  Declining 

The assessment of current condition and desired future status is represented by the following categories. Measures to assess this classification are documented in the Monitoring, Evaluation and Reporting Plan.

VERY GOOD (optimal integrity) — The attribute is functioning at an ecologically desirable status, and requires little human intervention to maintain or improve health.

GOOD (minimum integrity) — The attribute is functioning within its range of acceptable variation; it may require some human intervention.

FAIR (vulnerable) — The attribute is outside its range of acceptable variation and requires human intervention to recover or be restored. If unchecked, the target will be vulnerable to serious degradation.

POOR (imminent loss) — Allowing the attribute to remain in this condition for an extended period of time will make restoration or preventing extinction practically impossible.



Heathlands and Heathy Woodlands

Heathlands and Heathy Woodlands cover 120 700 hectares, equivalent to more than 60% of the Wimmera Park Landscape. They are characterised by a heathy ground-layer with canopies often dominated by mallee or Desert Stringybark, or both. This conservation asset is dominated by Dunefield Heathland, Heathy Woodland, and Lowan Sands Mallee EVCs.

The treeless component of this conservation asset (Dunefield Heathland) occurs in low-nutrient areas, ranging from sites of intermittent water logging, typically wet in winter and dry in summer, to deep siliceous sand on minor dunes and undulating sand plains where siliceous Lowan Sands of coastal origins have accumulated. Trees are generally present on soils typical of Quaternary sand sheets and low dunes of aeolian origin to the south of the Little Desert, in areas receiving less than 500 mm annual rainfall. The soils are deeply leached, infertile sands that may have a coffee rock horizon where the leached iron of upper soil horizons has reconsolidated.

Heathlands and Heathy Woodlands provide important habitat for a range of well-known fauna species, notably feeding habitat for the Red-tailed Black-Cockatoo. The heathlands also provide important habitat for Silky Mice and Pygmy Possums. Other significant species include the Blue-winged Parrot, Chestnut-rumped Heathwren, Tawny-crowned Honeyeater and Little Wattlebird.

Together with rainfall and climate factors, fire is an important driver of habitat condition in this system. Fire ignited by lightning is a natural event in heathlands, which generally recover rapidly after fires of any intensity. During 2006, 2007 and 2015 a number of relatively large bushfires occurred. The extent of these bushfires was such that large areas in Little Desert National Park are now either not yet mature or in the early stages of maturity; and importantly, older stands of heathy vegetation are now reduced in size and more scattered. Over the coming years, as the vegetation ages, habitat for those fauna species that require deep leaf litter beds and shrubby understorey cover will progressively return, increasing the habitat available for species such as Malleefowl.

Nested assets

Four nested assets have been identified for this asset (see the table below).

Nested asset	Examples of components
Heathland birds	FFG listed Temperate Woodland Bird Community, FFG-listed Victorian Mallee Bird Community (notably Red-tailed Black-Cockatoo)
Ground dwelling small mammals	Silky Mouse, Yellow-footed Antechinus, Western Pygmy-possum
Flora	Wimmera Spider Orchid (Endangered under the EPBC Act), Sand Heathland EVC (depleted)
Reptiles	Rosenberg's Goanna, Western Blue-tongued Lizard

Condition

Key ecological attributes	Indicator	Current condition	Current trend	Condition goal
Heathland landscape connectivity	Spatial arrangement of growth stages	Fair		Good
Heathland growth stages	Tolerable fire intervals	Fair		Good
Vegetation composition and structure	Composition and structure relative to expected (site-based richness and composition)	Fair		Good
Heathland birds — extent and richness	Victorian Mallee Bird Community (site occupancy and richness)	Good		Good
Woodland birds — extent and richness	Woodland Bird Community (site occupancy and richness)	Fair		Fair
Heathland mammals	Silky Mouse (site occupancy)	Fair		Fair
Heathland reptiles	Reptile assemblage (site occupancy and richness)	Good	unknown	Good
	Western Blue-tongued Lizard, Rosenberg's Goanna (site occupancy)	Poor	unknown	Fair

Conservation outcome

Heathlands and Heathy Woodlands	Current condition	Desired trend	Condition goal
Over the 15 years to 2033, improve the vegetation growth stage structure to support more heterogeneous vegetation structure and habitat complexity, and maintain heathland dependent flora and fauna richness.	Fair		Good



Mallee and Broombush

The Mallee and Broombush conservation asset covers around 19 590 hectares of the Wimmera Park Landscape. The canopy is dominated by mallee eucalypts (Blue, Dumosa, Red, Bull and Grey Mallees and Desert Stringybark) and is often less than 15 m in height and sparse. The vegetation is characterised by a broombush shrub layer. The open ground layer supports a range of understorey components, including chenopods, grasses, low shrubs and a diverse range of ground-layer forbs. Sandstone Ridge Shrubland EVC dominates the conservation asset.

Although this asset occurs on a range of soils, it is generally associated with dune systems. It is mostly confined to the Little Desert National Park and reserves in the northern section of the Wimmera Park Landscape.

As with Heathlands and Heathy Woodlands, Mallee and Broombush is a fire-adapted ecosystem in which fire is an important driver of habitat condition. Like the heathy systems, large areas of the Mallee and Broombush in Little Desert National Park are currently in the early stages of maturity, and older stands have become reduced in extent and more fragmented. As the vegetation ages in the coming years, habitat for those fauna species that require deep leaf litter beds and shrubby understorey cover will progressively return, increasing the habitat available for species such as Malleefowl.

This conservation asset provides important habitat for a range of fauna species, particularly the Malleefowl and Silky Mouse. Other significant species include the Western Blue-tongued Lizard, Western Pygmy-possum and Eastern Pygmy-possum.

Nested assets

Four nested assets have been identified for this asset (see the table below).

Nested asset	Examples of components
Birds	FFG-listed Victorian Mallee Bird Community, notably Malleefowl
Ground-dwelling small mammals	Silky Mouse, Yellow-footed Antechinus, Western Pygmy-possum
Reptiles	Rosenberg's Goanna, Western Blue-tongued Lizard
Flora	Parilla Mallee EVC (endangered)

Condition

Key ecological attributes	Indicator	Current condition	Current trend	Condition goal
Mallee and Broombush landscape connectivity	Spatial distribution of growth stages	Fair		Good
Landscape context	Temporal distribution of growth stages	Fair		Good
Vegetation composition and structure	Composition and structure relative to expected (site-based richness and composition)	Fair		Good
Mallee birds	Victorian Mallee Bird Community (site occupancy and richness)	Good		Good
Mallee mammals	Silky Mouse (site occupancy)	Fair		Fair
Mallee reptiles	Reptile assemblage (site occupancy and richness)	Good	unknown	Good
	Western Blue-tongued Lizard, Rosenberg's Goanna (site occupancy)	Poor	unknown	Fair

Conservation outcome

Mallee and Broombush	Current condition	Desired trend	Condition goal
Over the 15 years to 2033, increase the heterogeneity of vegetation structure to improve the extent and distribution of long unburnt areas, and improve the habitat complexity to increase the occupancy and richness of flora and fauna species.	Fair		Good



Dry Forests and Woodlands

The Dry Forests and Woodlands conservation asset covers 24 656 hectares of the Wimmera Park Landscape and is highly fragmented. This conservation asset is largely confined to areas south of the Little Desert, where it is often present in small isolated reserves surrounded by agriculture.

This asset is characterised by a shrubby to grassy ground layer with an open woodland or forest canopy, and usually occurs on higher-fertility soils. Eucalypts and non-eucalypts may be prominent, including Yellow Gum, Yellow Box, Grey Box, Buloke and White Cypress-pine. Dry Forests and Woodlands are made up of many EVCs, but is dominated by Shallow Sands Woodland, Low Rises Woodland, Plains Woodland, Damp Sands Herb-rich Woodland, and Heathy Herb-rich Woodland.

Dry Forests and Woodlands provide important habitat for a range of fauna species, in particular feeding and nesting habitat for the Red-tailed Black-Cockatoo.

Although fire ignited by lightning is a natural event in this system, the eucalypt canopy often remains unburnt for long periods. Fire in the grassy understorey can promote good habitat condition and improve the diversity in the ground cover of grasses and herbaceous flora. The fragmentation of this system has resulted in much of the older vegetation in small reserves being surrounded by agricultural land, while the patches in Little Desert National Park are mostly skewed to young vegetation. This is the result of bushfires and planned burning over the last 15 years.

Nested assets

Four nested assets have been identified for this asset.

Nested asset	Examples of components
EPBC listed woodlands	Buloke Woodland of the Murray Darling Depression, Grey Box Grassy Woodlands and Derived Grasslands
Woodland birds	FFG-listed Temperate Woodland Bird Community (notably Red-tailed Black-Cockatoo)
Invertebrates	Golden Sun Moth (Critically Endangered under the EPBC Act)
Flora	Winged Peppercress, Whipstick Westringia, Southern Pipewort (all Endangered under the EPBC Act); Murray Swainson-pea, Downy Star Bush (both Vulnerable under the EPBC Act).

Condition

Key ecological attributes	Indicator	Current condition	Current trend	Condition goal
Landscape connectivity	Level of fragmentation	Fair		Fair
Landscape context	Size class distribution of canopy species	Fair	unknown	Fair
Vegetation composition and structure	Composition and structure relative to expected (site-based richness and composition)	Fair		Fair
Woodland birds	Woodland bird community (site occupancy and richness)	Poor		Poor

Conservation outcome

Dry Forests and Woodlands	Current condition	Desired trend	Condition goal
Over the 15 years to 2033, maintain the extent of vegetation and sustain or improve its condition to promote heterogeneity of vegetation structure and the occupancy and richness of flora and fauna species.	Fair		Fair



Riverine Forests and Woodlands

Riverine Forests and Woodlands cover 7650 hectares of the Wimmera Park Landscape, and are characterised by tall riparian forests that grow along river banks and fertile alluvial terraces. The riverine forests are usually dominated by River Red Gum and Black Box, with an open to sparse mid layer of wattles and scattered dense patches of shrubs, grasses and herbs.

Where the ground is rocky, vegetation can also grow as a dense shrubland or damp scrub along creeks and minor streams in floodplains at lower elevations. This conservation asset is dominated by Intermittent Swampy Woodland, Seasonally Inundated Shrubby Woodland, Riverine Chenopod Woodland, Riparian Woodland and Lignum Swampy Woodland EVCs.

This conservation asset predominantly lines the banks of the Wimmera River and its associated tributaries. The river has a catchment of about 2.4 million hectares and is the largest Victorian river that does not flow to the sea, instead flowing into a series of terminal lakes of which Lake Hindmarsh is the largest. The system has been regulated since the 1840s for irrigation, stock and domestic supply. The lower extent from Polkemmet Bridge (approximately 40 km downstream from Horsham), through the eastern section of Little Desert National Park and north through Lake Hindmarsh, has been designated as a Heritage River under the *Heritage Rivers Act 1992* (Vic.) due to its significant environmental and social values.

Parks Victoria manages long extents of riparian vegetation along the Wimmera Heritage River including Wimmera River Heritage Area Park, Lake Hindmarsh, and isolated patches of vegetation along many of the Wimmera River tributaries including Norton Creek, Burnt Creek, MacKenzie River, Mt William Creek, Yarriambiack Creek, and Dunmunkle Creek.

The Wimmera River system flows from the higher rainfall areas of the Grampians to the more arid southern Mallee, providing an important connection across a semi-arid landscape as well as wildlife corridors between the parks of the landscape from the Grampians to the Little Desert to Wyperfeld National Park.

The Riparian Forests and Woodlands asset and the wetlands it supports are important drought refuges for the Wimmera Park Landscape. The Wimmera Heritage River is naturally ephemeral, but regulation and a

drying climate has substantially altered natural flow regimes and is impacting the condition of habitat along the river system.

There is a progressive decline in tree condition with distance downstream, mainly as a result of drier conditions and increasing salinity. This variability in condition is reflected in particular reaches of the system; the sections farther north, which are closer to the terminal lakes, are generally more stressed in comparison to the upper reaches such as the MacKenzie River. Between Polkemmet Bridge and the Little Desert, the River Red Gums are large and healthy, with limited signs of dieback, and there is a good variety of mid-storey shrubs and a rich and diverse ground flora. Further north, as the river flows through the Wimmera Plains and into Lake Hindmarsh, the River Red Gum dieback becomes progressively worse as high salinity levels impact tree health and break down the clay structure of the soil, resulting in increasing erosion. Despite the lower Wimmera River being highly stressed and degraded, it is a priority for management because of its high environmental value because even degraded sites protect rare or endangered species. Significant water recovery for environmental flows is partially redressing the issues of the past, and will continue to support on-going recovery.

Many bird species, including migratory waterbirds and waders, take advantage of the terminal lakes when they contain water. Woodland birds inhabit the riparian vegetation and take advantage of the conditions provided by access to water, with a greater diversity of bush birds observed where flows are taking place (Wimmera CMA, 2012).

Several threatened fish species also occur in the Wimmera River including Murray Cod, Freshwater Catfish and Silver Perch. The Catfish and Perch are stocked species that are not endemic to the region and are not believed to be self-sustaining populations.

The main driver of condition in Riparian Forests and Woodlands are water flow regimes, which are impacted by water harvesting, drought and climate change. The Wimmera's climate is typically semi-arid, but annual rainfall in elevated areas (Grampians and Pyrenees) is higher.

Rainfall and resulting streamflows are extremely variable. Frequent heavy rainfall events required to generate sufficient runoff to cause waterways to flow. In years of below average rainfall, streamflows are low or stop altogether. Very wet conditions generate substantial flows that provide water for the region's wetlands, rivers and streams.

Nested assets

Five nested assets have been identified for this asset (see the table below).

Nested asset	Examples of components
Aquatic fauna	Platypus, Water Rat/Rakali, turtles, Eastern Long-Necked Turtle, Growling Grass Frog
Flora	Wimmera Bottlebrush (Critically Endangered under the EPBC Act), Floodplain Rustyhood (Vulnerable under the EPBC Act), and the FFG Act-listed Native Peppergrass and Pale Flax-lily
Fish	Freshwater Catfish, Silver Perch
Woodland birds	FFG listed Temperate Woodland bird community, Regent Parrot
Cultural values	Tangible cultural assets (e.g. middens and scar trees)

Condition

Key ecological attributes	Indicator	Current condition	Current trend	Condition goal
Habitat connectivity	Connectivity of riparian vegetation	Fair	→	Good
Riparian habitat features	Streamside vegetation structure, instream habitat, connectivity (Index of Stream Condition) Condition and recruitment of River Red-gum and Black Box	Fair ³	↗	Fair–Good
Watershed functioning and connectivity	Hydrology; water quality (Index of Stream Condition)	Fair	→	Fair
Instream biota	Diversity of aquatic fauna Number and type of macroinvertebrates (Index of Stream Condition - Aquatic Life)	Fair	→	Good
Fish	Presence and abundance of freshwater catfish and silver perch	Poor ²	→	Fair

² SKM (2010) ³ ISC streamside zone score

Conservation outcome

Riverine Forests and Woodland	Current condition	Desired trend	Condition goal
Over the 15 years to 2033, maintain the extent and improve the connectivity and condition of riparian vegetation structure to provide habitat for fauna and refugia during dry periods.	Fair	→	Fair



Freshwater Wetlands

The Freshwater Wetlands conservation asset covers 29 275 hectares of the Wimmera Park Landscape. It is characterised by low-lying areas which are either ephemerally, seasonally or permanently inundated. Most wetlands are filled from local runoff and winter and spring rainfall, although big summer storms can also fill some of the wetlands. A small number of wetlands are fed by groundwater or streams, but most fill only from overbank and river inflows when the Wimmera River floods.

Most wetlands in the Wimmera Park Landscape are ephemeral freshwater wetlands that are seasonally inundated and hold water for short periods (four to eight months). These wetlands lie in depressions on fertile, silty, peaty or heavy clay soils in depressions, characterised by herbaceous or sedgy vegetation, sometimes including scattered or fringing eucalypts. Tea-tree and paperbark shrubs may grow in areas of higher rainfall.

The most notable freshwater wetland is Lake Hindmarsh, a terminal lake of the Wimmera River that is a wetland of national importance. Beyond Lake Hindmarsh the system continues to Lake Albacutya (a Ramsar site) and the Outlet Creek system when water is sufficient. Lake Hindmarsh is of particular importance as a drought refuge for waterbirds; the central area of the lake can hold water for several years.

More than 50 waterbird species have been recorded at the lake, including seven listed under international treaties (Great Egret, Black-tailed Godwit, Greenshank, Marsh Sandpiper, Curlew Sandpiper, Red-necked Stint, Sharp-tailed Sandpiper, Glossy Ibis and Caspian Tern). The open water areas provide important habitat for large native fish, including Murray Cod, Freshwater Catfish and Silver Perch. The shallow margins of the lake provide habitat for small fish such as Flathead Gudgeon and Australian Smelt. During dry phases the bed of Lake Hindmarsh is colonised by terrestrial vegetation and fauna, including the Western Grey Kangaroo, Emu, Australian Bustard, Gilbert's Whistler and Bush Stone-curlew.

The Natimuk–Douglas 'chain of lakes' lies in the south-western Wimmera within the Douglas depression, an area of lower elevation than the surrounding landscape aligned along former sea coasts in the Horsham–Edenhope area. The chain of more than 200 saline and freshwater lakes spans over 70 km, 80% of which occur on private land.

Three of the freshwater wetlands within this depression are recognised as being of national importance including Natimuk Lake, Saint Marys Lake and Bitter Swamp. The lakes are valuable for supporting regional biodiversity, supporting a similar community of waterbirds to Lake Hindmarsh when water levels are the same.

The EVCs in this conservation asset include Plains Grassy Wetland, Cane Grass Wetland, Red Gum Swamp and Lignum Swampy Woodland.

The condition of Freshwater Wetlands varies across the Wimmera Park Landscape; better-quality wetlands occur in areas where the hydrological regimes have been less modified. Significant rainfall over recent years has enabled a large proportion of these systems to recover. The long-term condition of this conservation asset is driven by a changing climate, altered water flows, and land uses on land adjacent to wetlands.

As most freshwater wetlands within the planning area cannot be managed with environmental water, the management goal is to ensure no further deterioration in key ecological assets, and considers the need to offset the potential impacts of climate change. The primary condition goal is to improve the condition of the aquatic habitat through management activities in the surrounding buffer vegetation.

Nested assets

Six nested assets have been identified for this asset (see the table below).

Nested asset	Examples of components
Aquatic fauna	Invertebrates, Growling Grass Frog
Aquatic flora	Dwarf Flat-sedge, Jerry-jerry, Jerry Fire-water, Six-point Arrow-grass, Ridged Water Milfoil, Cane Grass, and Spiny Lignum
Small-bodied fishes	Western Carp Gudgeon, Australian Smelt, Southern Pygmy Perch, and Flathead Gudgeon
Waterbirds/waterfowl	Great Egret, Freckled Duck, Blue-billed Duck, Black-tailed Glossy Ibis, Brolga and Caspian Tern
Shorebirds	Red-necked Avocets, Black-tailed Godwit, Greenshank, Marsh Sandpiper, Curlew Sandpiper, Red-necked Stint, Sharp-tailed Sandpiper
Geology	Dunes on eastern banks of Lake Hindmarsh (state importance), cliffs on western banks of Lake Hindmarsh (regional importance)
Cultural values	Tangible cultural assets (middens, scar trees and clay balls from earth ovens)

Condition

Key ecological attributes	Indicator	Current condition	Current trend	Condition goal
Functioning and connectivity of wetlands	Index of Wetland Condition (area, hydrology, water properties)	Fair ⁴		Fair
Habitat features	Index of Wetland Condition (plant biota)	Good ⁴		Good
Aquatic species extent	Species presence, occupancy	Fair		Fair
Shorebirds / waterbirds / waterfowl	Functional diversity, distribution and breeding abundance	Good ⁴	unknown	Good

⁴Inferred from the 2009 IWC Scores for Wetlands listed on the National Directory of Important Wetlands

Conservation outcome

Freshwater Wetlands	Current condition	Desired trend	Condition goal
Over the 15 years to 2033, maintain the structure and diversity of the aquatic habitat to support the persistence of waterbirds and aquatic flora and fauna under variable wet and dry cycles.	Fair		Fair to Good



Saline Wetlands

Saline wetlands cover 4645 hectares of the Wimmera Park Landscape and include wetlands on saline soils, permanent salt lakes and seasonal mildly saline shrublands dominated by chenopods and succulents. The Saline Wetland asset consists of a number of EVCs, including Saline Lake Aggregate, Samphire Shrubland, Cane Grass Wetland, Salt Paperbark Woodland and Brackish Wetlands. Salt Paperbark communities are listed under the Flora and Flora Guarantee Act 1988 and are poorly represented in Victoria.

Saline wetlands are often subject to seasonal inundation fed by the discharge of saline groundwater, local runoff and direct precipitation. During dry periods, springs create puddles in some dry saline lake beds. These pools provide an important water source for bird life during periods when surrounding freshwater lakes are dry.

Significant clusters of saline wetlands with a high conservation significance occur across the Wimmera Park Landscape, mainly in the Natimuk–Douglas chain of lakes, the Millicent Coast Basin area near Edenhope and along the Wimmera River floodplain downstream of Dimboola. The Natimuk–Douglas chain of lakes retains some of the highest quality saline wetlands in this conservation asset. There are 11 wetlands listed as nationally important, over 222 native plants (3 nationally listed) and 180 native animals recorded, including 14 migratory bird species. Within the chain of lakes, Lake Wyn Wyn retains one of the best remaining examples of samphire and Salt Paperbark vegetation communities in this part of Victoria.

The saline lakes are particularly important habitat for Red-necked Avocets, Banded Stilts, Red-kneed Dotterels, Red-Capped Plovers and Black Swans. Mitre Lake and White Lake are important sites for the Altona Skipper Butterfly because of the presence of Chaffy Saw-sedge.

The condition of Saline Wetlands varies across the Wimmera Park Landscape. Better-quality examples occur in areas of largely unmodified hydrological regimes. The long-term condition of this conservation asset is driven by changing climatic patterns, altered water flows, and land use activities on surrounding properties.

Nested assets

Four nested assets have been identified for this asset (see the table below).

Nested asset	Examples of components
Fauna	Invertebrates, Altona Skipper Butterfly, Golden-rayed Blue butterfly (endangered under the EPBC Act)
Wetland vegetation	Salt paperbark communities, Samphire Shrubland communities
Flora	Chaffy Saw-sedge, Beaded Glasswort (vulnerable under the EPBC Act)
Waterbirds/waterfowl	Black Swans, Grey Teal, Mountain Duck
Shorebirds	Banded Stilts, Red-kneed Dotterels, Red-Capped Plovers, Red-necked Avocets, Red-necked Stint, Curlew Sandpiper, Sharp-tailed Sandpiper
Cultural values	Tangible cultural assets (e.g. middens and scar trees)

Condition

Key ecological attributes	Indicator	Current condition	Current trend	Condition goal
Functioning and connectivity of wetlands	Index of Wetland Condition (area, hydrology, water properties) Frequency of inundation (relative to expected)	Good	→	Good
Habitat features	Index of Wetland Condition (plant biota)	Fair	→	Good
Shorebirds / waterbirds / waterfowl	Functional diversity, distribution and breeding abundance	Fair	→	Fair

Conservation outcome

Saline Wetlands	Current condition	Desired trend	Condition goal
Over the 15 years to 2033, maintain the extent and connectivity, and improve the condition of habitat (aquatic vegetation) to support saline-dependent flora and waterbirds.	Fair	↗	Good



Winged Peppergrass

6 Threats to conservation outcomes

6.1 Methodology for assessing threats

Parks Victoria's method for assessing threats broadly follows the process outlined in the current standard for risk management (AS/NZS ISO 31000: 2009). Threats to conservation assets are assessed against their impact on achieving the defined conservation outcome for each asset and their direct impact on key ecological attributes. The assessment is a three-step process.

1 Identify threats to conservation outcomes.

Threats to conservation assets are identified by assessing the threat agents as well as the impact of the threatening process on key ecological attributes. For example, the effect of foxes (agent) is predation (process), which reduces the abundance and diversity of small ground-dwelling fauna (impact).

2 Classify threats.

Threats are classified according to a risk assessment matrix that defines both the likelihood and ecological consequence of the identified threats impacting on key ecological attributes (Carey et al. 2007) over a defined period of 15 years. Threats are ranked as extreme, high, medium, low or negligible risk. Priority areas for the risk abatement of threats are mapped.

3 Develop threat management objectives.

Threat management objectives are developed to mitigate the impact of the threats that are the greatest risk to conservation assets. Threat management objectives specify the change in high risk threats required to achieve a particular conservation outcome for a conservation asset.

6.2 Threats to conservation assets

A broad range of key threats to the conservation assets of the Wimmera Park Landscape were identified by participants in the conservation action planning workshops. These threats have been assessed and ranked using the methodology described above (Table 6.1). The highest-ranked threats identified out of this process are discussed in the following sections will be directly addressed through this plan.

The key threats to the terrestrial conservation assets relate to impacts on the key ecological attributes, and are generally considered to be those with the greatest impact on the regeneration, recruitment and restoration of species and ecological communities. This focuses management on the need to ensure that species and ecological communities are functioning within acceptable bounds to maintain key species (e.g. Buloke Woodlands) and threatened flora and fauna populations (e.g. Red-tailed Black-Cockatoo, Malleefowl). Climate change has not been treated as a specific threat, rather it has been considered when assessing the trend in impacts of other threatening processes over 15 years.

Table 6.1 Key threats to the conservation assets of the Wimmera Park Landscape.

Threatening process	Threat agent	Heathlands & Heathy Woodlands	Mallee & Broombush	Dry Forests & Woodlands	Freshwater Wetlands	Riverine Forests & Woodlands	Saline Wetlands
Grazing pressure	Grazing / browsing by introduced herbivores Rabbits, Feral Goats, deer and Feral Pigs	Medium	Medium *threatened flora = High	Medium	High	High	Low
Predation	Introduced terrestrial predators (fox and cat) Redfin	Medium	Medium	Medium	High	High	Negligible
Fire — regimes and management	Prescribed burning / wildfire Too frequent, wrong season / severity / scale Impacts of fire management Fire ignition, suppression, patching out, chemical, blacking out, new track construction, off-track driving, strategic fire breaks, illegal camp fires, fuel breaks	Medium	Medium *Malleefowl = High Long vegetation = Extreme	Medium	Negligible	Medium	Negligible
Weed invasion — terrestrial/aquatic	Weed species herbaceous annual, woody, aquatic	Low	Low *threatened flora = Medium	High	Medium	Medium	Low
Alteration to natural hydrology	Harvesting or diversion Legal ground water harvesting and surface water diversions Barriers to water movement Levy banks, dams and in-stream barriers	Negligible	Negligible	Negligible	Medium *Shorebirds = High	Low *Amphibians = Medium	Low
Competition	Competitive interactions: Indian Mynahs and bees Carp	Negligible	Negligible	Medium	Medium	Negligible	Negligible
Habitat degradation	Recreational activities (legal / illegal) Mountain bikes, camping, motor bikes, 4WD, off track walking, physical presence by humans or domestic animals e.g. dogs, horses, hunting. Lack of biomass control Lack of disturbance regimes, e.g. fire, grazing, slashing	Negligible	Negligible	Low *threatened flora, herb-rich ground layer = Medium	Medium	Medium	Negligible
Habitat fragmentation	External impacts from adjoining land uses, etc. Roads, tracks and agriculture	Medium	Low *Victorian Mallee Bird Community = Medium	Low *temperate woodland birds = Medium	Medium	Negligible	Negligible
Natural resource extraction	Natural resource extraction (permitted and not permitted) Mineral extraction / exploration, gravel pits, sand mining and firewood collection	Negligible	Negligible	Low	Negligible	Negligible	Negligible
Diseases	Pathogens: Phytophthora, Chytrid Fungus	Unknown	Negligible	Negligible	Negligible	Negligible	Negligible

* Key ecological attributes with a threat risk that differs from the average indicated in the cell.



Total grazing pressure

Threat description

Total grazing and browsing pressure poses a medium to significant risk across the range of conservation assets in the Wimmera Park Landscape, particularly impacting floristic diversity and structural complexity. Riverine Forests and Woodlands and Freshwater Wetland environments are most affected by grazing and browsing. Dry Forests and Woodlands, Heathlands and Heathy Woodlands, and Mallee and Broombush are also at risk. Although rabbits are not highly visible in the Wimmera Park Landscape, their population density contributes to the decline of woodlands, especially in the smaller reserves to the south of the Little Desert that have sandy soil profiles.

Although Feral Goats and Fallow Deer are present in the landscape, their distribution and impact have not been systematically recorded. Feral Goats inhabit mallee and heathland vegetation, affecting canopy and shrub regeneration, and they pose a risk to the persistence of threatened orchid populations. Fallow Deer degrade the water quality of wetland assets by excreting and wallowing in shallow water. The distribution and abundance of deer has been increasing over recent years.

Native herbivore (kangaroo and wallaby) populations are also likely to be impacting the regeneration and recruitment of native species. The impacts and locations in the Park Landscape have not been identified, but the greatest impacts are believed to be in areas fringing private land, where more food and shelter is often present.

Managing grazing and browsing is necessary to promote the successful regeneration of key canopy species, increase species diversity of the shrub layer, improve overall vegetation cover and to increase vegetation complexity and diversity of plant species. The effective management of total grazing and browsing pressure requires reducing populations of introduced herbivores, and where necessary in conjunction with the management of native herbivores.

Threat objective

By 2023, reduce rabbit, feral goat and deer impacts across the landscape, and review native herbivore population management at key locations where they are affecting ground-layer flora and woodland structure.



Predation by introduced species

Threat description

Predation by introduced animals (notably foxes and feral cats) poses a high risk to a range of ground-dwelling species, including small mammals (particularly Silky Mice and Western Pygmy-possums), reptiles, ground-nesting wetland birds, and woodland birds. The threat is widespread and has contributed to a decline in the populations of these groups. Decreasing numbers of native fauna affect the ecosystems they inhabit, especially when species support ecological processes (such as small mammals that dig and or pollinate). Predation can also compound the impacts of drought and bushfires on animal populations, particularly as they recover from such events. Changes in the composition of native fauna populations can also change predator–prey associations and the way food webs function.

Some programs that focus on controlling a single predator species have been shown to result in the increase of other predator species. It is also likely that disturbance events such as extreme weather events or large-scale bushfires will influence the occurrence and extent of both predators and their prey across the landscape.

Because the Wimmera Park Landscape is a mosaic of public and private land, a collaborative approach to the management of predation pressure is needed to be effective in increasing the health of native animal populations. Challenges to collaboration include the number of private landowners involved and differing attitudes towards pest animal control. The current policy and legislation regulating Feral Cat has changed recently, which will improve the ability of land managers to effectively manage predation pressure across the landscape.

There is a gap in our knowledge about the ecological roles of native predators, especially those that have been lost from the Wimmera Park Landscape. Increasing our understanding of how native predators might interact with introduced predators and their prey may help to improve the sustainable and effective management of predation pressure.

Threat objective

By 2023, reduce Red Fox and Feral Cat predation at key locations to support increases in the populations of priority native fauna species.



Fire regimes and management

Threat description

Fire poses a medium risk to a range of assets across the Wimmera Park Landscape. Although fire is a highly managed program across the landscape, the key threat is uncontrolled, frequent and large-scale bushfire events that may become more frequent as the climate changes. Such fires events have created large extents of young vegetation, which has reduced the heterogeneity of vegetation age and habitat, affecting the ability of species to survive and recolonise in the landscape. Large fires may reduce existing fauna populations and reduce the food and resource availability for surviving animals, which can have a severe impact on threatened species populations. Old growth vegetation, and the fauna it supports, is particularly vulnerable to frequent fire. The absence of fire-induced regeneration in some parts of the landscape may also cause significant changes to ecosystems. This is a particular concern for small fragmented reserves.

Fire management can have an impact on conservation assets through activities such as track and control line establishment for bushfire suppression and planned burning. Fire management vehicles can also spread pathogens and weeds. In the Wimmera Park Landscape, fire should be managed using existing roads and tracks where possible to limit the physical impacts and minimise the potential for spreading pathogens and weeds.

To increase the variability of vegetation growth stages and habitats, fire must be strategically managed across the landscape to ensure that conservation assets are managed within tolerable fire intervals and that fire occurs at the appropriate intensity, timing and season for the vegetation type. The spatial arrangement of vegetation growth stages is also important to support suitable habitat for species with specific requirements (including Red-tailed Black-Cockatoos), and for species to be able to recolonise areas in the years following fire when the habitat becomes suitable for their needs. The Wimmera Park Landscape is a mosaic of private and public land, so cross-tenure fire management is essential.

Threat objective

By 2023, reduce the severity, extent, and impacts of severe, large-scale bushfires and promote a growth stage distribution that is related to, and informed by, the optimal geometric mean abundance and growth stage structure.



Weed invasion

Threat description

Weeds outcompete native species and alter the structure and function of habitat. In the Wimmera Park Landscape, which includes many small reserves and has significant public–private land boundaries, weeds are a medium threat to ecosystems. Weeds on private land can be a significant source of weed infestation and reinfestation to public parks and reserves, requiring a collaborative approach to management across land tenures to be effective in increasing the health of vegetation assets. Several introduced grass species are especially prevalent along reserve boundaries, including African Lovegrass, Phalaris, Tall Wheat-grass and Perennial Veldt Grass.

The soil disturbance and propagule spread caused by events such as fire and flooding can give weeds a competitive advantage over native species. Weeds can be transported to new sites, where infestations could rapidly establish and expand. Mechanical works (including fire prevention, suppression and management activities) also create opportunities for weed invasion through soil disturbance and the introduction of weed propagules in on equipment.

Several significant weeds (including Boneseed, Bridal Creeper, African Boxthorn and Perennial Veldt Grass) are already having a direct impact on conservation assets and limiting the recovery and restoration of important areas.

Newly emerging weeds and those that are extending their range are also recognised as key threats that could cause serious impacts if not managed appropriately. These include Buffel Grass, Sallow Wattle and invasive cactus species (e.g. Prickly Pear and Hudson Pear) in the Wimmera Landscape.

Focusing weed control efforts on existing weed species that are degrading ecosystems, and managing the threat of weeds as their distributions change over time, will result in a significant improvement in the health of conservation assets in the Wimmera Park Landscape.

Threat objective

By 2023, eradicate new and emerging weeds, contain the spread of identified established populations, and eradicate high priority species from high value locations.



Alteration to natural hydrology

Threat description

All riparian and wetland systems depend on appropriate hydrological regimes. The timing, duration and frequency of water flows, drying periods, and flood events drives the composition and characteristics of wetland and riparian ecosystems. Alterations to natural hydrology pose an ongoing medium threat to ecosystems in the Wimmera Park Landscape.

Throughout the Wimmera Park Landscape there has been significant alteration to the flow and delivery of hydrological regimes, particularly to support stock and domestic water use, and irrigation of agricultural land and facilitation of recreational experiences. The management of water flows and regimes, including the provision of environmental water, is a coordinated and regulated program. Public water infrastructure in the Park Landscape has altered water flows, resulting in some areas being cut off from natural flood events, and other areas experiencing increased inundation. Climate change and land use change is also resulting in reduced flows, causing further drying of the landscape and a deterioration in the condition of vegetation and habitat. In-stream barriers and ground water extraction creates barriers to species movements, and leads to the loss of important aquatic areas that provide refuge for species during dry years.

The long-term consequences of altered water flows can be exacerbated by pest plant and animal invasion, and the susceptibility of soils to erosion can affect the health of assets. Complementary actions that support healthy vegetation communities can have significant long-term benefits, particularly when water does flow across the landscape. These actions include reducing the threats caused by the establishment of inappropriate infrastructure that hinders appropriate water flow (e.g. levees), or by actions that promote sedimentation through increased erosion, or by weed propagule movement when water flows.

Threat objective

By 2023, reduce the impacts of pest plant and animal invasion and soil disturbance flood dependent assets to support improved vegetation condition and water flow conditions.



Silky Mouse

7 Conservation strategies

7.1 Prioritising conservation strategies

A broad range of conservation strategies have been considered, including those in existing park management plans and regional catchment strategies as well as additional actions identified by regional staff and conservation partners. The following strategies and their component actions have been designed to achieve the desired conservation outcomes identified in this plan. The Strategic Management Prospects tool, will be used to help determine the priority areas for implementing these strategies along with other assessments of impact feasibility and cost. Each strategy may be suitable for further refinement or development with conservation partners and stakeholders who wish to further support conservation outcomes in the Wimmera Park Landscape.

The following strategies were prioritised through this process:

- Establishment of collaborative partnerships to support the sustained management and connectivity of assets.
- Management of total grazing pressure.
- Ongoing control of introduced predators to support resilient native fauna population.
- Fire management for healthy assets.
- Environmental weed management using a biosecurity approach.
- Management of water-dependent ecosystems.

7.2 Priority strategies

Priority strategies have been further developed to establish guiding statements around the key implementation components of each strategy. These were tested through the development of results chains, which test the logic of the strategy in a stepwise manner for delivering the desired outcomes. These results chains were used to develop key implementation milestones for each strategy, which include measurable outputs and outcomes that help managers to understand the impacts of management on improving the viability of conservation assets and managing threats.

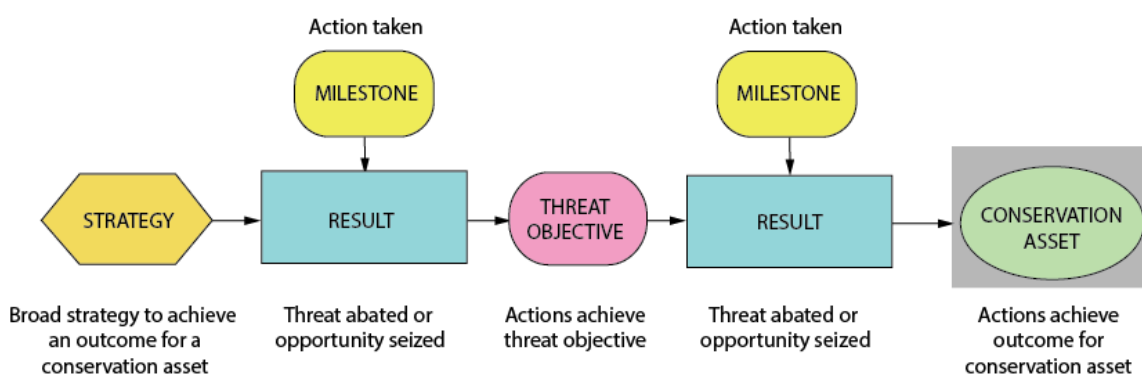
Conservation strategy

Conservation strategy development has focused on either addressing key threats or improving the health of key conservation assets or both. The development of these priority strategies has been undertaken using results chains to ensure that the actions that are defined within the strategy are those that will lead directly to addressing the objectives and conservation outcomes of this plan. Each strategy is captured in a statement which defines:

- the impacts of the strategy on key threats
- the approaches to be applied
- the measures of success
- the impact of the strategy on conservation outcomes.

Results chain

Results chains have been developed for all conservation strategies. They express the relationship between the conservation strategy, identified threats and an improvement in the desired state of conservation assets, as well as the assumptions that underpin how we think a conservation strategy will contribute to maintaining one or more conservation assets. The results chain helps visualise and identify some initial monitoring indicators and milestones. Below is a simple example of a results chain.



Implementation milestones

Result	Activities
Output from the results chain	Corresponding actions taken



Establishment of collaborative partnerships to support the sustained management and connectivity of assets

This strategy involves strengthening effective collaboration and partnership between Parks Victoria and restoration partners to help build landscape connectivity and cross-tenure management to address the impacts of fragmentation. The Wimmera Park Landscape has many groups invested in sound environmental management outcomes, including the Barengi Gadjin Land Council (BGLC), Greening Australia, the Habitat 141° initiative, DELWP, the Wimmera CMA, Conservation Volunteers Australia (CVA), and the Victorian Malleefowl Recovery Group (VMRG). Many local community groups and recreation groups are also keen to contribute as volunteers to care for their local environment. These include Friends groups such as Friends of Little Desert and Friends of Arapiles, Victorian Climbing Club CliffCare, BushKinder groups such as Natimuk and Horsham Pre-school BushKinder, and advisory groups such as the Mount Arapiles – Toon State Park Advisory Group.

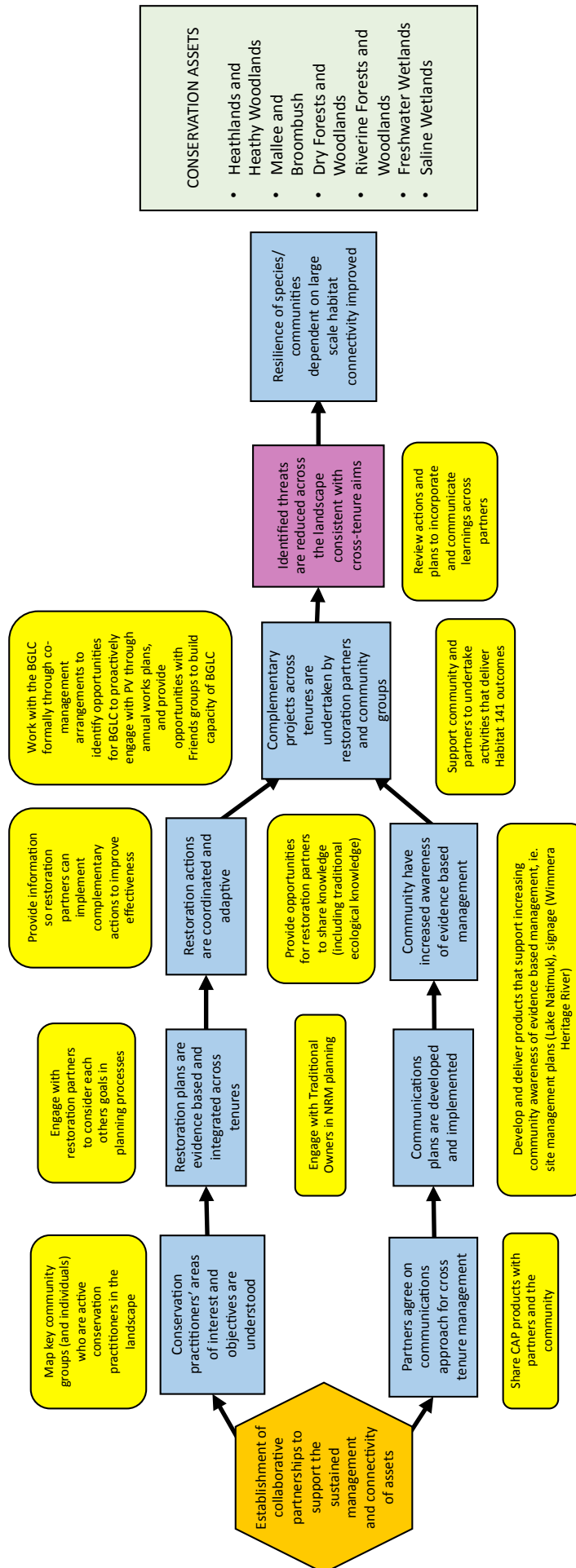
As part of the strategy, it is important to understand who these interested parties are, their desired level of involvement, and where their areas of interest lie. This will help identify high -priority programs that will benefit most from cross-tenure, landscape-scale programming. Coordinated programming will support working together to plan, deliver, monitor and adapt programs. Parks Victoria already has strong working arrangements with many of these groups and will take an active role in building and maintaining the partnerships with restoration partners to increase the effectiveness of on-ground management, integrate knowledge, and provide cross-tenure support for projects and partners.

Integrated management across the park boundaries will facilitate shared knowledge and expertise, and build the resilience of species and ecological communities that improves on-ground outcomes for environmental management projects. There are already several programs supporting activities beyond park boundaries, including landscape-scale private land protection and restoration, pest plant and animal control, and cultural burning.

Conservation outcomes

Key restoration projects involving working partnerships focused on improving the condition of assets are implemented across public and private land tenures to increase their effectiveness and efficiency.

Results chain



Implementation milestones

Result	Activities
Areas of interest and objectives of conservation practitioners is understood.	Map key community groups and individuals who are active conservation practitioners, including the BGLC, Greening Australia, Wimmera CMA, CVA, VMRG, Friends groups, BushKinder and Recreation groups such as the Victorian Climbing Club's CliffCare.
Restoration plans are evidence-based and integrated across tenures.	Engage with restoration partners to consider each other's goals in planning processes. Engage with BGLC and other Traditional Owner groups in natural resource management planning, including on a Partnership Agreement that will outline shared goals and future working arrangements for working together
Restoration actions are coordinated and adaptive.	Provide information so restoration partners can implement complementary actions to improve effectiveness, particularly pest plant and animal projects. Provide opportunities for restoration partners to share knowledge, including traditional ecological knowledge.
Partners agree on communications approach for cross tenure management.	Share conservation action plan products with partners and the community.
Communications plans are developed and implemented.	Develop and deliver products that support increasing community awareness of evidence-based management, e.g. site management plans (Lake Natimuk), signage (Wimmera Heritage River).
Community has increased awareness of evidence-based management.	Share conservation action plan products with partners, community groups, BushKinder, Friends groups and advisory groups.
Complementary projects across tenures are undertaken by cross-tenure partners and community groups.	Work with BGLC through co-management agreement and identifies opportunities to work together and build BGLC capacity through the annual works program. Support the community and partners to undertake activities that deliver Conservation Action Plan outcomes and outcomes for other complementary partner initiatives such as Habitat 141° initiative and CVA's Rewilding the Desert initiative.
Identified threats are reduced across the landscape consistent with cross-tenure aims.	Review actions and plans to incorporate and communicate learnings across partners.
Resilience of species/communities dependent on large-scale habitat connectivity is improved.	



Management of total grazing pressure

This strategy aims to effectively control or manage priority fauna (introduced pest animals and overabundant native species) that impact conservation assets across the Wimmera Park Landscape through competition for resources or habitat degradation.

The Park Landscape supports a broad range of public land assets, including small local reserves, long linear river frontages and large blocks of public land. Management of total grazing pressure therefore involves an integrated approach that reaches across boundaries. Pest animals to be managed in this landscape include rabbits, goats, Fallow Deer and Red Deer. The response of some macropod species to predator and competitor removal is yet to be understood, and this knowledge gap needs to be filled in order to manage grazing pressure at a landscape scale.

The strategy identifies the current priorities for action for individual species across this landscape where they currently occur, or when new weeds become established. The strategy also advocates monitoring to increase our understanding of where and what impacts are occurring, particularly for goats and deer.

Parks Victoria has programs in place that work with partner agencies and neighbours to manage rabbits and goats through coordinated programs, particularly in small woodland reserves. These programs deliver control activities that are integrated and effective. This approach includes implementing culturally sensitive rabbit control methods with the Barengi Gadjin Land Council, and utilising the skills of the Sporting Shooters Association of Australia.

Table 7.1 briefly describes the impacts, control methods, locations for eradication and control levels to be achieved. Revision of this table should be undertaken on a regular basis and particularly in response to severe disturbance events such as large-scale bushfires or floods.

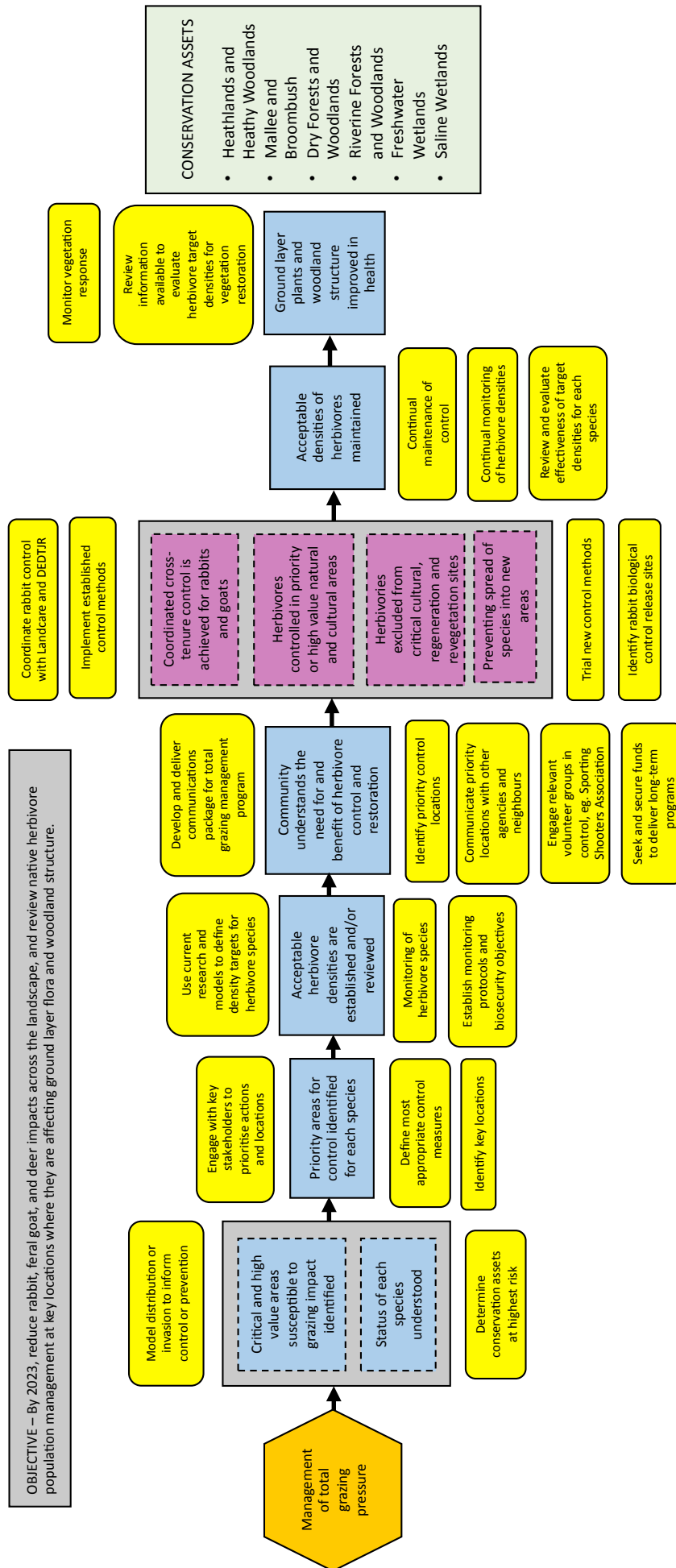
Table 7.1 Impacts, control methods, locations and control levels for managing total grazing pressure.

Management objective	Species	High-priority locations	Implementation milestones	Potential control methods
Eradicate	Feral Goat	Park landscape, particularly Yarrangook Nature Conservation Reserve	Eradicate goats from parks.	Aerial/ground shooting, trapping
Asset Protection	European Rabbit	Park landscape, particularly Little Desert National Park boundaries, riparian zones, and cultural site locations	Establish and maintain rabbit densities of less than one per spotlight kilometre. Trial alternative methods (e.g. gas and backfill) for rabbit control in culturally significant areas to reduce impact from control.	Biocontrol, baiting, fumigation, shooting, ripping
Asset Protection	Fallow Deer, Red Deer	Little Desert National Park (western block)	Control deer densities, particularly to reduce impacts on sensitive values (e.g. treeless wetlands).	Ground shooting, trapping
Monitor	Fallow Deer, Red Deer	Park landscape	Understand the distribution, abundance and potential impact by 2019.	To be determined
Monitor	Kangaroos, wallabies	Park landscape, particularly Little Desert National Park	Coordinate with managers of the Grampians Park Landscape and the Mallee Park Landscape to better understand macropod management.	To be determined

Conservation outcomes

In partnership with neighbours, total grazing pressure is reduced across the landscape to encourage species and structural diversity of native flora and habitats.

Results chain



Implementation milestones

Result	Activities
Critical and high value areas susceptible to grazing impact are identified.	Model distribution, or invasion, to inform the control or prevention of grazing and browsing species, including rabbits, goats and deer.
Status of each species are understood.	Determine conservation assets at highest risk.
Priority areas for control are identified for each species.	Engage with key stakeholders (including neighbours and Traditional Owners) to prioritise control actions and locations. Define the most appropriate control measures (e.g. fencing, shooting, ripping, fumigation, baiting, etc.). Identify key locations that experience a high grazing impact.
Acceptable herbivore densities are established and reviewed.	Use current research and models to define density target for herbivore species. Establish monitoring protocols and biosecurity objectives. Monitor herbivore species, including kangaroos and wallabies. Understand the distribution, abundance and potential impact of deer on the landscape.
The community understands the need for, and benefit of, herbivore control and restoration.	Develop and deliver a communications package for the total grazing management program. Identify priority control locations, considering high-value natural and cultural areas. Communicate priority locations for control with other agencies and neighbours. Engage relevant volunteer groups in control, such as the Sporting Shooters Association of Australia. Seek and secure funds to deliver long-term programs to reduce grazing and browsing pressure.
Coordinated cross-tenure control is achieved for rabbits and goats. Herbivores controlled in priority or high value natural and cultural areas. Herbivores are excluded from critical cultural, regeneration and revegetation sites. Species are prevented from spreading into new areas.	Coordinate rabbit control with Landcare and DEDJTR. Implement targeted, appropriate control methods for each species and treatment site. Undertake control consistent with any Cultural Heritage Management Plans, and Traditional Owners work with Parks Victoria to monitor control treatments where agreed Eradicate goats from parks and reserves, particularly Yarrangook FFR. Treat rabbit warrens to establish and maintain rabbit densities below 1 per spotlight kilometre. Trial alternative methods (e.g. gas and backfill) for rabbit control in culturally sensitive areas. Control deer densities, particularly to reduce impacts on sensitive values (e.g. treeless wetlands). Monitor rabbit biological control release sites.
Acceptable densities of herbivores are maintained.	Continual maintenance of control. Continual monitoring of herbivore densities. Review and evaluate effectiveness of target densities for each species.
The health of ground layer plants and woodland structure is improved.	Monitor vegetation response to grazing levels. Review information available to evaluate herbivore target densities for vegetation restoration.



Ongoing control of introduced predators to support resilient native fauna populations

The control of introduced predators (Red Fox and Feral Cat) will support the persistence and increase of priority native fauna vulnerable to predation, and their occurrence in the landscape. Understanding the key locations for the threatened fauna populations vulnerable to predation in the Wimmera Park Landscape and targeting control on those areas is an important step in managing predation pressure in the Park Landscape. Also, understanding when species are most at risk to predation pressure will support the development of targeted, integrated and effective programs.

Baiting is an effective landscape-scale technique for managing fox populations, and shooting and trapping may be useful complementary techniques at smaller scales. New and emerging techniques may also complement and increase the effectiveness of existing approaches.

Feral cats have recently been declared as a pest animal under the Catchment and Land Protection Act 1994. This will support Parks Victoria to more effectively control predation pressure from feral cats at a landscape scale. The support and engagement of key agencies is needed to develop effective and humane approaches to feral cat control, including targeted baiting programs.

Integrated cross-tenure control of predator species is important to effectively manage the threat of predation, and must be based on understanding where and when predators are most active. This may be influenced by seasonal factors or disturbance events.

The Little Desert National Park is the site of a pilot landscape-scale program involving increasing the control of foxes and experimentally trialling feral cat control at priority locations. The project complements work by Conservation Volunteers Australia at their neighbouring Little Desert property where enhanced predator control supports increasing populations of small mammals and re-introduction of lost species. Monitoring involves both introduced predators and small mammal populations at treatment and control sites.

This strategy needs to be implemented with other strategies that seek to improve the quality and extent of available habitat for fauna, and on a collaborative scale across land tenures. To ensure that the effectiveness of this strategy is maintained in the longer term, the presence and population sizes of

introduced predators will need to be monitored, and control must be evaluated regularly. Other fauna species (including potential prey and competitor species) should also be monitored to assess impacts to faunal community structures and food webs.

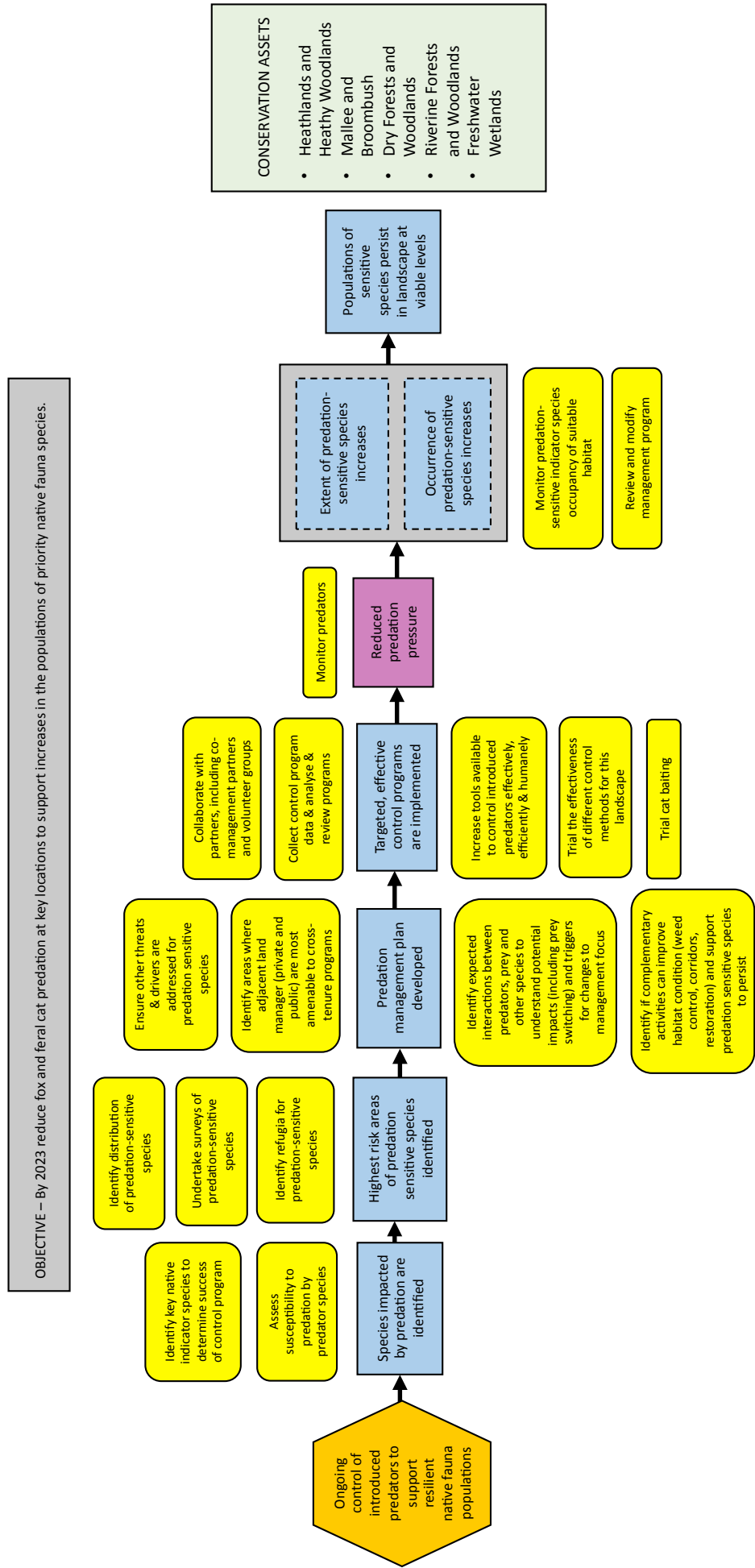
Conservation outcomes

There will be an increase in the distribution and abundance of predation-sensitive fauna at high-priority locations.

Implementation milestones

Result	Activities
Species impacted by predation are identified.	<p>Identify key predation-sensitive species, particularly species of birds and small mammals.</p> <p>Assess risk of different species to predation by feral cats and foxes.</p>
Highest risk areas of predation sensitive species are identified.	<p>Undertake surveys of predation-sensitive species such as Silky Mouse and other small mammals to determine presence and distribution.</p> <p>Identify refugia for predation-sensitive species.</p>
A predation management plan is developed.	<p>Address knowledge gaps through targeted research programs to understand if/when seasonal timing of control programs can increase effectiveness, and whether high level predator control impacts other components of faunal food chains.</p> <p>Identify expected interactions between predators, prey and other species to understand potential impacts (including prey switching) and triggers for changes to management focus.</p> <p>Identify if complementary activities can improve habitat condition (weed control, corridors, restoration) and support predation sensitive species to persist.</p> <p>Ensure other threats and drivers are addressed for predation sensitive species.</p>
Targeted, effective control programs are identified	<p>Undertake targeted Feral Cat and Red Fox control measures, based on predation-sensitive species, priority locations and seasonal timing. Priority projects currently underway include developing landscape scale partnership projects with CVA in Little Desert National Park and working with the VMRG on fox control programs for Malleefowl in Little Desert. Priority locations also include Mount Arapiles –Tooan State Park and Nurcoung FR.</p> <p>Involve volunteer groups such as the Sporting Shooters Association of Australia in control programs.</p> <p>Work with the BGLC on planning and implementing control programs.</p> <p>Collect control program data and analyse and review programs.</p> <p>Trial the effectiveness of different control methods as novel tools become available to control introduced predators effectively, efficiently and humanely, particularly in relation to Feral Cats.</p>
Predation pressure is reduced.	<p>Monitor predator abundance/presence.</p>
<p>The extent of predation-sensitive specie increases.</p> <p>The abundance of predation-sensitive species increases.</p>	<p>Monitor the outcomes of the control program by undertaking surveys of predation-sensitive species such as Silky Mouse and other small mammals.</p> <p>Review and modify the management program as necessary to continue to support persistence of species.</p>
Populations of sensitive species persist in the landscape at viable levels.	

Results chain





Fire management for healthy assets

The Wimmera Park Landscape consists of conservation reserves of various sizes surrounded by privately owned land. As a result, fire planning and management must take a cross-tenure approach, supporting partners in fire management including the Country Fire Authority, DELWP and private landowners. This strategy involves working in partnership with other fire management agencies, particularly DELWP, to improve the ecological and cultural health of the Wimmera Park Landscape through appropriate fire management.

As the lead agency for fire management on public land in Victoria, DELWP works with Parks Victoria to develop and deliver fire management programs based on risk mitigation. The DELWP program sets objectives for bushfire management on public land and develops associated strategies for fire prevention, preparedness, fuel management (including planned burning and non-burning fuel treatments), response and recovery (DEWLP 2012). Parks Victoria works to ensure that our landscapes are managed in the most effective and respectful way, so that high-quality habitat persists and supports healthy populations of threatened flora and fauna species.

Landscape management zone strategies are the most relevant for land managers, because they support the maintenance of high-quality habitat in the landscape that in turn supports the persistence of flora and fauna. Key areas of focus in the coming years for the Wimmera Landscape will be planned burning in the internal blocks of Little Desert National Park and the management of fire in the network of fragmented reserves across the landscape.

Appropriate fire management recognises that assets have differing fire needs, and the scale, severity, intensity, frequency, and seasonal timing of fire events (both bushfire and planned burning). The impacts of such events to the health of assets may be apparent immediately post-fire in the loss of fauna habitat and population numbers, but may also be evident over the longer term, through impacts on the ability of species to recolonise burnt areas, or through increased predation or competition for resources that may last decades after large-scale bushfire events. Parks Victoria also has a key role in supporting the rehabilitation and ecological recovery of ecosystems after fire events which may also include mitigating the risks of grazing/browsing, or degradation from illegal use of fire areas by park visitors post-fire.

Bushfire events and planned burning in vegetation communities that have regeneration events promoted by fire triggers (temperature, smoke, etc.) are important for the continuing health of the system over the longer term. Fire provides renewal opportunity and can be a highly effective risk mitigation tool when appropriately used and sited in the landscape. Fire management is a high -priority program in Heathlands and Heathy Woodlands, Mallee and Broombush, and Dry Forests and Woodlands.

Bushfire events over the last 10–15 years have created large extents of similarly aged young vegetation and habitat through Little Desert National Park. Current planned burning programs in these systems will consider habitat connectivity, maintaining habitat complexity and the effect on growth stage composition across the Park Landscape. It aims to use targeted fuel management to reduce the extent of high -severity bushfires that impact the tree canopy.

This strategy supports a risk-mitigation and cross-tenure based approach to fire management, aiming to retain appropriate fire in the landscape and reduce the impacts of planned burning and large-scale bushfires. This strategy supports the following activities:

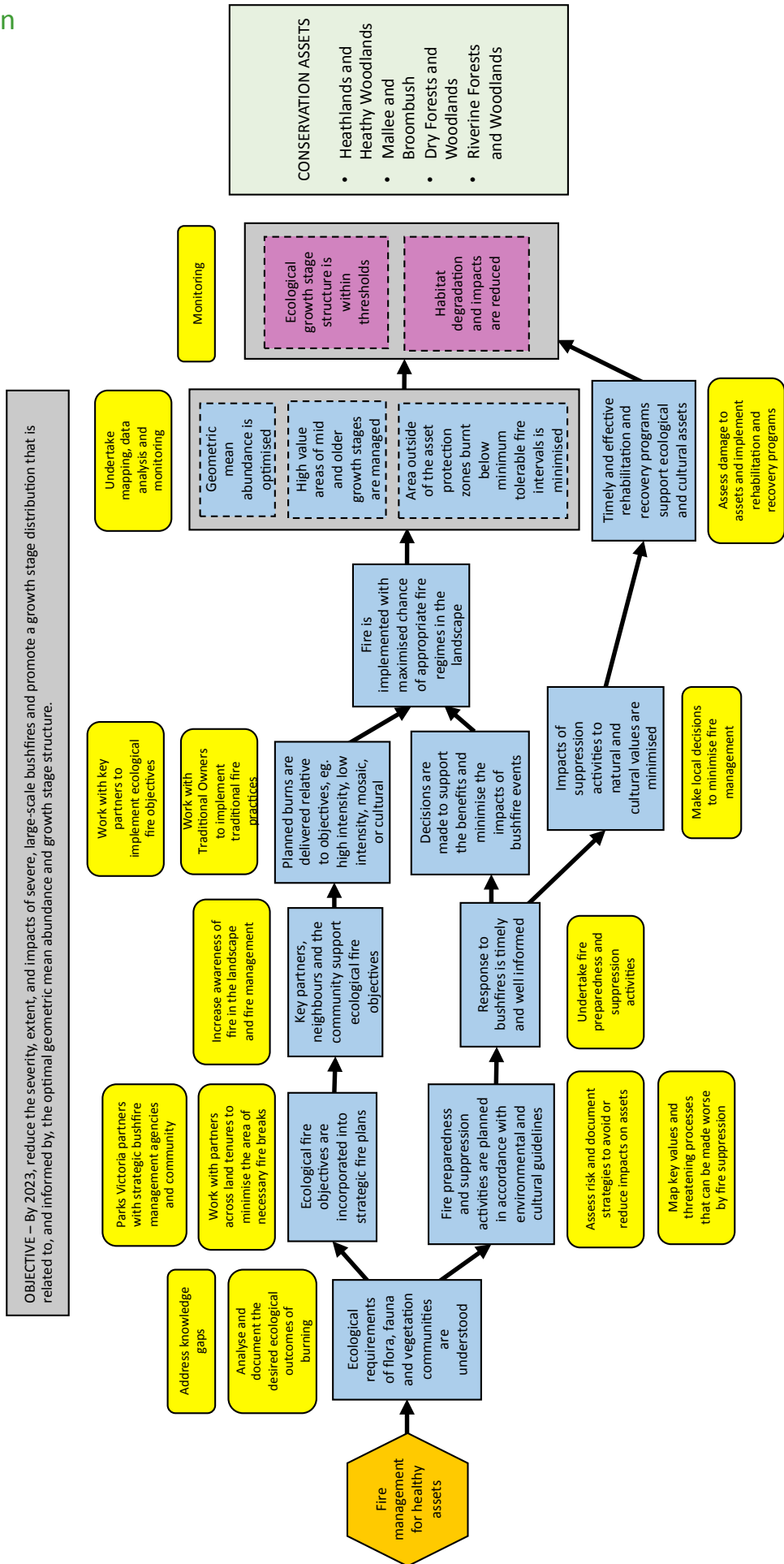
- Applying ecologically sensitive fire to fire-dependent ecosystems based on our knowledge of tolerable fire intervals, vegetation growth stage distributions, and geometric mean abundance. It is important that the appropriate growth stage structure for each vegetation type is considered and used to guide the planning process for planned burns across the Landscape. Particularly important is retaining critical habitat provided by long-unburnt vegetation. The location of planned burns is also recognised as important to support habitat connectivity and facilitate the recolonisation of burnt areas.
- Targeting fuel management to protect cultural, built and ecological assets, including areas of high biodiversity value based on identified risk mitigation needs.
- Undertaking fire preparedness and suppression activities in accordance with environmental and fire management guidelines, including local planning documents.
- Actively excluding fire from fire -sensitive ecosystems and other high priority areas.

The strategy also aims to increase our knowledge of traditional burning practices by supporting local Traditional Owners to contribute cultural and ecological knowledge into fire plans and strategies. Parks Victoria will also support the training and mentoring of Indigenous rangers to be forest fire-fighters, promoting the implementation of traditional burn practices that can be used to engage the community in cultural understanding and have a positive ecological benefit.

Conservation outcomes

The outcome of this strategy will be an improvement in the structural diversity and distribution of vegetation growth stages in vegetation communities that depend on fire, and protection of values in ecosystems that are sensitive to inappropriate fire management.

Results chain



Implementation milestones

Result	Activities
The ecological requirements of flora, fauna and vegetation communities are understood.	Analyse and document the growth stage distribution for which fire management is aiming. This will be related to and informed by the optimal geometric mean abundance and growth stage structure. Tolerable fire intervals and expert opinion may also inform development. Define high-value area, and identify them spatially. Address fire ecology knowledge gaps that will support better implementation of sound, risk-mitigation based fire management.
Ecological fire objectives are incorporated into strategic fire plans.	Parks Victoria partners with strategic bushfire management agencies (DELWP and the CFA) and community. Where possible, work with partners across land tenures to consolidate edge breaks and minimise the area of necessary fire breaks on public lands.
Key partners, neighbours and the community support ecological fire objectives.	Use the Fire Operations Plan as a public communication tool to increase awareness of fire in the landscape, considerations of management, and the use of non-burn fuel treatments.
Planned burns are delivered relative to objectives, e.g. high intensity, low intensity, mosaic or cultural.	Work with DELWP to implement ecological fire objectives, including in Little Desert NP increasing the proportion of Heathland and Mallee vegetation communities that are considered long unburnt, and implementing strategies that reduce the incidence of large-scale high severity bushfires. Work with the BGLC and PV/DELWP staff who are traditional owners to implement traditional fire practices where practical
Fire preparedness and suppression activities are planned in accordance with environmental and cultural guidelines.	Work with DELWP to assess risk and document strategies to avoid or reduce impacts on assets. Identify opportunities where bushfire will benefit ecosystems. Map key values (natural and cultural) and threatening processes (weeds, pests and pathogens) that can be made worse by fire suppression.
Responses to bushfires are timely and well-informed.	Undertake fire preparedness and suppression activities in accordance with strategies, guidelines and legislation.
Decisions are made to support the benefits and minimise the negative impacts of bushfire events.	Make local decisions to minimise fire management impacts, such as the placement of dozer breaks.
The impacts of fire suppression activities on natural and cultural values are minimised.	
Fire management maximises the chance of appropriate fire regimes in the landscape.	
Geometric mean abundance (a measure of biodiversity) is optimised. High-value areas of mid and older growth stages are managed. The area outside the asset protection zones that is burnt below minimum TFIs is minimised.	Undertake mapping, data analysis and monitoring Optimised GMA is one tool that will be used to inform the most appropriate growth stage distribution. Support DELWP to undertake mapping, data analysis and monitoring of fire management activities. Ensure a continuous supply of appropriately aged vegetation over the long term. When competing objectives must be managed, sound reasoning supports decision-making, i.e. some internal breaks in the Little Desert NP may require burning below the minimum tolerable fire interval to remain effective as a risk mitigation measure.

Result	Activities
Timely and effective rehabilitation and recovery programs support ecological and cultural assets.	Assess damage to assets and implement timely rehabilitation and recovery programs.
Ecological growth stage structure is within thresholds. Habitat degradation and impacts to cultural assets are reduced.	Carry out monitoring.



Environmental weed management using a biosecurity approach

This strategy guides the management of weeds to reduce their spread, establishment and impact. The strategy focuses on species that have, or are likely to have, significant impacts on the health of conservation assets and ecological processes that occur within the Wimmera Park Landscape.

A biosecurity approach to pest plant management is a Victorian Government standard for identifying the threat of an invasive species and undertaking an assessment of its relative risk to determine an appropriate intervention. There are four general management responses to controlling weeds: prevention, eradication, containment and asset protection (see Appendix D). The management responses to weeds in this strategy are based on their current extent and the level of risk they present to the Wimmera Landscape. Described below are the management responses to weeds, the control objective of each response, and the predominant examples of species in the landscape subject to control types.

The prevention and eradication responses require that resources are available to reduce the potential for new and emerging weeds to establish. This will be achieved by identifying the most likely invasion points and pathways, which are often vehicle access sites, parking sites and places where animals are likely to act as vectors. Locations where incursions have been observed previously are likely to be key invasion points, and hygiene practices need to be established to contain weed or pathogen spread. Any new weed species in the Park Landscape need to be controlled rapidly to prevent establishment and spread.

Another key component of this strategy is to focus on significantly reducing or eradicating environmental (and regulated) weed species that are already established. A focus on species that alter ecological processes is likely to result in significant gains in the health of assets. Working with local landowners to control regulated weeds on private land will increase the effectiveness of the program.

All fires can result in significant weed invasion. Working with authorities, departments and contractors to build weed management into fire management planning will be an important step in integrated weed control and pathogen containment across the Wimmera Park Landscape. Standards will be developed and adopted for best-practice hygiene procedures, techniques and equipment for in-house and contracted fire management staff.

Weed management responses have been categorised using the groupings listed on the following page.

New and emerging weeds

For weeds at the early stages of invasion, initial control efforts and surveillance are prioritised. The objective of control is generally eradication, in order to limit the potential for establishment. The process of addressing new and emerging weed threats should follow the six steps outlined in the Weeds of Early Stages of Invasion framework (Blood and James 2016):

- 1 Search and detect.
- 2 Name and notify.
- 3 Assess the risk.
- 4 Delimit the invasion.
- 5 Decide the response.
- 6 Implement eradication.

This group includes species such as Buffel Grass (invading from the north and west), needle -grasses (from southern areas) and Hudson Pear (Warracknabeal Rifle Range Flora and Fauna Reserve). Effective eradication is the recommended objective for this group of weeds.

Containable woody weeds

Longer-lived woody weeds with a localised distribution are more likely to be able to be controlled or eradicated locally by manual removal or chemical applications. Species that have been identified for this approach include Sallow Wattle, European Olive, African Boxthorn and Peppercorn Tree. For such species the asset protection approach outlined below is appropriate. Effective control and localised eradication where feasible will contain the impacts of this group of weeds.

Weeds of disturbed areas

A range of herbaceous weeds associated with agriculture can also be significant weeds of parks and reserves within the Wimmera Park Landscape. High densities of this group of weeds are generally associated with areas of higher disturbance, such as roadsides, camping areas, and park boundaries adjacent to farmland. Prioritising weed control in areas with higher levels of disturbance will reduce the spread of these species and reduce the risk of the movement of species around the Park Landscape. Species in this group include Paterson's Curse, Horehound, Caltrop and thistles. The objective is to contain weeds of disturbed areas through control along roadsides and in areas of higher disturbance (e.g. visitor areas and boundaries).

Priority established weeds for asset protection

A range of weeds are well established and widespread within the Wimmera Parks Landscape, notably Phalaris (Toowoomba Canary-grass), Tall Wheat-grass, Perennial Veldt-grass, South African Weed Orchid, Boneseed, Bridal Creeper, and native species colonising new habitats. There are limited control options available to treat these species because of the scale of infestation. Eradication or containment is unlikely to be possible without the development of novel control agents or methods, so management is generally limited to reducing their impact on high -priority assets.

Because widespread control of these species across the Wimmera Park Landscape is not feasible, reducing their abundance and preventing them from invading priority areas is the objective for these species.

Biological control options

In the past a range of biological control options have been applied to the landscape in an effort to control significant weed species. Biological controls have generally resulted in a reduction in target weed species, but long term decrease in weed populations have often been unsuccessful. The persistence of biological control agents is often limited, with reintroduction required for ongoing results.

Working closely with Agriculture Victoria to help reintroduce biological control agents and ensure their persistence may be an effective ongoing control option for widespread, established weeds which are having an ecological impact. Species for which ongoing biological control options may be effective include broom, Bridal Creeper, Paterson’s Curse, prickly pears, Horehound, Dock, Boneseed and Blackberry. The objective for this group of weeds is containment and asset protection across the Wimmera Park Landscape.

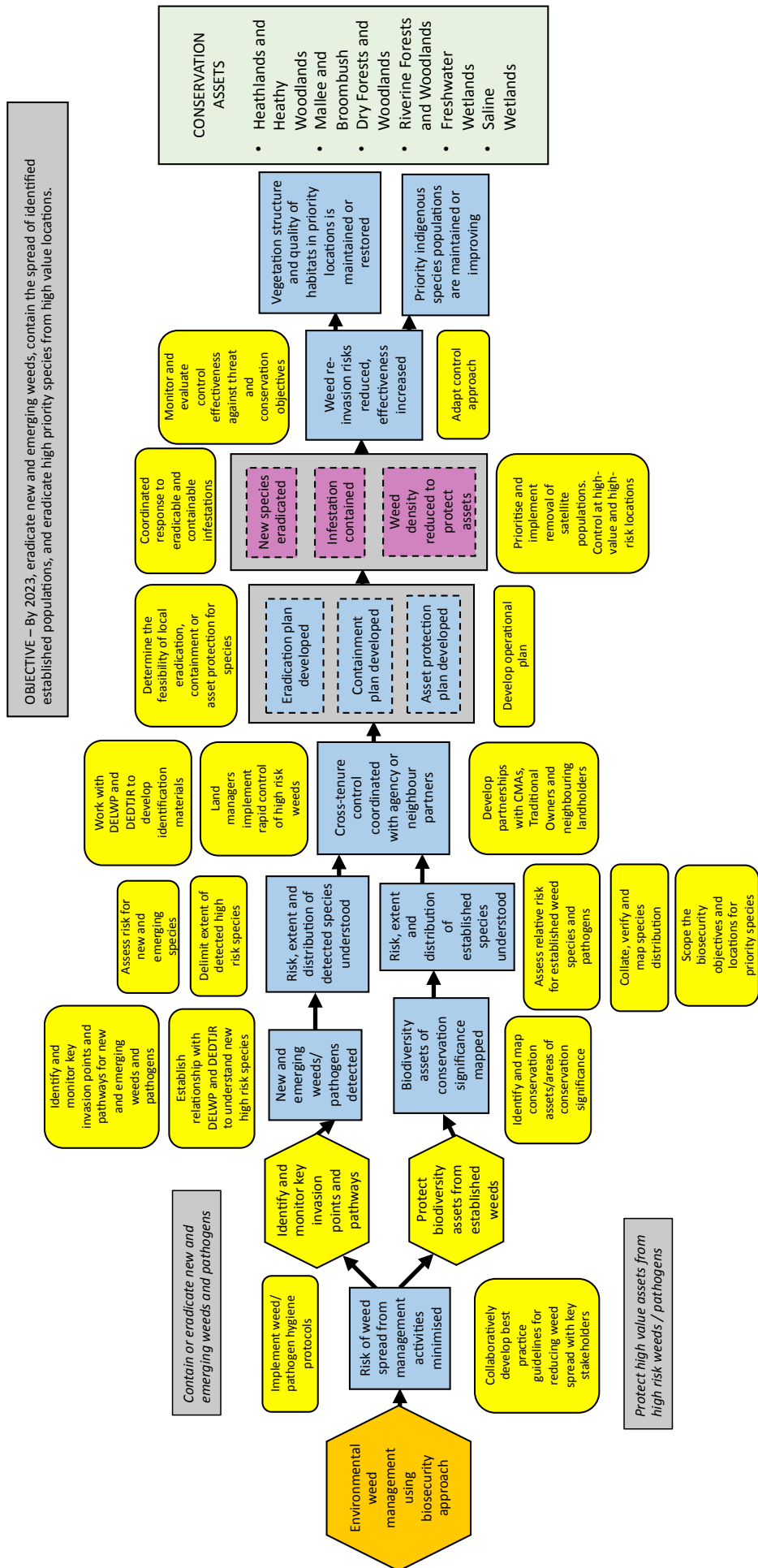
Conservation outcomes

In partnership with neighbours, priority weed species are effectively managed at appropriate locations to encourage species and structural diversity of native flora and habitats.

Species	Invasion pathway	Priority areas	Management approach
New and emerging weeds			
Buffel Grass	From Northern Sections	All areas	Watch and hygiene
Needle Grass	Glenelg Hopkins roadsides and machinery	All areas	Watch and hygiene
Bridal Veil	Clear Lake LR	Clear Lake LR	Eradication
Hudson’s Pear	Warracknabeal Rifle Range FFR	Mallee and Broombush	Search and eradicate
Sallow Wattle	Grampians	Mitre Lakes NCR	Post-fire watch
Cotton Bush	Southern section of Park Landscape, Mount Arapiles – Tooan SP	Mount Arapiles – Tooan SP	Watch and eradicate
Containable woody weeds			
Mesquite	Eastern areas	All areas	Name and notify, eradication
Olives	Grampians, Dimboola	All areas	Watch and eradicate
Peppercorn Tree	Disturbed areas	All areas	Watch and eradicate
Tree Tobacco	Riparian areas	Riparian areas, Lake Hindmarsh LR	Watch and eradicate
African Boxthorn	Smaller reserves in the agricultural landscape in the south of the Park Landscape	Barrett FFR, Glenlee FFR, Minyip BR, Gerang-Gerung BR	Eradication at reserve level
Weeds of disturbed areas			
Great Brome/Fescue	Disturbed areas	All assets	Watch and eradicate
Black Flag	Western edge of central block in Little Desert NP	All assets	Watch and eradicate
Cape Tulip	Southern section of Park Landscape, Mount Arapiles – Tooan SP	Wetter areas	Watch and eradicate
Paterson’s Curse	Wimmera River systems and grazing licences	Disturbed areas	Contain and encourage neighbour support
Horehound	Widespread in the agricultural landscape	Lake Wyn Wyn WR, McClures Swamp WR, Pink Lake	Contain and encourage neighbour support
Caltrop	Widespread in the agricultural landscape in disturbed areas	Disturbed areas	Contain and encourage neighbour support
Thistles	Widespread in the agricultural landscape in disturbed areas	Disturbed areas	Contain and encourage neighbour support

Species	Invasion pathway	Priority areas	Management approach
Priority established weeds			
African Lovegrass	Control lines, roads and disturbed areas	Previously cleared mallee	Shade out, monitor disturbed areas
Phalaris	Reserve boundaries, heavy damp soils	High diversity areas and significant orchid populations	Asset protection
Tall Wheat-grass	Reserve boundaries, heavy damp saline soils	High-diversity areas and significant orchid populations	Asset protection
Perennial Veldt Grass	Reserve boundaries, saline soils	High-diversity areas and significant orchid populations	Asset protection
Boneseed	Mount Arapiles – Tooan SP	All assets within Mount Arapiles	Eradication
Boneseed	Lake Hindmarsh LR and Little Desert NP	All areas	Contain
South African Weed Orchid	Mitre FFR, Mount Arapiles – Tooan SP, Nurcoung NCR, Lake Natimuk and Natimuk Creek LR, West Wimmera	West Wail FFR, Kiata FFR, areas with high orchid populations	Contain and asset protection
Bridal Creeper	Widespread	Lake Hindmarsh LR and riparian areas	Asset protection

Results chain



Implementation milestones

Result	Activities
The risk of weed spread from management activities is minimised.	<p>Implement weed and pathogen hygiene protocols.</p> <p>Develop best-practice guidelines for reducing weed spread, in collaboration with key stakeholders (DEDTJR and DELWP).</p>
New and emerging weeds/pathogens are detected.	<p>Identify and monitor key invasion points and pathways for new and emerging weeds and pathogens.</p> <p>Increase awareness of roadside infestations of Buffel Grass, Needle Grass and Bridal Veil (Henty Highway), and implement vehicle hygiene protocols where and when necessary.</p> <p>Monitor for Sallow Wattle invasion in post-fire environment</p> <p>Establish a relationship with DELWP and DEDJTR to understand new high-risk species, including pasture species.</p>
The risk, extent and distribution of detected species are understood.	<p>Assess risks for new and emerging species using a biosecurity approach.</p> <p>Delimit the extent of detected high risk species within parks.</p> <p>Scope the biosecurity objectives and locations for priority species across the landscape.</p>
Biodiversity assets of conservation significance are mapped.	Identify and map conservation assets/areas of conservation significance.
The risk, extent and distribution of established species are understood.	<p>Assess relative risk for established weed species and pathogens.</p> <p>Collate, verify and map weed species distribution.</p> <p>Scope the biosecurity objectives and locations for priority species across the landscape.</p>
Cross-tenure control is coordinated with agency or neighbour partners.	<p>Maintain partnerships with CMAs, Traditional Owners and neighbouring landholders.</p> <p>Work with DELWP and DEDJTR to develop identification materials, especially to help landholders identify young plants.</p> <p>Neighbouring land managers rapidly control new and emerging and established high-risk weeds.</p>
<p>Eradication plan is developed.</p> <p>Containment plan is developed.</p> <p>Asset protection plan is developed.</p>	<p>Determine feasibility of eradication, containment or asset protection objectives for species and sites.</p> <p>Develop eradication plans for Bridal Veil, Hudson's Pear, Cotton Bush, Mesquite, European Olive, Peppercorn Tree, Tree Tobacco, African Boxthorn, Great Brome/Fescue, Black Flag, Cape Tulip, Boneseed.</p> <p>Work with park neighbours to develop containment plans for Paterson's Curse, Horehound, Caltrop and thistles.</p> <p>Develop asset protection plans for priority established weeds, including African Lovegrass, Phalaris, Tall Wheat-grass, Perennial Veldt-grass, South African Weed Orchid, Boneseed, Bridal Creeper.</p>
<p>New species are eradicated.</p> <p>Infestations are contained.</p> <p>Weed density is reduced to protect assets.</p>	<p>Ensure there is a coordinated, cross-tenure response to eradicable and containable infestations.</p> <p>Prioritise and implement the removal of satellite weed populations. Control weeds at high-value and high-risk locations</p>
Weed reinvasion risks are reduced, effectiveness increased.	<p>Monitor and evaluate weed control effectiveness against threat and conservation objectives.</p> <p>Adapt control approach.</p>
<p>Vegetation structure and quality of habitat in priority locations is maintained or restored.</p> <p>Priority indigenous species populations are maintained or improving.</p>	



Management of water-dependent ecosystems

This strategy involves working in partnership with other government agencies to improve the hydrology of waterways and wetlands, in order to restore the ecological and cultural health of the Wimmera Park Landscape. Parks Victoria has a supporting role with the Wimmera Catchment Management Authority (CMA), which is the statutory agency responsible for floodplain management and environmental flows. As a partner in these programs, Parks Victoria plays a key role in helping the CMA plan and deliver environmental water, as well as implementing the complementary actions, such as managing risks and threats.

Environmental water is an option where a water entitlement exists and there are feasible ways to deliver water to the site. In the Wimmera Park Landscape this includes the Wimmera River downstream of Dadswells Bridge, MacKenzie River, Burnt Creek, Mt William Creek and Bungalally Creek. There are also a number of Parks Victoria reserves supplied with environmental water, including Crow Swamp, Challambra Swamp, Carapugna, Mutton Swamp and Sawpit Swamp. At other sites, where environmental water cannot be delivered, activities to improve hydrology focus on managing runoff into those wetlands such as road infrastructure that blocks flow paths or decommissioning levees constructed for flood mitigation purposes.

Flood mitigation infrastructure protects private assets from flooding, but it can reduce the overland movement of water to aquatic ecosystems. Through regional floodplain management planning, Parks Victoria can identify redundant infrastructure and opportunities to reinstate natural flow paths, typically levee systems that span public and private land. The recent Victorian Floodplain Management Strategy clarifies future management arrangements for these levees to manage future flood risks, chiefly:

- Levees that provide public benefits (e.g. preventing disruptions to services or protecting towns from flooding) will be subject to formal management arrangements that are coordinated by councils (managed levees).
- Levees that are not part of managed schemes (unmanaged levees) will be allowed to weather away or can be maintained by the beneficiaries under a permit scheme if the levee is on crown land. The permits will be issued through the CMA and subject to conditions imposed by Parks Victoria.

Damage to the parks and reserves from emergency flood response activities can be mitigated by ensuring that appropriate arrangements are in place for the management of levees. Similarly, where private irrigation infrastructure exists within the parks and reserves system, Parks Victoria is responsible for issuing section 30G licences to manage potential damage to natural and cultural values.

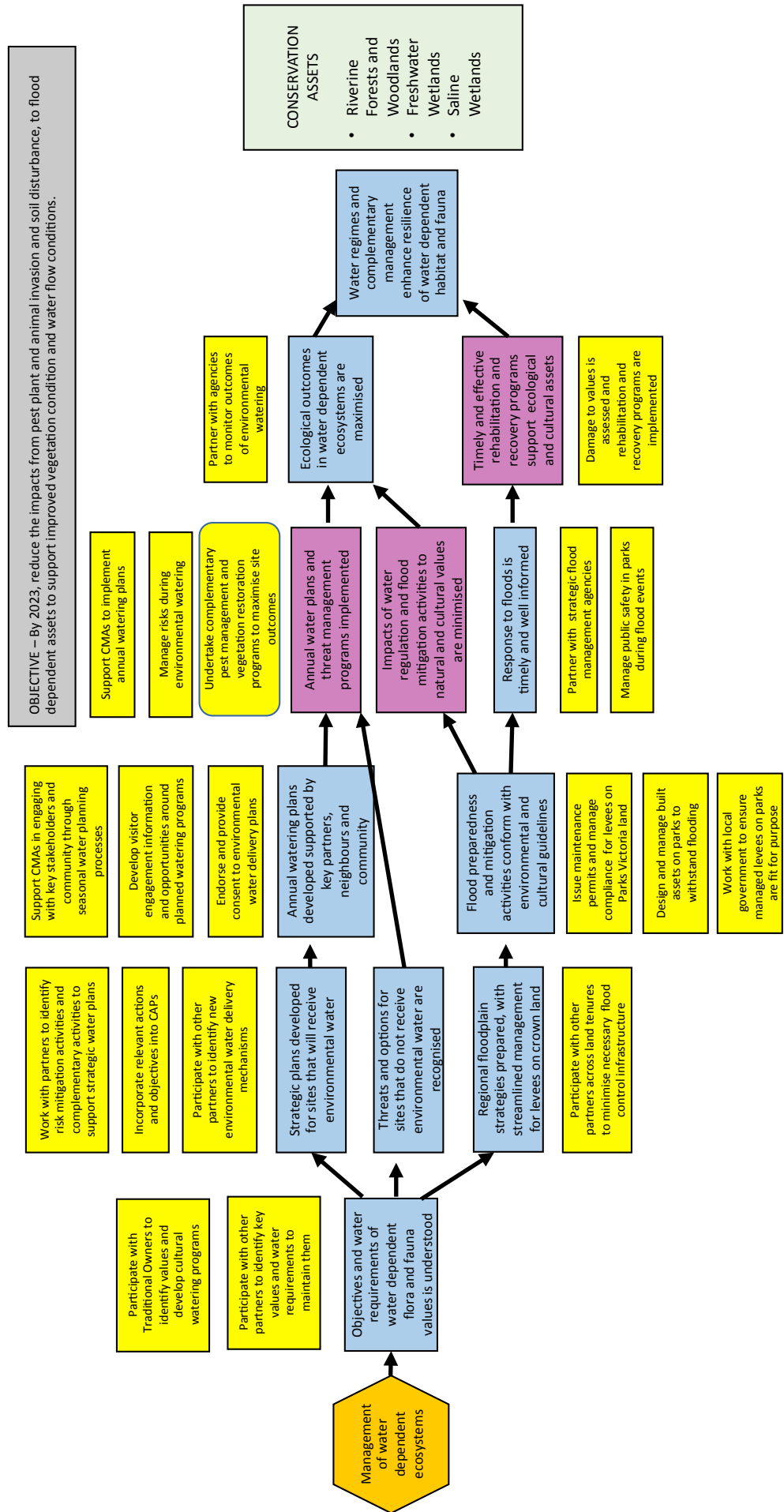
While Parks Victoria is not the lead agency for the floodplain or environmental water management, it plays a critical role in managing other threats to achieving environmental values through targeted pest plant and animal control activities. The strategy for managing water for conservation outcomes is therefore underpinned by other conservation strategies in this plan, including total grazing pressure, introduced predator control and environmental weed management.

The region's rivers and wetlands provide water-based recreational opportunities in an otherwise relatively dry landscape. As a result, recreational pressures can impact on the health of these areas, so that appropriate visitor management programs must be in place to underpin this strategy.

Conservation outcomes

Ecosystems in the Park Landscape will be more resilient to the cumulative impacts of changes to natural hydrology and the effect of climate change. The rivers and wetlands will be healthy and well-managed, and will support environmental, social, cultural and economic values that are enjoyed by all communities.

Results chain



Implementation milestones

Result	Activities
Objectives and water requirements of water dependent flora and fauna values are understood.	<p>Work with the Wimmera CMA to identify key values and water requirements to support them.</p> <p>Support the Wimmera CMA to work with the BGLC to identify traditional values and develop cultural watering programs.</p>
Strategic plans are developed for sites that will receive environmental water.	<p>Work with partners to identify risk mitigation and complementary activities (such as pest plant and animal control) to support the strategic water plans.</p> <p>Incorporate relevant actions and objectives from the strategic water plans into the Wimmera Park Landscape Conservation Action Plan.</p> <p>Participate with other partners to identify new environmental water delivery mechanisms.</p>
Annual watering plans are developed, and are supported by key partners, neighbours and community.	<p>Support Wimmera CMA to engage with key stakeholders and community during annual development of the seasonal water plan.</p> <p>Develop visitor engagement information and opportunities around planned watering programs.</p> <p>Endorse and provide consent to environmental water delivery plans as appropriate.</p>
Threats and options for sites that do not receive environmental water are recognised	<p>Work with partners to identify risk mitigation and complementary activities (such as pest plant and animal control) to support the strategic water plans.</p>
Regional floodplain strategies are prepared, with streamlined management for levees on crown land.	<p>Work with partners (including local government) across land tenures to minimise necessary flood control infrastructure such as levees.</p>
Flood preparedness and mitigation activities conform with environmental and cultural guidelines.	<p>Issue maintenance permits and manage compliance for unmanaged levees on Parks Victoria land.</p> <p>Design and manage built assets on parks to withstand flooding.</p> <p>Work with local government to ensure managed levees in the Park Landscape are fit for purpose.</p>
Annual water plans and threat management programs are implemented.	<p>Support Wimmera CMA in implementing annual watering plans.</p> <p>Manage risks during environmental watering (e.g. by road closures and providing alternative visitor options).</p> <p>Undertake complementary land management activities to manage other threats to water dependent values (including transitional states in drying wetlands).</p>
Impacts of water regulation and flood mitigation activities to natural and cultural values are minimised.	<p>Participate in planning and approval processes for water regulation and flood mitigation activities, to ensure comprehensive risk assessment of park natural and cultural assets.</p>
Responses to floods are timely and well informed.	<p>Partner with strategic flood management agencies</p> <p>Manage public safety in parks in accordance with incident management directives during floods.</p>
Ecological outcomes in water-dependent ecosystems are maximised.	<p>Partner with the Wimmera CMA to monitor outcomes of environmental watering, and use the results to evaluate the effectiveness of CAP implementation.</p>
Timely and effective rehabilitation and recovery programs support ecological and cultural assets.	<p>Assess damage to natural and cultural values and implement rehabilitation and recovery programs in a timely manner.</p>
Water regimes and complementary management enhance resilience of water dependent habitat and fauna.	



Whipstick Westringia

8 Measuring performance

Monitoring, evaluation and reporting allows Parks Victoria to quantify the effectiveness of implementing the prioritised conservation strategies, and supports continuous improvement through value-based and evidence-informed decision-making.

Measuring performance in conservation action planning involves the assessment of the effects of management actions in relation to the desired state of key ecological attributes and conservation assets. In developing an effective Conservation Action Plan, agreeing on what will be measured and how measurement will be made before works are implemented is a critical step. Performance measures enable an integrated assessment of:

- the quantity and quality of management actions (activity measures)
- the impacts of an activity on threats (threat measures)
- the results of management on the conservation asset (outcome measures).

The following performance measures, developed in collaboration with experts in this field, provide a useful starting point for developing a Monitoring, Evaluation and Reporting Plan for the Wimmera Park Landscape. This can be used to guide interim assessments of performance until a detailed plan is established.

Establishment of collaborative partnerships to support the sustained management and connectivity of assets

Implementing this strategy will improve the health of the range of conservation assets in the Wimmera Parks Landscape by strengthening effective collaboration and partnership between Parks Victoria and restoration partners to support connected management across the fragmented landscape. This in turn will increase the effectiveness and efficiency of managing, restoring and improving the health of the Wimmera Parks Landscape.

This will include closer collaboration between public and private land managers, key researchers and stakeholders, and coordinated programming to support working together to plan, deliver, monitor and adapt programs. This strategy involves understanding key restoration partners and the high -priority programs and locations that will most benefit from cross-tenure, landscape-scale actions.

Activity measures for the strategy are:

- number of projects in which Parks Victoria is a partner that are implemented across land tenures
- number of days participating in events that share knowledge and best practice with other land managers
- number of days spent on threat mitigation activities that have landscape -scale benefits, e.g. pest plant and animal control.

This strategy addresses all key threats, for which the following **threat measures** can be used:

- total effort to manage each threat
- total cost to manage a unit of threat.

Conservation outcomes for the strategy can be measured by:

- cross-land tenure projects that extend the influence and increase the effectiveness of management programs
- confidence of Parks Victoria staff in management actions
- stakeholder confidence in the management of the Park Landscape
- cost–benefits of management.

Management of total grazing pressure

Implementing this strategy will improve the health of the range of conservation assets through a range of actions aimed at increasing the cover and growth-stages of canopy species and improving the structural composition of the understorey. This strategy is most likely to result in the long-term recovery of a range of assets within the Wimmera Parks Landscape.

The direct result of implementing the strategy will be the effective control or management of priority fauna (introduced pest animals and overabundant native species) that degrade conservation assets across the Wimmera Park Landscape through overgrazing or overbrowsing.

Activity measures for the strategy are:

- number and location of rabbit warrens treated
- extent and frequency of goat control programs
- number of goats or deer removed
- number of volunteer group days.

The key threat managed under this strategy is over-grazing, for which the following **threat measures** can be used:

- rabbit density and abundance
- goat abundance (or activity)
- deer abundance (or activity)
- kangaroo and wallaby density.

Conservation outcomes for the strategy can be measured by:

- presence of canopy species recruits surviving to maturity
- recruitment and regeneration of grazing sensitive flora species.

Ongoing control of introduced predators to support resilient native fauna populations

This strategy will improve the health of a range of nested assets in the Wimmera Parks Landscape that are sensitive to predation. Key actions include the establishment of a targeted predation control program, including cat control at key sites for predation sensitive species and large-scale fox control to reduce predation pressure throughout the Parks Landscape.

Activity measures for the strategy are:

- extent, frequency and method of fox control (e.g. number of fox baits laid) in identified high risk areas
- extent, frequency and method of cat control (e.g. number of cat trap-nights, or other measure) in identified high risk areas
- percentage of the park boundary with neighbouring properties engaged in cross-tenure management.

The key threat managed under this strategy is predation by cats and foxes, for which the following **threat measures** can be used:

- cat activity (e.g. camera trap) in identified high risk areas
- fox activity (e.g. bait take) in identified high risk areas.

Conservation outcomes for the strategy can be measured by:

- population extent of predation-sensitive species
- population size of predation-sensitive species

Fire management for healthy assets

This strategy will improve the health of the Heathlands and Heathy Woodlands, Mallee and Broombush, and Dry Forests and Woodlands assets by ensuring that Parks Victoria works in partnership with other fire management agencies, particularly DELWP, to improve the ecological and cultural health of the Wimmera Park Landscape through appropriate fire management.

This will include a cross-tenure approach to fire management that is based on risk mitigation: burning within tolerable fire intervals, working to increase the percentage of the landscape that is considered 'long unburnt' over time, targeting fuel management that will reduce the extent of high -severity bushfires that impact the tree canopy, and minimising the long-term impacts of planned burning and large-scale bushfires.

This strategy is seen as most likely to result in the long-term persistence of appropriate spatial and temporal growth-stage distributions of all the conservation assets in the Wimmera Parks Landscape.

Activity measures for the strategy are:

- map of fire history, tolerable fire intervals and vegetation growth-stages prepared
- effectiveness of liaison undertaken with DELWP on Strategic Fire Plans and the Fire Operations Plans
- timeliness of bushfire recovery and rehabilitation programs.

The key threats managed under this strategy are inappropriate fire regimes and fire management activities, for which the following **threat measures** can be used:

- extent and timing of all fire events, planned burning and bushfire
- percentage of the Park Landscape burnt within tolerable fire intervals
- deviation from the ideal growth-stage distributions
- effectiveness (extent and type) of rehabilitation implemented after fire events.

Conservation outcomes for the strategy can be measured by:

- age-class structure of canopy species
- spatial and temporal vegetation growth stage structure
- vegetation species composition
- occurrence and diversity of ground-dwelling mammals
- occurrence and diversity of reptiles
- occurrence and diversity of bird assemblages.

Environmental weed management using a biosecurity approach

Implementing this strategy will improve the health of the range of conservation assets in the Wimmera Parks Landscape by reducing the spread, establishment and impacts of non-native plant species. This will include a risk assessment approach, focusing on species that have, or are likely to have, significant impacts on the health of conservation assets and ecological processes that occur within the Wimmera Park Landscape. Management interventions are based on the current extent of weeds and the level of risk they present to the Wimmera Landscape; categorised as new and emerging weeds, containable woody weeds, weeds of disturbed areas, or priority established weeds for asset protection. Working with neighbours and partners across land tenure boundaries is also important. This strategy will result in improved effective and integrated management of non-native plant species that compete with native species and cause degradation to habitats.

Activity measures for the strategy are:

- surveillance effort for new and emerging weeds (area surveyed, person-days)
- treatment effort for new and emerging weeds (species, area treated, person-days)
- area of woody weeds treated (species, area treated, person-days)
- area of weeds of disturbed areas treated (species, area treated, person-days)
- area of priority established weeds for asset protection treated (species, area treated, person-days)
- area of good neighbour weed projects
- plans developed for high priority species.

The key threat managed under this strategy is weed invasion, for which the following **threat measures** can be used:

- number of new weed infestations identified
- number of newly identified weed infestations that are eradicated
- extent and cover of locally eradicable weeds
- extent and cover of weeds controlled for asset protection or containment.

Conservation outcomes for the strategy can be measured by:

- vegetation structure and composition.

Management of water-dependent ecosystems

Implementing this strategy will improve the health of the Freshwater Wetlands, Saline Wetlands and Riverine Forests and Woodland assets, by working in partnership with other government agencies to improve the hydrology of waterways and wetlands and restore the ecological and cultural health of the Wimmera Park Landscape. This will include assisting the CMA to plan and deliver environmental water, ensuring water management infrastructure has minimal impact on park values, and implementing complementary actions, such as targeted pest plant and animal control activities, as well as ensuring that appropriate visitor management programs are in place. This strategy will most likely result in the long-term persistence of appropriate water flows and support the recovery of riparian health within the Wimmera Parks Landscape.

Activity measures for the strategy are:

- liaison undertaken with CMA on watering plans
- extent and frequency of pest plant and animal programs.

The key threats managed under this strategy are alterations to natural hydrology and habitat degradation resulting from pest plant and animal activities, for which the following **threat measures** can be used:

- area of pest plants treated
- areas of pest animal treated.

Conservation outcomes for the strategy can be measured by:

- appropriate water flows and managed regimes
- vegetation structure and composition.



Red-tailed Black-Cockatoos

9 Plan implementation

A Monitoring, Evaluation and Reporting Plan will be developed from the interim performance indicators in this Conservation Action Plan. It will include key evaluation questions, more specific monitoring questions, and appropriate metrics, measures and reporting standards. It will be a key component of adaptive management and a more outcomes-focused approach to managing for conservation in parks and reserves. Specifically, the Monitoring, Evaluation and Reporting Plan is essential for:

- determining whether the conservation strategies and specific operational activities are achieving the desired conservation outcomes
- showing trends in the condition of conservation assets and the levels of threat
- demonstrating the effectiveness and efficiency of resources invested in the Conservation Action Plan.

The plan will address the collection, storage and collation of data as well as its analysis and interpretation. The analysis and interpretation of data is the cornerstone of applying a 'learning by doing' approach, in which knowledge gaps are identified and addressed through targeted scientific research. The evaluation of the Conservation Action Plan is an important step in documenting lessons learnt and communicating ideas around the improvement of policy, planning and management within Parks Victoria and to external audiences.

Steps 8, 9 and 10 of the 10-step process for conservation planning follow on from implementing the strategies outlined here, and are beyond the scope of this Conservation Action Plan. Steps 8 and 9 will be carried out at an operational level within the Parks Victoria Region that has responsibility for the Wimmera Park Landscape. Step 10 will involve a review of the Conservation Action Plan in the light of what is learnt during implementation.

Step 8: Plan work

In planning the work program, prioritised conservation strategies will be converted into operational conservation projects in specific locations. Quality maps generated by Parks Victoria in the conservation action planning process are critical for planning on-ground conservation activities, targeting key threats to conservation assets. They provide a greater understanding of the potential spread or overlap of operational conservation activities physically and in terms of their geographic impact. They also support the detailed consideration of logistic issues including access, cultural heritage and areas of high visitation.

Engaging with Traditional owners and investigating opportunities for collaboration will be investigated during this phase. During the organisation of work, local and organisation-wide resource allocation processes should be followed. Detailed project planning within the Parks Victoria District and Region, including the refinement of resource requirements, will be undertaken using standard procedures.

Step 9: Implement plan

The Conservation Action Plan will be implemented by a regional team, often in collaboration with other agencies, Friends groups and volunteers. Operational conservation activities will be implemented in accordance with relevant Parks Victoria policies and procedures and legislative obligations.

Step 10: Adapt the Conservation Action Plan and operational activities

In the context of adaptive management, the evaluation of the Conservation Action Plan is important in determining and communicating whether or not the conservation strategies and specific on-ground activities have abated threats and achieved the desired conservation outcomes.

The Conservation Action Plan is not a static document. It will be reiterated in response to the outcomes of the Monitoring, Evaluation and Reporting Plan and in response to emerging issues. This reiteration may lead to a restructure of conservation strategies, including the amendment of results chains and their underlying assumptions and a refinement of specific on-ground activities. The review and reiteration of the plan is likely to be undertaken in part through a small workshop process involving a similar representation of people involved in the development of the original plan.

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Appendices

Appendix A — Parks and reserves in the Wimmera Park Landscape

Levels of Protection (LoP) for natural values management

Levels of Protection is a tool to aid planning and resource allocation by placing individual parks in a statewide context. Parks have been classified (or grouped) according to composition and representation of attributes classified at the EVC and species scale (Table A.1). A key principle of the framework is that protected area planning is conducted in a bioregional context. The bioregional value, and hence management priority, of biodiversity attributes in parks and reserves has been assessed on the basis of:

- conserving the range of ecosystems and existing biotic diversity
- the occurrence of attributes that depend on a particular park for their security.

The Protected Areas Category System

The protected area management categories of the International Union for Conservation of Nature and Natural Resources (IUCN) classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas, and as such are increasingly being incorporated into government legislation. For further information, see the IUCN website: <http://www.iucn.org/theme/protected-areas/about/categories>

Category Ia Strict Nature Reserve — strictly protected area set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited.

Category Ib Wilderness Area — usually large unmodified or slightly modified area, retaining its natural character and influence without permanent or significant human habitation.

Category II National Park — large natural or near natural area set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area.

Category III Natural Monument or Feature — set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove.

Category IV Habitat/Species Management Area — aims to protect particular species or habitats and management reflects this priority.

Category V Protected Landscape/ Seascape — protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value.

Category VI Protected area with sustainable use of natural resources — conserves ecosystems and habitats together with associated cultural values and traditional natural resource management systems.

Table A.1 Park groups and their attributes.

Park group	General description of park group attributes
A1	<p>All parks represent at least 2 bioregions.</p> <p>Parks generally greater than 10000 ha (up to 660 000 ha), all scheduled under the National Parks Act.</p> <p>Most parks very large or have contiguity with state forest areas (or both), and have very high area to boundary ratios.</p> <p>All have very high diversity in terms of both vegetation communities and species, & represent a high proportion of the bioregions species diversity (about 40–60%).</p> <p>Very large number of threatened species present and important for protecting a relatively high proportion of those species.</p> <p>Internal fragmentation is highly variable across the scale of these parks as is areas of highly disturbing previous land use.</p>
A2	<p>With Park Group A1, captures representation of all bioregions.</p> <p>Park size generally greater than 1000 ha (up to 21 600 ha), mostly parks scheduled under the National Parks Act but also includes high value nature conservation reserves.</p> <p>All have relatively high diversity in terms of both vegetation communities and species, and represent a high proportion of the bioregions species diversity (about 40–60%).</p> <p>Large number of threatened species present and important for protecting a relatively high proportion of those species.</p> <p>A greater degree of exposure to threatening processes at their edge (than A1), as well as from previous disturbing land uses.</p>
A – Marine	<p>Marine National Parks scheduled under the National Parks Act.</p>
B	<p>Represents full range of bioregions, except for 3 bioregions completely conserved within parks in A1 and A2.</p> <p>Park size ranges from 50 ha to 40 000 ha, majority of nature conservation reserves.</p> <p>Parks are protecting vegetation communities largely of moderate significance and well represented in the parks system.</p> <p>Parks have relatively lower species diversity, representing a moderate proportion of the bioregions species diversity (about 20–40%).</p> <p>Moderate number of threatened species present and important for protecting a small number of those species.</p>
B – Marine	<p>Marine Sanctuaries scheduled under the National Parks Act</p>
C	<p>Park size ranges from 1 ha to 142 300 ha, predominantly nature conservation reserves, with a small number of parks scheduled under the National Parks Act that have relatively low or common biodiversity values.</p> <p>Parks are protecting vegetation communities largely of low to moderate significance and that are well represented in the parks system. Generally have moderate to high levels of internal fragmentation and adjacency to non-native vegetation.</p> <p>Parks have relatively lower species diversity, representing a moderate proportion of the bioregions species diversity (about 10–30%).</p> <p>Moderate but variable number of threatened species present and important for protecting a small number of those species.</p>
D	<p>Park sizes range from 10 ha to 15 000 ha, and are conservation reserves.</p> <p>Parks have relatively lower species diversity, representing a moderate proportion of the bioregions species diversity (about 2–15%).</p> <p>Relatively small number of threatened species present.</p>
E	<p>Generally have very low or nil recorded values of low biodiversity conservation significance.</p>

Parks and reserves in the Wimmera Park Landscape

All parks and reserves are within Parks Victoria's Wimmera Area, except where indicated by the following:

¹ PV Grampians Area ² PV Goldfields Area ³ PV Southern Mallee Area ⁴ PV Glenelg Area

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
3298	Little Desert National Park	National Park: Schedule 2, National Parks Act	131583	A1
5005	Lake Wyn Wyn (addn) WR	Proposed National Parks Act park/park addition	65	C
3342	Mount Arapiles – Toon SP	State Park: Schedule 2B, National Parks Act	745	A1
125	Jilpanger NCR	Nature Conservation Reserve	12248	A2
4165	Tallageira NCR	Nature Conservation Reserve	3750	no group
4024	Jumping Jack Wattle NCR	Nature Conservation Reserve	2	E1
166	Yarrangook FFR	Nature Conservation Reserve – Flora and Fauna Reserve	1535	D
14	Barrabool FFR ¹	Nature Conservation Reserve – Flora and Fauna Reserve	1036	B
186	Mitre Lake FFR	Nature Conservation Reserve – Flora and Fauna Reserve	762	C
330	West Wail FFR	Nature Conservation Reserve – Flora and Fauna Reserve	589	B
94	Glenlee FFR	Nature Conservation Reserve – Flora and Fauna Reserve	554	C
230	Olivers Lake FFR	Nature Conservation Reserve – Flora and Fauna Reserve	405	C
15	Barrett FFR	Nature Conservation Reserve – Flora and Fauna Reserve	220	C
140	Kiata FFR	Nature Conservation Reserve – Flora and Fauna Reserve	80	C
185	Mitre FFR	Nature Conservation Reserve – Flora and Fauna Reserve	49	D
284	Grassflat Swamp FFR	Nature Conservation Reserve – Flora and Fauna Reserve	35	C
224	Nurcung FR	Nature Conservation Reserve – Flora Reserve	588	D
179	Meereek FR	Nature Conservation Reserve – Flora Reserve	282	B
109	Hindmarsh FR	Nature Conservation Reserve – Flora Reserve	191	D
86	Gerang Gerung (north) FR	Nature Conservation Reserve – Flora Reserve	108	C
49	Jallumba Marsh FR ¹	Nature Conservation Reserve – Flora Reserve	79	E1
3671	Warracknabeal Rifle Range FR	Nature Conservation Reserve – Flora Reserve	71	E1
87	Gerang Gerung (south) FR	Nature Conservation Reserve – Flora Reserve	56	D
69	Edenhope FR	Nature Conservation Reserve – Flora Reserve	45	E1
61	John Smith Memorial FR ¹	Nature Conservation Reserve – Flora Reserve	35	E1
281	Boyeo FR	Nature Conservation Reserve – Flora Reserve	27	D
1790	Sheepwash FR	Nature Conservation Reserve – Flora Reserve	27	D
66	Dimboola FR	Nature Conservation Reserve – Flora Reserve	16	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
184	Mirampiram FR	Nature Conservation Reserve – Flora Reserve	10	E1
218	Ni Ni FR	Nature Conservation Reserve – Flora Reserve	4	E1
730	Lake Carchap WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	95	C
817	Red Gum Swamp, Yanac WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	89	D
822	Waurm Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	81	C
781	Woolshed Swamp, Karnak WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	76	D
770	Ti Tree Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	66	E1
812	Nhill Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	65	No Group
734	Lake Dewabbin WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	33	E1
752	Mullinger Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	31	E1
717	Charlegrark Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	26	E1
821	Verandah Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	17	E1
783	Yallamatta Swamp WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	14	E1
768	Sheepwash, Edenhope WR	Nature Conservation Reserve – Wildlife Reserve (no hunting)	13	E1
3738	Edenhope NFR	Natural Features Reserve	81	E1
3764	Warra Warra NFR ¹	Natural Features Reserve	2	E2
2432	Apsley BR	Natural Features Reserve – Bushland Reserve	259	C
1020	Mageppa BR	Natural Features Reserve – Bushland Reserve	213	D
1880	Dooen Swamp BR	Natural Features Reserve – Bushland Reserve	191	C
2453	Tooan BR	Natural Features Reserve – Bushland Reserve	169	D
2464	Connangorach I45 BR ¹	Natural Features Reserve – Bushland Reserve	125	C
1832	Millers Rd No.1 Pit BR	Natural Features Reserve – Bushland Reserve	124	E1
2437	Edenhope Aerodrome BR	Natural Features Reserve – Bushland Reserve	122	D
2462	Daahl BR ¹	Natural Features Reserve – Bushland Reserve	120	D
1822	Mortat I32 BR	Natural Features Reserve – Bushland Reserve	112	D
2423	Morea I4 BR	Natural Features Reserve – Bushland Reserve	104	D
2443	Wombelano I24 BR	Natural Features Reserve – Bushland Reserve	103	E1
2428	Goroke I9 BR	Natural Features Reserve – Bushland Reserve	97	E1
2430	Goroke I11 BR	Natural Features Reserve – Bushland Reserve	95	E1
2438	Awonga I19 BR	Natural Features Reserve – Bushland Reserve	91	E1
2452	Connewirrecoo I33 BR	Natural Features Reserve – Bushland Reserve	90	D
1861	Gerang Gerung I71 BR	Natural Features Reserve – Bushland Reserve	81	D
1864	McClure BR	Natural Features Reserve – Bushland Reserve	80	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
2451	Connewirrecoo I32 BR	Natural Features Reserve – Bushland Reserve	77	E1
1824	Lemon Springs BR	Natural Features Reserve – Bushland Reserve	68	E1
2431	Gymbowen BR	Natural Features Reserve – Bushland Reserve	68	D
2469	Bungalally I50 BR ¹	Natural Features Reserve – Bushland Reserve	65	D
2427	Dopewora I8 BR	Natural Features Reserve – Bushland Reserve	64	E1
2445	Harrow BR	Natural Features Reserve – Bushland Reserve	63	E1
2440	Charam BR	Natural Features Reserve – Bushland Reserve	63	E1
2465	Red Rock BR ¹	Natural Features Reserve – Bushland Reserve	58	E1
1801	Lillimur South BR	Natural Features Reserve – Bushland Reserve	58	D
1802	Minimay I12 BR	Natural Features Reserve – Bushland Reserve	57	D
2444	Reillys Creek BR	Natural Features Reserve – Bushland Reserve	56	C
2470	Tyer Swamp BR ¹	Natural Features Reserve – Bushland Reserve	55	D
1796	Dinyarrak I6 BR	Natural Features Reserve – Bushland Reserve	50	E1
2468	Bungalally I49 BR ¹	Natural Features Reserve – Bushland Reserve	50	D
1882	Jung Jung Swamp BR ¹	Natural Features Reserve – Bushland Reserve	48	E1
1823	Mortat I33 BR	Natural Features Reserve – Bushland Reserve	46	D
1828	Mirampiram I38 BR	Natural Features Reserve – Bushland Reserve	46	E1
1901	Rupanyup I111 BR	Natural Features Reserve – Bushland Reserve	45	E1
2241	Glenorchy I5 BR ¹	Natural Features Reserve – Bushland Reserve	44	E1
1910	Watchem I120 BR ²	Natural Features Reserve – Bushland Reserve	44	E1
1872	Wail BR	Natural Features Reserve – Bushland Reserve	43	E1
1842	Kinimakatka I52 BR	Natural Features Reserve – Bushland Reserve	41	D
2458	Kout Narin I39 BR	Natural Features Reserve – Bushland Reserve	40	D
1912	Watchem I122 BR ²	Natural Features Reserve – Bushland Reserve	39	D
2446	Meereek BR	Natural Features Reserve – Bushland Reserve	36	E1
1833	Butts BR	Natural Features Reserve – Bushland Reserve	32	E1
1800	Yearinga I10 BR	Natural Features Reserve – Bushland Reserve	32	E1
2457	Kout Narin I38 BR	Natural Features Reserve – Bushland Reserve	30	E1
1847	Warraquil I57 BR	Natural Features Reserve – Bushland Reserve	30	D
1322	Concertina Rock BR	Natural Features Reserve – Bushland Reserve	30	E1
1819	Worsley BR	Natural Features Reserve – Bushland Reserve	29	D
1896	Nullan I106 BR	Natural Features Reserve – Bushland Reserve	29	E1
2237	Ridds BR ¹	Natural Features Reserve – Bushland Reserve	28	E1
1966	Langkoop BR	Natural Features Reserve – Bushland Reserve	28	D
2442	Kadnook I23 BR	Natural Features Reserve – Bushland Reserve	27	E1
1890	Kellalac BR	Natural Features Reserve – Bushland Reserve	26	E1
2239	Paynes Pool BR ¹	Natural Features Reserve – Bushland Reserve	25	E1
1844	Koonik BR	Natural Features Reserve – Bushland Reserve	25	E1
1887	Lierschs BR	Natural Features Reserve – Bushland Reserve	25	E1
1879	Cat Swamp BR	Natural Features Reserve – Bushland Reserve	25	E1
1791	Leeor I1 BR	Natural Features Reserve – Bushland Reserve	24	E1
1898	Nullan I108 BR	Natural Features Reserve – Bushland Reserve	23	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
1831	Shingle Hut Swamp BR	Natural Features Reserve – Bushland Reserve	23	E1
1857	Big One Dam BR	Natural Features Reserve – Bushland Reserve	22	E1
1843	Gymbowen Swamp BR	Natural Features Reserve – Bushland Reserve	22	E1
1815	Yanipy I25 BR	Natural Features Reserve – Bushland Reserve	22	E1
1888	Coromby BR	Natural Features Reserve – Bushland Reserve	21	E1
1794	Leeor I4 BR	Natural Features Reserve – Bushland Reserve	21	E1
1863	Woraigworm I73 BR	Natural Features Reserve – Bushland Reserve	20	E1
2471	Bungalally I52 BR ¹	Natural Features Reserve – Bushland Reserve	20	E1
1869	Lil-Lil Dam BR	Natural Features Reserve – Bushland Reserve	19	E1
1865	Arapiles BR	Natural Features Reserve – Bushland Reserve	19	E1
1881	Longerenong BR	Natural Features Reserve – Bushland Reserve	19	E1
1900	Minyip BR	Natural Features Reserve – Bushland Reserve	19	E1
1827	Mirampiram I37 BR	Natural Features Reserve – Bushland Reserve	19	E1
1810	Yarrook I20 BR	Natural Features Reserve – Bushland Reserve	18	E1
1903	Burrereo BR	Natural Features Reserve – Bushland Reserve	18	E1
1878	Morep Dam BR	Natural Features Reserve – Bushland Reserve	18	E1
1793	Leeor I3 BR	Natural Features Reserve – Bushland Reserve	17	E1
1856	Glenlee BR	Natural Features Reserve – Bushland Reserve	17	E1
1803	Murrawong BR	Natural Features Reserve – Bushland Reserve	16	E1
2463	Connangorach I44 BR ¹	Natural Features Reserve – Bushland Reserve	16	E1
1866	Babatchio BR	Natural Features Reserve – Bushland Reserve	16	E1
2426	Mortat I7 BR	Natural Features Reserve – Bushland Reserve	16	E1
1845	Nurcoung BR	Natural Features Reserve – Bushland Reserve	16	E1
1792	Leeor I2 BR	Natural Features Reserve – Bushland Reserve	14	E1
1795	Dinyarrak I5 BR	Natural Features Reserve – Bushland Reserve	14	E1
1808	Yarrook I18 BR	Natural Features Reserve – Bushland Reserve	13	E1
1820	Minimay I30 BR	Natural Features Reserve – Bushland Reserve	13	E1
1804	Yarrangook BR	Natural Features Reserve – Bushland Reserve	13	E1
1858	Salisbury BR	Natural Features Reserve – Bushland Reserve	12	D
1839	Mallee Dam BR	Natural Features Reserve – Bushland Reserve	12	E1
2435	Awonga I16 BR	Natural Features Reserve – Bushland Reserve	12	E1
2473	Howards BR ¹	Natural Features Reserve – Bushland Reserve	12	E1
1829	Mirampiram I39 BR	Natural Features Reserve – Bushland Reserve	12	D
1897	Nullan I107 BR	Natural Features Reserve – Bushland Reserve	12	E1
1868	Ti Tree Creek BR	Natural Features Reserve – Bushland Reserve	11	E1
1230	Werrap I169 BR ³	Natural Features Reserve – Bushland Reserve	11	E1
1899	Nullan I109 BR	Natural Features Reserve – Bushland Reserve	11	E1
1830	Mirampiram I40 BR	Natural Features Reserve – Bushland Reserve	11	E1
1834	Yanac-a-yanac I44 BR	Natural Features Reserve – Bushland Reserve	11	E1
1893	Bangerang I103 BR	Natural Features Reserve – Bushland Reserve	10	E1
1851	Woorak I61 BR	Natural Features Reserve – Bushland Reserve	10	D
2439	Yallakar I20 BR	Natural Features Reserve – Bushland Reserve	10	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
2420	Tallageira BR	Natural Features Reserve – Bushland Reserve	10	E1
1837	Yanac-a-yanac I47 BR	Natural Features Reserve – Bushland Reserve	10	E1
1836	Yanac-a-yanac I46 BR	Natural Features Reserve – Bushland Reserve	10	D
1871	Katyil BR	Natural Features Reserve – Bushland Reserve	9	E1
1918	Laen North BR ²	Natural Features Reserve – Bushland Reserve	9	E1
1849	Woorak I59 BR	Natural Features Reserve – Bushland Reserve	9	E1
2238	Mulligans BR ¹	Natural Features Reserve – Bushland Reserve	9	E1
2456	Kout Narin I37 BR	Natural Features Reserve – Bushland Reserve	8	C
1825	Mortat I35 BR	Natural Features Reserve – Bushland Reserve	8	E1
2242	Hunts BR ¹	Natural Features Reserve – Bushland Reserve	8	E1
2466	Mockinya BR ¹	Natural Features Reserve – Bushland Reserve	8	D
1877	Crymelon BR	Natural Features Reserve – Bushland Reserve	8	E1
1809	Yarrock I19 BR	Natural Features Reserve – Bushland Reserve	8	E1
1821	Minimay I31 BR	Natural Features Reserve – Bushland Reserve	8	E1
2433	Murrandarra BR	Natural Features Reserve – Bushland Reserve	8	E1
1876	Willenabrina I86 BR	Natural Features Reserve – Bushland Reserve	7	E1
2461	Telangatuk I42 BR ¹	Natural Features Reserve – Bushland Reserve	7	E1
2434	Jallakin I15 BR	Natural Features Reserve – Bushland Reserve	7	E1
1811	Kaniva I21 BR	Natural Features Reserve – Bushland Reserve	7	E1
1854	Lorquon I64 BR	Natural Features Reserve – Bushland Reserve	7	E1
2441	Yallakar I22 BR	Natural Features Reserve – Bushland Reserve	7	E1
1891	Bangerang I101 BR	Natural Features Reserve – Bushland Reserve	7	E1
1835	Yanac-a-yanac I45 BR	Natural Features Reserve – Bushland Reserve	7	E1
1874	Joop I84 BR	Natural Features Reserve – Bushland Reserve	7	E1
1798	Yearinga I8 BR	Natural Features Reserve – Bushland Reserve	7	E1
1909	Warmur I119 BR ²	Natural Features Reserve – Bushland Reserve	7	E1
1860	Kiata I70 BR	Natural Features Reserve – Bushland Reserve	6	E1
1875	Willenabrina I85 BR	Natural Features Reserve – Bushland Reserve	6	E1
2472	Lah-arum BR ¹	Natural Features Reserve – Bushland Reserve	6	E1
1867	Tullyvea BR	Natural Features Reserve – Bushland Reserve	6	E1
1812	Kaniva I22 BR	Natural Features Reserve – Bushland Reserve	6	E1
1913	Watchem I123 BR ²	Natural Features Reserve – Bushland Reserve	6	E1
1902	Rupanyup I112 BR	Natural Features Reserve – Bushland Reserve	6	E1
1275	Werrap I170 BR ³	Natural Features Reserve – Bushland Reserve	6	E1
1886	Warren BR ¹	Natural Features Reserve – Bushland Reserve	6	E2
1841	Kinimakatka I51 BR	Natural Features Reserve – Bushland Reserve	5	E1
2467	Bungalally I48 BR	Natural Features Reserve – Bushland Reserve	5	C
1848	Woorak I58 BR	Natural Features Reserve – Bushland Reserve	5	E1
1884	Marma I94 BR ¹	Natural Features Reserve – Bushland Reserve	5	E1
2424	Morea I5 BR	Natural Features Reserve – Bushland Reserve	4	E1
1852	Woorak I62 BR	Natural Features Reserve – Bushland Reserve	4	E1
1840	Lawloit I50 BR	Natural Features Reserve – Bushland Reserve	4	E2

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
1904	Dunmunkle BR	Natural Features Reserve – Bushland Reserve	4	E1
2459	Telangatuk I40 BR	Natural Features Reserve – Bushland Reserve	4	E1
2422	Bringalbert BR	Natural Features Reserve – Bushland Reserve	4	E1
1838	Tarranginnie I48 BR	Natural Features Reserve – Bushland Reserve	4	E1
1915	Carron I125 BR ²	Natural Features Reserve – Bushland Reserve	4	E1
1826	Morea I36 BR	Natural Features Reserve – Bushland Reserve	4	E1
1883	Ashens I93 BR ¹	Natural Features Reserve – Bushland Reserve	4	E1
1846	Coyhallan BR	Natural Features Reserve – Bushland Reserve	4	E2
1894	Nullan I104 BR	Natural Features Reserve – Bushland Reserve	4	E2
1806	Boundary Rd No.1 BR	Natural Features Reserve – Bushland Reserve	3	E1
2454	Carchap BR	Natural Features Reserve – Bushland Reserve	3	E2
1895	Nullan I105 BR	Natural Features Reserve – Bushland Reserve	3	E1
2421	Laverys Corner BR	Natural Features Reserve – Bushland Reserve	3	E1
2475	Jess BR ¹	Natural Features Reserve – Bushland Reserve	3	E1
1862	Woraigworm I72 BR	Natural Features Reserve – Bushland Reserve	3	E1
1816	Yanipy I26 BR	Natural Features Reserve – Bushland Reserve	3	E1
1807	Boundary Rd No.2 BR	Natural Features Reserve – Bushland Reserve	3	E1
1805	Murrawong North Rd BR	Natural Features Reserve – Bushland Reserve	3	E1
2476	Ledcourt I57 BR ¹	Natural Features Reserve – Bushland Reserve	3	E1
1859	Kiata I69 BR	Natural Features Reserve – Bushland Reserve	2	E1
1885	Gellatly BR ¹	Natural Features Reserve – Bushland Reserve	2	E2
2429	Goroke I10 BR	Natural Features Reserve – Bushland Reserve	2	E1
1817	Miram South BR	Natural Features Reserve – Bushland Reserve	2	E1
1797	Foresters Spring BR	Natural Features Reserve – Bushland Reserve	2	E1
1813	Kaniva I23 BR	Natural Features Reserve – Bushland Reserve	2	E1
1892	Bangerang I102 BR	Natural Features Reserve – Bushland Reserve	2	E1
1855	Woorak BR	Natural Features Reserve – Bushland Reserve	2	E1
2474	Gampola I55 BR ¹	Natural Features Reserve – Bushland Reserve	2	E2
2436	Jallakin I17 BR	Natural Features Reserve – Bushland Reserve	2	E2
1873	Pepper Plains BR	Natural Features Reserve – Bushland Reserve	2	E1
1818	Lawloit I28 BR	Natural Features Reserve – Bushland Reserve	1	E1
1850	Woorak I60 BR	Natural Features Reserve – Bushland Reserve	1	E1
1889	Werrigar BR	Natural Features Reserve – Bushland Reserve	1	E1
1914	Carron I124 BR ²	Natural Features Reserve – Bushland Reserve	1	E1
2455	Toolondo BR	Natural Features Reserve – Bushland Reserve	1	E2
1853	Lorquon I63 BR	Natural Features Reserve – Bushland Reserve	1	E1
2425	Dopewora I6 BR	Natural Features Reserve – Bushland Reserve	1	E1
1799	Yearinga I9 BR	Natural Features Reserve – Bushland Reserve	1	E1
2514	Connan Swamp GR	Natural Features Reserve – Geological Reserve	5	E1
3182	Bates Lake HP	Natural Features Reserve – Highway Park	142	E1
3180	Jane Duff HP	Natural Features Reserve – Highway Park	27	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
3179	Lawloit Range HP	Natural Features Reserve – Highway Park	15	E1
3063	Lake Hindmarsh LR	Natural Features Reserve – Lake Reserve	15341	B
3089	Boorookpi Swamp LR	Natural Features Reserve – Lake Reserve	486	C
3095	Lake Ratzcastle LR	Natural Features Reserve – Lake Reserve	410	B
3114	Lake Natimuk and Natimuk Creek LR	Natural Features Reserve – Lake Reserve	401	B
3088	Dumbopportunity Swamp & Lake Bringalbart LR	Natural Features Reserve – Lake Reserve	324	C
3092	Lake Yallakar LR	Natural Features Reserve – Lake Reserve	293	D
3087	Boikerbert Swamp LR	Natural Features Reserve – Lake Reserve	187	D
3103	Clear Lake LR	Natural Features Reserve – Lake Reserve	161	D
3097	Miga Lake LR	Natural Features Reserve – Lake Reserve	154	D
3102	St Marys Lake LR	Natural Features Reserve – Lake Reserve	125	D
3096	Maryvale and Charam Swamp LR	Natural Features Reserve – Lake Reserve	109	E1
3115	Loch Iel (Pink Lake) LR	Natural Features Reserve – Lake Reserve	103	C
3118	Murrانبool Swamp LR	Natural Features Reserve – Lake Reserve	81	E1
3099	Lake Dollanoke LR	Natural Features Reserve – Lake Reserve	59	E1
3090	Lake Charlegrark LR	Natural Features Reserve – Lake Reserve	55	D
3110	Greenhill Lake LR	Natural Features Reserve – Lake Reserve	53	E1
3100	Lake Jaracter LR	Natural Features Reserve – Lake Reserve	52	E1
3098	Byrons Swamp LR	Natural Features Reserve – Lake Reserve	49	E1
3093	Parsons (Collins) Lake LR	Natural Features Reserve – Lake Reserve	42	E1
3094	Scrubby Lake LR	Natural Features Reserve – Lake Reserve	35	E1
3113	Mitre Dam LR	Natural Features Reserve – Lake Reserve	34	E1
3109	Nurcoung LR	Natural Features Reserve – Lake Reserve	34	E1
3091	Lake Carpolac LR	Natural Features Reserve – Lake Reserve	31	D
3112	Webbs Salt Lake LR	Natural Features Reserve – Lake Reserve	29	E1
3101	Lime Kiln Lake LR	Natural Features Reserve – Lake Reserve	25	E1
3122	Swanee Lake LR	Natural Features Reserve – Lake Reserve	22	E2
3111	Arapiles LR	Natural Features Reserve – Lake Reserve	3	E1
2523	Mount Talbot SR ¹	Natural Features Reserve – Scenic Reserve	24	D
5026	Wimmera River Heritage Area Park	Natural Features Reserve – Streamside Reserve	2095	0
2522	Wimmera River, Marma SR ¹	Natural Features Reserve – Streamside Reserve	130	C
2520	Warracknabeal SR	Natural Features Reserve – Streamside Reserve	90	E1
2521	Kellalac SR	Natural Features Reserve – Streamside Reserve	30	E1
2704	Faux Bridge SR ¹	Natural Features Reserve – Streamside Reserve	23	E2
2531	Mooree SR ⁴	Natural Features Reserve – Streamside Reserve	19	E1
2702	Station Creek SR ¹	Natural Features Reserve – Streamside Reserve	14	E2
2705	Glenorchy SR ¹	Natural Features Reserve – Streamside Reserve	13	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
807	Lake Wyn Wyn WR	Natural Features Reserve – Wildlife Reserve (hunting)	706	C
753	North, Centre and other Lakes WR	Natural Features Reserve – Wildlife Reserve (hunting)	630	D
778	White Lake, Douglas WR	Natural Features Reserve – Wildlife Reserve (hunting)	617	C
736	Lake Kanagulk WR	Natural Features Reserve – Wildlife Reserve (hunting)	454	D
796	Darlot Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	264	no group
815	Peechember Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	246	C
743	Leah Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	226	D
824	Yanac Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	201	C
710	Bow Lake WR	Natural Features Reserve – Wildlife Reserve (hunting)	194	E1
725	Heard Lake WR	Natural Features Reserve – Wildlife Reserve (hunting)	183	C
733	Lake Coyrahilla (Copper Colour) WR	Natural Features Reserve – Wildlife Reserve (hunting)	177	E1
764	Red Gum Swamp, Jallumba WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	171	E1
718	Connangorach Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	171	D
809	Minimay Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	169	C
737	Lake Karnak WR	Natural Features Reserve – Wildlife Reserve (hunting)	163	C
767	Sheepwash, Charam WR	Natural Features Reserve – Wildlife Reserve (hunting)	161	D
709	Boundary Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	156	D
787	Boyeo Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	127	D
780	Winter Lake WR	Natural Features Reserve – Wildlife Reserve (hunting)	126	E1
802	Hardings Swamp (Tarranginnie Swamp) WR	Natural Features Reserve – Wildlife Reserve (hunting)	118	C
806	Lake Lawloit WR	Natural Features Reserve – Wildlife Reserve (hunting)	116	D
715	Jacka Lake & lakes to north WR	Natural Features Reserve – Wildlife Reserve (hunting)	111	D
731	Lake Clarke WR	Natural Features Reserve – Wildlife Reserve (hunting)	106	D
825	Yarrackigarra Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	104	C

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
776	Wash Tomorrow (Washdamorra) Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	98	C
775	Wally Allens Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	96	D
724	Hateleys Lake WR	Natural Features Reserve – Wildlife Reserve (hunting)	94	D
738	Lake Kemi Kemi WR	Natural Features Reserve – Wildlife Reserve (hunting)	92	D
741	Lake Mullancoree WR	Natural Features Reserve – Wildlife Reserve (hunting)	89	D
749	McCosslen Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	88	D
744	Lignum Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	88	C
763	Pot Brook WR	Natural Features Reserve – Wildlife Reserve (hunting)	84	D
739	Lake Koynock WR	Natural Features Reserve – Wildlife Reserve (hunting)	81	E1
814	Nurcoung Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	80	D
703	Alakilu Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	77	D
732	Lake Cogumbul WR	Natural Features Reserve – Wildlife Reserve (hunting)	74	E1
761	O'Keefe Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	74	E1
720	Darragan Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	67	D
742	Lake Yampitcha WR	Natural Features Reserve – Wildlife Reserve (hunting)	64	E1
721	Donald (Dollin) Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	64	D
786	Box Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	61	D
705	Bens Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	58	E1
792	Coorong Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	54	E1
735	Lake Jaie Jaie WR	Natural Features Reserve – Wildlife Reserve (hunting)	49	E1
769	Silver Lake WR	Natural Features Reserve – Wildlife Reserve (hunting)	44	E1
728	Kurrayah Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	40	D
810	Mortat WR	Natural Features Reserve – Wildlife Reserve (hunting)	40	D

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
799	Green Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	38	D
779	White Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	37	E1
782	Lampard Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	37	E1
748	McClures Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	37	E1
750	McGlashin Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	36	D
818	Red Plains Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	34	E1
706	Bitter Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	34	E1
727	Kingcourt Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	34	E1
791	Coker Dam WR	Natural Features Reserve – Wildlife Reserve (hunting)	33	E1
772	The Reserve WR	Natural Features Reserve – Wildlife Reserve (hunting)	33	E1
811	Mutton Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	33	E1
716	Champion Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	31	E1
819	Saw Pit Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	31	E1
765	School Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	30	E1
766	Scotts Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	29	E1
747	Mahney Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	28	E1
704	Assiste Swamp (Brickie Swamp) WR	Natural Features Reserve – Wildlife Reserve (hunting)	27	E1
785	Bills Gully WR	Natural Features Reserve – Wildlife Reserve (hunting)	27	E1
712	Broughtons Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	26	E1
795	Dahwedarre WR	Natural Features Reserve – Wildlife Reserve (hunting)	24	E1
722	Gashes Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	23	D
790	Cloughs Waterholes WR	Natural Features Reserve – Wildlife Reserve (hunting)	22	E1
800	Gum Swamp, Vectis East WR	Natural Features Reserve – Wildlife Reserve (hunting)	22	E1
726	Hurleys Bank WR	Natural Features Reserve – Wildlife Reserve (hunting)	22	E1

Reserve ID	Park or reserve name	Area type	Area (ha)	Level of protection
808	Merwyn Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	21	E1
643	Wal Wal Swamp WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	19	E1
746	Lumeah Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	19	E1
798	Freshwater Swamp, Yarrock WR	Natural Features Reserve – Wildlife Reserve (hunting)	18	E1
762	Okely Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	17	E2
797	Ding-a-ding WR	Natural Features Reserve – Wildlife Reserve (hunting)	16	E1
813	Ni Ni WR	Natural Features Reserve – Wildlife Reserve (hunting)	16	E1
801	Habys Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	16	E1
794	Crow Swamp (Phillips Dam) WR	Natural Features Reserve – Wildlife Reserve (hunting)	15	E1
723	Greens Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	15	E1
719	Cookes Reserve WR ¹	Natural Features Reserve – Wildlife Reserve (hunting)	14	E2
777	West Hut Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	12	E1
820	Seven Mile Dam WR	Natural Features Reserve – Wildlife Reserve (hunting)	12	C
745	Little Donkey Woman Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	11	E1
774	Victory Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	8	E1
708	Boiler Swamp WR	Natural Features Reserve – Wildlife Reserve (hunting)	8	D
804	Koonik Koonik WR	Natural Features Reserve – Wildlife Reserve (hunting)	4	E1
816	Red Gum Swamp, Goroke WR	Natural Features Reserve – Wildlife Reserve (SGR classification pending reservation)	245	D
788	Brooks Swamp WR	Natural Features Reserve – Wildlife Reserve (SGR classification pending reservation)	207	D
711	Brig Brig Swamp WR	Natural Features Reserve – Wildlife Reserve (SGR classification pending reservation)	29	E1
2608	Mooree HA	Historic Reserve	58	D
2607	Serviceton Railway Station HA	Historic Reserve	2	no group
4000	Tullyvea State School HA	Historic Reserve	1	E1
2612	Black Waterhole EA	Education Area	266	no group

Appendix B — Conservation assets

This appendix provides an overview of the area of conservation assets (aligned to EVDs and EVCs) within the Wimmera Park Landscape.

Conservation asset	Ecological Vegetation Class	Bioregion	Bioregional conservation status	Total (ha)
HEATHLANDS & HEATHY WOODLANDS	Damp Heathland	Lowan Mallee	least concern	1373
		Wimmera	least concern	13
	Dunefield Heathland	Lowan Mallee	least concern	28007
		Murray Mallee	least concern	2
		Wimmera	least concern	6
	Heathy Woodland	Dundas Tablelands	least concern	46
		Greater Grampians	least concern	187
		Lowan Mallee	least concern	1
		Wimmera	least concern	12032
	Heathy Woodland / Sand Heathland Mosaic	Wimmera	least concern	2665
	Sand Heathland	Wimmera	depleted	1298
	Heathy Mallee	Lowan Mallee	least concern	7
		Murray Mallee	least concern	64
	Lowan Sands Mallee	Lowan Mallee	least concern	75010
Wimmera		least concern	25	
Total				120736
MALLEE & BROOMBUSH	Parilla Mallee	Murray Mallee	endangered	10
		Wimmera	endangered	5
	Red Swale Mallee	Murray Mallee	least concern	5
		Wimmera	least concern	1
	Sandstone Ridge Shrubland	Lowan Mallee	least concern	19070
		Murray Mallee	least concern	84
		Wimmera	vulnerable	415
Total				261062
DRY FORESTS & WOODLANDS	Damp Sands Herb-rich Woodland	Dundas Tablelands	vulnerable	90
		Glenelg Plain	vulnerable	9
		Greater Grampians	least concern	20
		Wimmera	vulnerable	1240
	Damp Sands Herb-rich Woodland / Shallow Sands Woodland Mosaic	Wimmera	vulnerable	184

Conservation asset	Ecological Vegetation Class	Bioregion	Bioregional conservation status	Total (ha)
	Grassy Woodland	Wimmera	endangered	166
	Grassy Woodland / Hills Herb-rich Woodland / Damp Sands Herb-rich Woodland Mosaic	Dundas Tablelands	endangered	12
	Heathy Herb-rich Woodland / Damp Sands Herb-rich Woodland Mosaic	Wimmera	vulnerable	273
	Hills Herb-rich Woodland / Grassy Dry Forest Complex	Greater Grampians	least concern	53
		Wimmera	endangered	2
	Grassy Dry Forest / Heathy Woodland Mosaic	Wimmera	depleted	101
	Heathy Herb-rich Woodland	Dundas Tablelands	depleted	121
		Glenelg Plain	depleted	73
		Wimmera	depleted	1164
	Heathy Woodland / Damp Heathy Woodland / Damp Heathland Mosaic	Glenelg Plain	vulnerable	119
	Heathy Woodland / Heathy Herb-rich Woodland Mosaic	Wimmera	least concern	113
	Rocky Outcrop Shrubland	Wimmera	rare	4
	Rocky Outcrop Shrubland / Rocky Outcrop Herbland Mosaic	Dundas Tablelands	least concern	12
		Greater Grampians	least concern	279
		Wimmera	rare	7
	Rocky Outcrop Shrubland / Rocky Outcrop Herbland / Heathy Woodland Mosaic	Greater Grampians	least concern	342
		Wimmera	rare	2
	Rocky Outcrop Shrubland / Rocky Outcrop Herbland / Sandstone Ridge Shrubland Mosaic	Greater Grampians	least concern	120
		Wimmera	rare	6
	Grassy Woodland / Alluvial Terraces Herb-rich Woodland Mosaic	Wimmera	endangered	4
Lunette Woodland	Wimmera	endangered	64	
	Plains Grassy Woodland	Dundas Tablelands	endangered	49
		Wimmera	endangered	18
	Plains Woodland	Glenelg Plain	endangered	24
		Lowan Mallee	endangered	5
		Murray Mallee	endangered	11
	Wimmera	endangered	2227	

Conservation asset	Ecological Vegetation Class	Bioregion	Bioregional conservation status	Total (ha)
	Plains Woodland / Damp Sands Herb-rich Woodland Mosaic	Wimmera	endangered	127
	Plains Woodland / Plains Grassy Wetland Mosaic	Wimmera	endangered	51
	Ridged Plains Mallee	Murray Mallee	endangered	30
		Wimmera	endangered	464
	Scree-slope Woodland	Greater Grampians	endangered	23
	Low Rises Woodland	Lowan Mallee	endangered	95
		Murray Mallee	endangered	37
		Wimmera	endangered	2473
	Plains Savannah	Murray Mallee	endangered	6
		Wimmera	endangered	643
	Sand Ridge Woodland	Wimmera	endangered	63
	Semi-arid Woodland	Murray Mallee	vulnerable	4
	Shallow Sands Woodland	Dundas Tablelands	vulnerable	39
		Greater Grampians	vulnerable	52
		Lowan Mallee	depleted	8171
		Murray Mallee	endangered	1
		Wimmera	vulnerable	3282
	Shallow Sands Woodland / Heathy Woodland Mosaic	Greater Grampians	vulnerable	65
		Wimmera	vulnerable	506
	Shallow Sands Woodland / Plains Sedgy Woodland Mosaic	Wimmera	vulnerable	901
	Shallow Sands Woodland / Plains Sedgy Woodland / Seasonally Inundated Shrubby Woodland Mosaic	Wimmera	vulnerable	307
	Shallow Sands Woodland / Plains Sedgy Woodland / Seasonally Inundated Shrubby Woodland / Damp Sands Herb-rich Woodland Mosaic	Glenelg Plain	vulnerable	110
		Wimmera	vulnerable	291
Total				24656
FRESHWATER WETLANDS	Cane Grass Wetland	Lowan Mallee	endangered	1
		Wimmera	vulnerable	707
	Lake Bed Herbland / Red Gum Swamp Mosaic	Wimmera	depleted	301
	Lignum-Cane Grass Swamp	Wimmera	endangered	126

Conservation asset	Ecological Vegetation Class	Bioregion	Bioregional conservation status	Total (ha)
	Plains Grassy Wetland / Red Gum Swamp Mosaic	Wimmera	endangered	72
	Plains Sedgy Wetland	Wimmera	endangered	16
	Aquatic Herbland	Dundas Tablelands	endangered	59
		Wimmera	endangered	178
	Freshwater Lake Aggregate	Wimmera	rare	474
	Permanent Open Freshwater	Wimmera	not applicable	91
	Red Gum Swamp	Lowan Mallee	endangered	2
		Wimmera	vulnerable	1904
	Red Gum Wetland / Aquatic Herbland Mosaic	Wimmera	vulnerable	317
	Sedge Wetland	Glenelg Plain	vulnerable	4
		Wimmera	endangered	21
	Shallow Freshwater Marsh	Wimmera	vulnerable	11
	Water Body – Fresh	Murray Mallee	not applicable	13464
		Wimmera	not applicable	1275
	<i>total</i>			
RIVERINE FOREST AND WOODLAND	Black Box Lignum Woodland	Wimmera	endangered	119
	Floodplain Riparian Woodland	Dundas Tablelands	vulnerable	12
		Wimmera	endangered	4
	Freshwater Lignum Shrubland	Wimmera	endangered	91
	Plains Riparian Shrubby Woodland	Wimmera	vulnerable	28
	Riparian Woodland	Lowan Mallee	vulnerable	81
		Murray Mallee	vulnerable	234
		Wimmera	vulnerable	517
	Riverine Chenopod Woodland	Lowan Mallee	depleted	87
		Murray Mallee	depleted	322
		Wimmera	endangered	450
	Cane Grass Wetland / Lignum Swampy Woodland Mosaic	Wimmera	endangered	9
	Creekline Grassy Woodland	Dundas Tablelands	endangered	5
	Creekline Sedgy Woodland	Wimmera	endangered	13
	Damp Sands Herb-rich Woodland / Seasonally Inundated Shrubby Woodland Mosaic	Wimmera	vulnerable	113
Drainage-line Woodland	Wimmera	endangered	92	

Conservation asset	Ecological Vegetation Class	Bioregion	Bioregional conservation status	Total (ha)
	Intermittent Swampy Woodland	Murray Mallee	vulnerable	1581
	Intermittent Swampy Woodland / Riverine Grassy Woodland Complex	Murray Mallee	vulnerable	805
		Wimmera	vulnerable	3
	Lignum Swampy Woodland	Murray Mallee	vulnerable	201
		Wimmera	vulnerable	598
	Plains Sedgy Woodland	Wimmera	depleted	215
	Red Gum Swamp / Cane Grass Wetland Mosaic	Wimmera	vulnerable	91
	Red Gum Swamp / Lignum Swampy Woodland Mosaic	Wimmera	vulnerable	312
	Red Gum Swamp / Spike-sedge Wetland Mosaic	Wimmera	vulnerable	146
	Sandy Stream Woodland	Dundas Tablelands	endangered	2
	Seasonally Inundated Shrubby Woodland	Glenelg Plain	endangered	8
		Lowan Mallee	least concern	724
		Wimmera	least concern	566
	Seasonally Inundated Shrubby Woodland / Plains Sedgy Woodland Mosaic	Glenelg Plain	endangered	3
		Wimmera	least concern	119
	Dune Soak Woodland	Wimmera	endangered	14
Plains Grassland	Wimmera	endangered	87	
Total				7650
SALINE WETLANDS	Brackish Drainage-line Aggregate	Dundas Tablelands	endangered	4
		Wimmera	endangered	19
	Brackish Lake Aggregate	Wimmera	depleted	333
	Brackish Sedgeland	Wimmera	endangered	43
	Brackish Wetland	Wimmera	endangered	14
	Cane Grass Wetland / Salt Paperbark Woodland Mosaic	Wimmera	endangered	2
	Inland Saltmarsh	Wimmera	endangered	205
	Permanent Saline	Wimmera	not applicable	95
	Saline Lake Aggregate	Wimmera	least concern	948
	Salt Paperbark Woodland	Wimmera	vulnerable	65
	Salt Paperbark Woodland / Samphire Shrubland Mosaic	Wimmera	vulnerable	689
	Samphire Shrubland	Wimmera	least concern	47

Conservation asset	Ecological Vegetation Class	Bioregion	Bioregional conservation status	Total (ha)
	Samphire Shrubland / Saline Lake Mosaic	Wimmera	least concern	352
	Semi-permanent Saline	Wimmera	not applicable	752
	Water body – salt	Wimmera	not applicable	1079
	Total			4645
	Water Body – to be determined	Wimmera	not applicable	104

Appendix C — Scientific names of species mentioned in the plan

English name	Scientific name
African Boneseed	<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>
African Boxthorn	<i>Lycium ferocissimum</i>
African Lovegrass	<i>Eragrostis curvula</i>
Altona (or Yellow) Sedge-Skipper Butterfly	<i>Hesperilla flavescens flavescens</i>
Australian Smelt	<i>Retropinna semoni</i>
Banded Stilt	<i>Cladorhynchus leucocephalus</i>
Beaded Glasswort	<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>
Black Flag	<i>Ferraria crispa</i> subsp. <i>crispa</i>
Black Swan	<i>Cygnus atratus</i>
Black-tailed Godwit	<i>Limosa limosa</i>
Black-tailed Native Hen	<i>Gallinula ventralis</i>
Blue-billed Duck	<i>Oxyura australis</i>
Bridal Creeper	<i>Asparagus asparagoides</i>
Bridal Veil	<i>Asparagus declinatus</i>
Brolga	<i>Grus rubicunda</i>
Buffel Grass	<i>Cenchrus ciliaris</i>
Caltrop	<i>Tribulus terrestris</i>
Cane Grass	<i>Eragrostis australasica</i>
Caspian Tern	<i>Hydroprogne caspia</i>
Chaffy Saw-sedge	<i>Gahnia filum</i>
Common Greenshank	<i>Tringa nebularia</i>
Cotton Bush	<i>Gomphocarpus</i> sp.
Curlew Sandpiper	<i>Calidris ferruginea</i>
Downy Star Bush	<i>Asterolasia phebalioides</i>
Dwarf Flat-sedge	<i>Cyperus</i> sp.
Eastern Great Egret	<i>Ardea modesta</i>
Eastern Long-Necked Turtle	<i>Chelodina longicollis</i>
European Rabbit	<i>Oryctolagus cuniculus</i>
Fallow Deer	<i>Cervus dama</i>
Feral Goat	<i>Capra hircus</i>
Fescue	<i>Vulpia</i> spp.
Flathead Gudgeon	<i>Philypnodon grandiceps</i>
Floodplain Rustyhood	<i>Pterostylis planulata</i>
Freckled Duck	<i>Stictonetta naevosa</i>
Freshwater Catfish	<i>Tandanus tandanus</i>
Glossy Ibis	<i>Plegadis falcinellus</i>
Golden Rayed Blue Butterfly	<i>Candalides noelkeri</i>
Golden Sun Moth	<i>Synemon plana</i>
Great Brome	<i>Bromus diandrus</i>
Grey Teal	<i>Anas gracilis</i>
Growling Grass Frog	<i>Litoria raniformis</i>
Horehound	<i>Marrubium vulgare</i>
Hudsons Pear	<i>Cylindropuntia rosea</i>
Jerry Fire-water	<i>Bergia ammannioides</i>
Jerry-jerry	<i>Ammannia multiflora</i>

Malleefowl	<i>Leipoa ocellata</i>
Marsh Sandpiper	<i>Tringa stagnatilis</i>
Mesquite	<i>Prosopis</i> spp.
Murray Swainson-pea	<i>Swainsona murrayana</i>
Native Peppergrass	<i>Lepidium pseudohyssopifolium</i>
Needle Grass	<i>Nasella</i> sp.
Olive	<i>Olea europaea</i>
One-leaf Cape-tulip	<i>Moraea flaccida</i>
Pale Flax-lily	<i>Dianella longifolia</i> s.l.
Paterson's Curse	<i>Echium plantagineum</i>
Peppercorn Tree	<i>Schinus molle</i>
Perennial Veldt Grass	<i>Ehrharta calycina</i>
Phalaris	<i>Phalaris aquatica</i>
Platypus	<i>Ornithorhynchus anatinus</i>
Red Deer	<i>Cervus elaphus scoticus</i>
Red Fox	<i>Vulpes vulpes</i>
Red-Capped Plover	<i>Charadrius ruficapillus</i>
Red-kneed Dotterel	<i>Erythrogonyx cinctus</i>
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>
Red-necked Stint	<i>Calidris ruficollis</i>
Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii graptogyne</i>
Regent Parrot	<i>Polytelis anthopeplus monarchoides</i>
Ridged Water Milfoil	<i>Myriophyllum porcatum</i>
Rosenberg's Goanna	<i>Varanus rosenbergi</i>
Sallow Wattle	<i>Acacia longifolia</i> subsp. <i>longifolia</i>
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>
Silky Mouse	<i>Pseudomys apodemoides</i>
Silver Perch	<i>Bidyanus bidyanus</i>
Six-point Arrow-grass	<i>Triglochin hexagona</i>
South African Weed Orchid	<i>Disa bracteata</i>
Southern Pipewort	<i>Eriocaulon australasicum</i>
Southern Pygmy-perch	<i>Nannoperca australis</i>
Spiny Lignum	<i>Duma horrida</i> subsp. <i>horrida</i>
Tall Wheat-grass	<i>Lophopyrum ponticum</i>
Tree Tobacco	<i>Nicotiana glauca</i>
Two-leaf Cape-tulip	<i>Moraea miniata</i>
Water Rat / Rakali	<i>Hydromys chrysogaster</i>
Western Blue-tongued Lizard	<i>Tiliqua occipitalis</i>
Western Carp Gudgeon	<i>Hypseleotris klunzingeri</i>
Western Pygmy-possum	<i>Cercartetus concinnus minor</i>
Whipstick Westringia	<i>Westringia crassifolia</i>
Wimmera Bottlebrush	<i>Callistemon wimmerensis</i>
Wimmera Spider-orchid	<i>Caladenia lowanensis</i>
Winged Peppergrass	<i>Lepidium monoplocoides</i>
Yellow-footed Antechinus	<i>Antechinus flavipes</i>

Appendix D — Biosecurity principles

Prevention

Prevention is a pre-emptive action to managing the risk of introducing weeds into the Park landscape and ensuring works or disturbance events do not provide an opportune environment for weed establishment. This is achieved by identifying the most likely invasion points, which are often vehicle access and parking sites and locations where animals are likely to act as vectors. Pre-emptive action includes measures such as maintaining vehicle and equipment hygiene, avoiding the introduction of soils, gravels and other materials which may carry seed and ensuring that appropriate site preparation and risk identification before planned disturbance events such as planned burning and environmental watering.

Eradication of new and emerging weeds

The initial part of the strategy is to ensure that resources are available to address the threat of new and emerging weeds before they can become established. Any new weed species identified within the Park Landscape should be eradicated as a management priority and the area of infestation monitored for re-emergence. Once a species has become established, its potential for eradication becomes less feasible and more resource intensive.

DELWP have designed a decision-making framework to managing Weeds of Early Stages of Invasion (WESI). This framework will guide and support the management of new and emerging weeds. The WESI principles are based on a landscape approach to identifying new and emerging species. The process to address new and emerging weed threats should follow the six-step approach outlined in the Weeds of Early Stages of Invasion framework. Eradication is the objective for new and emerging weeds where feasible.

Containment

Containment is an ongoing maintenance approach to managing the spread of established weeds. Management tracks, ridgelines and other landscape features are useful in defining containment boundaries. Containment is used when a species is not considered feasibly eradicable in the short-medium term, however a strategy establishing containment lines and constricting the containment area over time may have a long-term eradication goal.

It is important to inspect a buffer around an established containment area to ensure efforts are effective and new populations are not establishing beyond containment boundaries. Where there are pathways of spread through a containment area (eg. vehicles, walkers, river corridors) a concerted effort should be made to undertake control works along tracks and waterways to decrease the likelihood of spread. Containment includes the eradication of satellite or local populations of weeds outside the containment area.

Asset Protection

A range of weeds are well established and wide spread within the Wimmera Park Landscape. If a weed species presents a specific threat to a specific value, an asset protection approach to weed management may be undertaken. Examples of assets include riparian corridors, threatened species, cultural heritage sites, visitor sites and infrastructure. Asset protection efforts will generally involve specifying a buffer around the asset and treating weeds within its perimeter. Biological controls can assist with containment efforts for established weeds, but are limited to species with an available control agent.



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