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| Strategy for interim management in the Western Grassland Reserve  Melbourne Strategic Assessment |

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| A map of the world  Description automatically generated with low confidenceAcknowledgment  We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.  We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond. |
| The Wadawurrung Traditional Owners Aboriginal Corporation, Bunurong Land Council Aboriginal Corporation and Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation represent the Traditional Owners of the land to which this strategy applies and were engaged in its development. The Department of Environment, Land, Water and Planning (DELWP) commits to partnering together in delivering this strategy.  DELWP acknowledges that the conservation outcomes for the Western Grassland Reserve (WGR) Nature Conservation Reserve are more likely to be achieved by developing co-operative, collaborative relationships with a range of people and organisations with interests in the WGR Nature Conservation Reserve.  The list below summarises the initial organisations or parties recognised as important stakeholders and thus consulted in the development of this strategy. This list is not exhaustive and will be expanded to incorporate additional groups as required. Equally, inclusion in this list does not imply support for any aspect of this strategy, however attempts have been made to ensure it is inclusive and responsive to the feedback received. Stakeholders that were invited to engage with DELWP on this strategy however did not respond have not been included in this list. It is important to note that not all stakeholders, such as private landowners, have yet been contacted. Stakeholders engaged in developing this strategy (in no particular order) are:  Melton City Council, Wyndham City Council, Port Philip Westernport Catchment Management Authority, Parks Victoria, Little River Landcare Group, Grassy Plains Network, Arthur Rylah Institute, Wadawurrung Traditional Owners Aboriginal Corporation, Bunurong Land Council Aboriginal Corporation and Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation.  Photo credit  Drone undertaking weed surveillance on private land in the WGR, Jonathan Wilson, Wyndham City Council  © The State of Victoria Department of Environment, Land, Water and Planning 2021  LogoThis work is licensed under a Creative Commons Attribution 4.0 International licence. You are free to re-use the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo and the Department of Environment, Land, Water and Planning (DELWP) logo. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>  ISBN (pdf)  Disclaimer  This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.  Accessibility  If you would like to receive this publication in an alternative format, please telephone the DELWP Customer Service Centre on 136186, email [customer.service@delwp.vic.gov.au](mailto:customer.service@delwp.vic.gov.au), or via the National Relay Service on 133 677 [www.relayservice.com.au](http://www.relayservice.com.au). This document is also available on the internet at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au). |

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Introduction

Natural grasslands of Kangaroo Grass (*Themeda triandra*) and other native tussock-forming grasses (*Austrodanthonia spp*., *Austrostipa spp.*, and/or *Poa spp*.) on volcanic soils were once widespread around Melbourne. They were managed for thousands of years by Aboriginal people. The rich agricultural opportunities of the volcanic soils were an important factor leading to the colonisation of the Melbourne area. Agriculture and development resulted in the degradation and loss of these grasslands, and they are now listed as the critically endangered ecological community ‘Natural Temperate Grasslands of the Victorian Volcanic Plain’ (NTG), under the federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

To facilitate the sustainable urban growth of Melbourne and mitigate the biodiversity impacts of urban development, the Victorian Government agreed with the Commonwealth Government to deliver a series of conservation outcomes, detailed in the document *Delivering Melbourne’s Newest Sustainable Communities, Program Report 2009* (MSA Program Report). The conservation outcomes to be achieved for NTG include:

* the creation and management of a 15,000-hectare permanently protected native grasslands reservation (nature conservation reserve or National Park) outside of the Urban Growth Boundary in Melbourne’s west, and
* the long-term sustainability and persistence of NTG through permanent protection and enhancement of ecological functions and values of the largest consolidated remaining area of grasslands.

These conservation outcomes will be delivered as part of the larger Melbourne Strategic Assessment program (MSA program) and will be achieved by:

* applying a Public Acquisition Overlay (PAO) to land within the Western Grassland Reserve (‘WGR’, ‘the reserve’) (**Figure 1**) – this step was achieved in 2010 by introducing amendment VC68 to the Victorian Planning Provisions and relevant planning schemes,
* providing interim management of the WGR before it is acquired, to be achieved by helping landowners to manage threats and prevent degradation of NTG and native vegetation on their land,
* publicly acquiring the land,
* managing the WGR as a nature conservation reserve or National Park for a range of particular vegetation and species requirements, and
* improving the quality of natural grasslands in the WGR including supplementary planting to improve NTG composition, structure, and function.

The WGR was initially identified for protection in the MSA Program Report and *Delivering Melbourne’s Newest Sustainable Communities, Strategic Impact Assessment Report 2009*. It was selected to protect and conserve the largest consolidated area of NTG remaining on the Victorian Volcanic Plain bioregion and to provide offsets for the clearing of native vegetation and habitat associated with the MSA Program. It will also support several nationally threatened plant and animal species and contains a range of other habitat types including wetlands, riparian habitats and scattered open grassy woodlands. Due to the previous land use history, the area being established for the protection of NTG forms a mosaic of intact NTG of varying quality and degraded vegetation – including cropland – to enhance connectivity between high value areas, provide necessary buffers, and form practical management boundaries.

The establishment of the WGR will contribute to regional conservation and enhancing landscape linkages to other MSA Program conservation areas as well as existing local reserves and creek-line habitat corridors.

To ensure the natural grasslands on the private land earmarked for the WGR do not degrade prior to their acquisition, the Victorian Government agreed also to prepare an interim management plan, detailed in the document *Western Grassland Reserve Interim Management 2011* (Interim Management Plan) and undertake urgent and ongoing works in line with the plan. The plan set broad management goals and focused on a strategic approach to weed risk and control as the primary interim management intervention across private land in the initial years of reserve establishment.

This strategy updates DELWP’s approach to the prioritisation and management of private land during the interim period to X. It focuses on X.

## Purpose

This strategy responds to the recommendation of the Victorian Auditor-General’s Office independent assurance report to Parliament, *Protecting Critically Endangered Grasslands, June 2020* that DELWP ‘reviews and updates its Western Grassland Reserve Interim Management document in line with the extended acquisition timeline and in collaboration with relevant stakeholders and delivery partners’.

This strategy forms the overarching framework to guide the delivery of interim management of the WGR. The strategy details the management options for protecting native grasslands and preventing degradation on private land subject to the WGR PAO and specifies the criteria for identifying and prioritising suitable land for investment. The strategy will be supported by a Landowner and Community Engagement Plan and investigating strategic partnerships with local councils, the Port Philip and Westernport Catchment Management Authority and other organisations.

The Landowner and Community Engagement Plan will acknowledge the importance of proactive, inclusive and continued engagement with Aboriginal Victorians, affected stakeholders, communities, and landholders, and will be supported by a long-term, face-to-face landholder engagement program.

The strategic partnerships with local councils and the Port Philip and Westernport Catchment Management Authority will facilitate active engagement with landowners, including negotiations for access to private land and promoting landowner uptake of interim management support, to achieve targeted, cost-effective delivery of weed control and other conservation-based land management support on private land in the WGR.

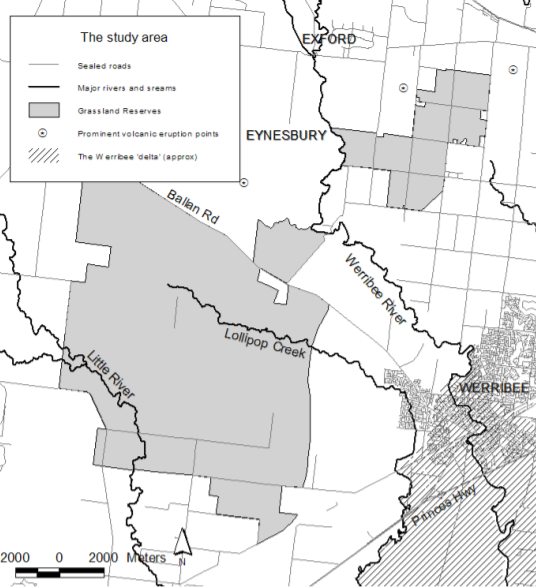


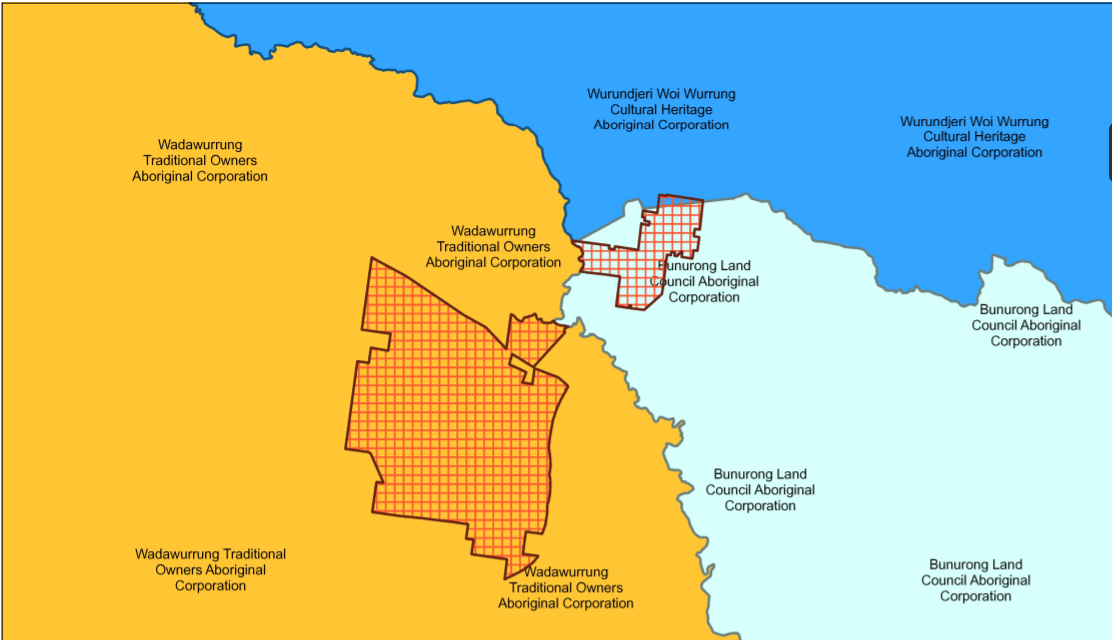
Figure 1: Locality map of the Western Grassland Reserve

Credit: Steve Sinclair, Arthur Rylah Institute for Environmental Research

Source: Sinclair & Atchison (2012) The pre-colonial distribution of grasslands, woodlands and forests on the Werribee plains, Victoria, Cunninghamia 12(3):213-227

## Aboriginal heritage and self-determination

The Wadawurrung, Bunurong and Wurundjeri People are acknowledged as the Traditional Owners of the land where the WGR (nature conservation reserve or National Park) will be established (**Figure 1**). As such, this strategy will be delivered in collaboration with the Wadawurrung Traditional Owners Aboriginal Corporation, Bunurong Land Council Aboriginal Corporation, and Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation (**Figure 2**).



*Figure 2*

*Pupungarli Marnmarnepu: Aboriginal Self-Determination Reform Strategy 2020-2025* guides delivery of DELWP policy and programs, and this strategy seeks to support Wadawurrung, Bunurong and Wurundjeri People and their connection to Country. Wadawurrung, Bunurong and Wurundjeri People have a long-standing cultural relationship with this landscape and a deep understanding of its biogeographic patterns which informed traditional management regimes.

## Vision

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| *The Western Grassland Reserve is healthy Country. It protects our natural grasslands and native species as Melbourne continues to grow. It is a nature conservation reserve or National Park that is enjoyed and valued by all Victorians. It deepens the relationship between people and nature and is nurtured by future generations.*  *Private landholders in the Western Grassland Reserve are highly engaged and participating in sustainable land management and land protection works. They are supported in the right way that balances existing and use rights and the protection and enhancement of biodiversity and cultural values.* |

## Governance

The MSA program was established under the EPBC Act and aligned with the Victorian native vegetation controls. The *Melbourne Strategic Assessment (Environment Mitigation) Levy Act 2020* (MSA Act) was created to strengthen, improve, and sustain the MSA program. DELWP is responsible for implementing and administering the MSA program.

## Objectives

This strategy guides how interim management of private land in the WGR will be prioritised and delivered to support achievement of the conservation outcome for NTG.

The objectives of this strategy are to:

* meet the commitments to the Commonwealth Government as part of the MSA Program Report
* meet the recommendations of the VAGO as part of the independent assurance report
* provide appropriate, fit-for-purpose incentives and support to landholders and lessees to help them manage their land for conservation, or manage their land in a sustainable way that reduces threats to biodiversity and cultural values (while ensuring incentives and support is strategic, allocated in an open, equitable and transparent manner and considers barriers to participation)
* significantly increase the collection of targeted, ecological data (assets, threats, and management outcomes) for evidence-based decision making by embedding MSA-funded ecological surveys into incentives and support programs
* ensure that landholders and lessees are actively and regularly engaged to act to:
  + reduce the risk of allowing their land to degrade
  + ensure they do not apply inappropriate management techniques that may be destructive
  + comply with their legal obligations under the *Catchment and Land Protection Act 1994* (CALP Act)
  + communicate useful information on the oral history of their land, including land-use practices and histories of social, community, and land management changes over time
* explore novel approaches to achieving conservation outcomes in the interim period and implement approaches where feasible, cost-effective, and prioritised
* foster partnerships with local councils and catchment management authorities to bolster capacity to engage landowners and deliver appropriate incentives and support for interim management
* investigate and address barriers to landholder participation, where appropriate (noting that DELWP may be unable resolve certain barriers, e.g., those under the jurisdiction of other regulatory bodies)

This strategy includes objectives that go beyond the requirements of the EPBC Act, the Commonwealth Government’s approvals for urban development issued under the EPBC Act, and the MSA Act. The broader cultural and social objectives of this strategy is to do the following:

* support the Wadawurrung, Bunurong and Wurundjeri People to achieve their goals for the WGR through respectful and meaningful collaboration
* identify and protect social, cultural, and ecological heritage values of the area where it is conducive to achieving the NTG conservation outcome, particularly sites that are important to Wadawurrung, Bunurong and Wurundjeri Peoples, and
* use the WGR to learn and communicate knowledge about the environment.

The MSA Act allows money collected under the MSA Act to be spent on, among other things, the management of land, and the carrying out of other activities on land, for the conservation of NTG. When spending money collected under the MSA Act to achieve the conservation objective, DELWP will look at opportunities to achieve the broader cultural and social objectives as well.

Other fund sources may be explored during the implementation of this strategy. There is likely to be greater flexibility concerning how money from other fund sources is spent.

## Principles

To ensure the objectives of this strategy are upheld, the following principles will be applied:

* deliver interim management on private land in the WGR as the state progressively acquires it over time
* establish and manage interim management initiatives on private land in the WGR through partnerships with local councils and catchment management authorities
* make well-informed decisions by considering multiple sources of knowledge including survey information, traditional knowledge, local community knowledge, land management observations and scientific data
* make well-informed and evidence-based decisions by identifying and addressing knowledge gaps
* make decisions by considering feasibility, likelihood, opportunities, risks, cost-effectiveness, and return
* collaborate with relevant landowners, lessees, Traditional Owners, authorities, and community groups to facilitate sustainable land use planning of high priority areas and capture oral history
* focus engagement and protection of high priority areas
* build and maintain strong relationships with landowners, lessees and the local community through consistent engagement and communication sharing
* apply adaptive management to guide interim management decisions,
* continuously review, learn from, and improve upon land management initiatives and interventions.

There are a number of dynamic factors which create uncertainty that this strategy must account for to achieve its objectives. These are:

* current knowledge gaps on vegetation condition and both ecological and cultural values to inform prioritisation of property selection,
* landowner responsiveness and willingness to participate,
* the outcome of voluntary negotiations with landowners and lessees to protect priority areas and/or employ sustainable agriculture on their properties,
* fluctuating annual revenue from the Environment Mitigation Levy imposed on urban development regulated under the MSA Act,
* on sale of private land to a third party,
* local environmental factors, i.e., seed storm and wildfire events, and
* major environmental factors, i.e., global pandemic and climate change,

These factors must be monitored and decision making adapted as circumstances evolve.

# The Natural Temperate Grassland ecosystem

## Definition

The EPBC-listing advice on NTG describes the ecological community (TSSC, 2008). The definition is focussed on the characteristics of the geology and vegetation. In the WGR, NTG encompasses all native grassland vegetation on Basalt.

The following condition criteria must also be met for NTG to exist:

* The total perennial tussock cover represented by the native grass genera *Themeda*, *Austrodanthonia*, *Austrostipa* or *Poa* is at least 50%, **OR**
* If the total perennial tussock cover represented by the above four native grass genera is less than 50%, then the ground cover of native forbs (wildflowers) is at least 50% of total vegetation cover during spring-summer (September to February), **OR**
* The cover of non-grass weeds is less than 30% of total vegetation cover at any time of the year.

In addition to the above, the conservation value of a patch of NTG is enhanced if it shows any of the following features:

* A high native plant species richness
* Large patch size
* Minimal weed invasion
* Presence of threatened plant and/or animal species
* Presence of natural exposed rock platforms and outcrops, or
* Presence of mosses, lichens or a soil crust on the soil surface.

## Understanding the system: the Werribee Plains environment

This section is replicated from the Interim Management Plan.

This section summarises the current ecological understanding of the NTG ecosystem to be managed (it is not a comprehensive literature review). Native grasslands are the primary focus.

### Geomorphology

The nature of the terrain and soils is a primary determinant of the pattern of vegetation, land-use history, and the options available for management and restoration. The WGR is located entirely on relatively recent lava flows, between 4.5 and 2.2 million years old (Stewart 1977, Rosengren 199, Hare *et al.* 2005, Gray and McDougal 2009). These form flat or undulating plains. Drainage patterns are irregular and poorly formed, and are still influenced by the paths of lava flows. The soils are fertile (by Australian standards), shallow and heavy (small-particles), with many rocks at or near the surface. The Mt Cottrell lava shield is considered to be a feature of state significance (Rosengren 1986).

### Natural grasslands

Perhaps the most obvious feature of the area is the scarcity of trees. Historic sources show that most of the WGR area was treeless or thinly-wooded at the time of colonisation (1835). The cause of treelessness in lowland grasslands has been the topic of much discussion in southern Australia (Sutton 1916-1917, Patton 1935, Willis 1964, Lang 2008) and worldwide (e.g., Coupland1979). It is generally agreed that moisture stress excludes trees. This is a function not of rainfall alone, but also the soil. Soil with a high proportion of fine particles (‘heavy’ soils), such as those formed on recent basaltic flow, make water less available for uptake by plants. Soil cracking in summer, a common feature of heavy soils, exacerbates summer drought stress. Those trees that do not grow on the Werribee Plains grow in areas where ‘lighter’ soils have been deposited or are exposed (e.g., Grey Box forests and Buloke Woodlands); on rocky rises where difficulties of the clay soil are moderated (e.g., She-oaks and large shrubs); in wetter depressions (e.g., Red Gums), or because they have been planted and have bypassed the need to survive as seedlings. Frequent fire is also cited as a cause of treelessness in many places (e.g., Hulbert 1984, Lunt 1997), and it is likely to have played a secondary role in preventing the establishment of woody plants.

The vascular flora of the Werribee Plains is well known (Sutton 1916-17, Patton 1935, Willis 1964, Stuwe and Parsons 1977, Carr 1999). The treeless plains naturally support vegetation dominated by tussock grasses (Poaceae), particularly Kangaroo Grass *Themeda triandra*, Spear-grasses *Austrostipa* spp., and Wallaby-grasses *Austrodanthonia* spp.. Between the tussocks grow a diversity of other plants, notably broad-leaved native herbs, often with white, yellow or blueish flowers. Many of these are daisies (Asteraceae), with Lemon Beauty-heads *Calocephalus citreus* and Common Everlasting *Chrysocephalum apiculatum* being particularly abundant at relatively intact sites. The prominence of the Poaceae and Asteraceae are a reoccurring feature of temperate grasslands world-wide (Coupland 1979). Many other plants from a variety of families also occur. Prominent are lilies that retreat underground over summer (such as *Arthropdium* spp.), herbs or sub-shrubs with very deep roots (such as *Pimelea* and *Cullen* spp.), dwarf chenopod shrubs (such as *Maireana* spp.) and herbs that spread vegetatively (such as *Asperula conferta*). Some plants show interesting affinities with inland Australia, highlighting the area’s status as on outlying island or aridity south of the Great Dividing Range.

Less well known is the non-vascular flora. A crust of native, tiny photosynthetic organisms often form on the soil. It is made up of bryophytes (mosses, liverworts), lichens and algae (Scarlett 1994, Morgan 2004, Bowker 2007). This crust may plan important ecological roles such as soil-binding and nutrient fixation (Bowker 2007). The composition of the crust in the WGR area is known from only a few studies, but clearly varies between sites (Scarlett 1994, Morgan 2004).

Grassland vegetation is well adapted to the removal of surface biomass by fire, or grazing by some herbivores. In fact, the lack of biomass removal is a threat: when good rainfall promotes vigorous grass growth a diversity of herbaceous species may be excluded (Stuwe and Parsons 1977). After fire, most plants re-sprout quickly from underground storage organs such as tubers and corms. The subterranean energy stores of fire-tolerant non grass species were an important food source for aboriginal people, promoting the use of fires as a management tool (Gott 1999).

All native grassland vegetation within the WGR is considered NTG (TSSC 2008). Victoria uses Ecological Vegetation Classes (EVCs) to describe the vegetation types (see [www.environment.vic.gov.au](http://www.environment.vic.gov.au)). The grassland vegetation of the Werribee Plains is almost all referrable to Plains Grassland (EVC 132), which is endangered throughout the state. Small areas support very open woodland of Buloke, and these areas are similar to Plains Woodland (EVC 803, also considered endangered).

The WGR supports three plant species that are EPBC-listed:

* Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*). Critically Endangered,
* Clover Glycine (*Glycine latrobeana*). Vulnerable,
* Large-fruit Fireweed or Large-headed Groundsel (*Senecio macrocarpus*). Vulnerable.

Several other EPBC-listed plants probably once occurred within the reserve and will be candidates for reintroduction from nearby areas in future:

* Button Wrinklewort (*Rutidosis leptorhynchoides*). Endangered,
* Small Golden Moths Orchid (*Diuris basaltica*). Endangered,
* Sunshine Diuris (*Diuris fragrantissima*). Endangered.

### Other native vegetation

Two permanent streams cross the WGR (Figure 1). These support bands of riparian and aquatic vegetation (described by many EVCs). River Red Gums *Eucalyptus camaldulensis* line the streambanks, along with shrubs such as River Bottlebrush *Callistemon seiberi*. The rivers are bordered by spectacular, steep rocky slopes, with large, exposed basalt blocks. They support a range of woody vegetation not generally found elsewhere, including shrubs such as Hop Busg *Dodonea viscosa*, Rock Correa *Correa glabra*, Sweet Bursaria *Bursaria spinosa* and several species of wattle *Acacia* spp. Rocky rises on the lava plains are also covered naturally by shrub, notably Hedge Wattle *Acacia paradoxa*. Woody plants can persist in these rocky locations because the factors excluding them from the plains are relieved. In the WGR area, the EVCs Escarpment Shrubland (EVC 895) and Stony Knoll Shrubland (EVC 654) are used to describe these areas.

There are many wetlands within the reserve (over 50). These range from ephemeral drainage lines that are barely distinguishable from the surrounding grasslands to large depressions that support ancient River Red Gums. Many of the wetlands have been formed as a result of the haphazard surface topography of the recent lava flows. Some have no apparent relationship to the surrounding streams. All wetlands on the Werribee Plains are to some degree ephemeral. The limited historic record suggests this is a long standing, natural situation (e.g., Nixon 1859). When dry, their heavy soils are subject to deep cracking, which allows water to disappear underground. After drought-breaking rains, which may cause pooling of water elsewhere on the grassland plains, the wetlands may be the driest places in the landscape. Not until sustained rainfall will they hold water; and then they may remain full for years. These wetlands are thus one of the harshest and most extreme places for perennial vegetation to grow: plants must be tolerant of prolonged drought, and prolonged inundation.

The more substantial wetlands support low, spreading forms of River Red Gum Eucalyptus camaldulensis, frequently with large expanses of Barren Cane-grass *Eragrostis infecunda*, clumps of tangled Lignum *Muehlnbeckia florulenta*, and a range of herbs. Other wetlands support a range of herbs, with few grasses and no woody plants, while others support a sward of grasses including Common Tussock-grass *Poa labillardierei*. The wetlands require a number of EVCs to adequately describe their diversity. The most prominent include Red Gum Swamp (EVC 292), Lignum Wetland (EVC 104), Ephemeral Drainage Line Grassy Wetland (EVC 678, Cane Grass Wetland (EVC 291) and Plains Grassy Wetland (EVC 125).

### Indigenous land use and culture

The Werribee Plains has a long history of indigenous culture practice and land management, being nurtured for thousands of years by the Wadawurrung, Bunurong and Wurundjeri peoples. Root crops were actively managed through cultural burning, and some re-planting of plant material. Very early accounts of the Werribee Plains confirm that they were frequently burnt (Fleming 1803, Hovell 1824 (in Moloney 2006), Batman 1835, King 1837 (in Moloney 2006)). Unfortunately, we know little of the timing, coverage or frequency of management burns. Most of the herbaceous species within subterranean storage organs are edible and were available in large numbers. The Murnong (*Microseris* sp.) is the most frequently mentioned and was once extensive on the Werribee Plains (Gott 1999). Game would no doubt have been available on the plains, and fish including eels in the rivers; but we have little direct evidence of their utilisation. Despite being productive, the plains lacked cover, and it has been suggested that they were inhabited seasonally or sporadically (VEAC 2010). Regardless of the pattern of use, several remaining campsites and numerous artefact sites attest to significant occupation (Massola 1969). As well as utilitarian sites, at least one significant cultural site is known: the Wurdi Youang stone arrangement, located on Aboriginal land within the WGR area (Lane 2009).

# Land use legacy and future management of the Western Grassland Reserve

Introductory text.

## Threats acting within the Western Grassland Reserve

Threats to ecological systems are generally complex, involving social, economic, ecological, evolutionary and stochastic elements. The threats facing the WGR are no exception. They are profoundly interactive. The threats considered important are listed below according to the land-use practice or ecological phenomena that drives the threatening process. The dot points describe the impact of the process and allow cross-references to be made between processes that influence each other.

It is important to note that the impact of each threat may change over time. Some threats had a massive impact in the past, and now have more moderate, ongoing impacts (i.e., sheep grazing). While others are only now emerging (i.e., climate change) or may act at any time in large or small increments (i.e., expansion of cropping). Table 2 lists the persistent threats recognised by DELWP to be threatening the values within the WGR.

Table 2: Threats acting within the WGR

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| Threat | Impact |
| Destruction of the soil and rock layer (i.e., de-rocking, rock-pushing, cropping, and crop expansion) | * Reduction of grassland extent, leading to reduced populations of native species, * Increased fragmentation of relic habitat. |
| Weed invasion and spread | * Competition with native plants, * Alteration of grassland structure. |
| Fertilizer application leading to nutrient over-enrichment | * Encouragement of weeds, * Imbalance in bryophyte, algal, fungal and bacterial assemblages. |
| Application of ‘biocides’ (i.e., herbicides, insecticides, including locust control) | * Inadvertent destruction of beneficial native species, * Loss of services provided by native species (i.e., Locust biomass control) |
| Stock grazing | * Grazing animal consuming important plants, * Over-grazing excessively reducing biomass, * Cattle causing damage to the soil (plugging), * Stock causing damage to cultural sites (dry stone walls and riverbanks), * Increased variability between nutrient enriched and depleted areas, * Possible reduction in selective biomass control by native species. |
| Over-abundant native herbivores | * Grazing animal consuming important plants, * Over-grazing excessively reducing biomass, |
| Introduced predators | * Reduction in number of native animals and plants, * Extinction of native animal species, * Reduction in selective biomass control and soil disturbance by native species. |
| Introduced herbivores | * Rabbit warrens providing niches for weeds, * Rabbits consuming important plants, * Rabbits excessively reducing biomass. |
| Exotic invertebrates | * Competition with native species that perform important ecological functions, * Excessive consumption of plant material, including native germinants. |
| Lack of burning leading to biomass accumulation | * Reduction in germination space for some native species, * Alteration of grassland structure (reduction of inter-tussock space). |
| Loss of species with important functions | * Loss of native animals that influence natural grassland and soil properties, * Loss of plant pollinators and dispersers, * Loss of native predators that control other animals, * Loss of tussocks that control stable grassland structure, * Loss of burning refugia. |
| Spatially fragmented land-use patterns | * Increase in native grassland edges, greater exposure to external threats, * Increased risk of local losses of important species. |
| Population and genetic decline | * Reduced fitness or fecundity of organisms due to genetic problems, * Loss of unique, locally adapted ecotypes, * Increased risk of chance extinction for small populations, * Loss of evolutionary potential. |
| Disruption of hydrological patterns | * Dams on ephemeral drainage lines depriving wetlands of water, * Dams on major streams causing pooling and disrupted flows, * Groundwater extraction. |
| Planting | * Ecologically inappropriate restoration, * Genetic pollution, through use of plants with inappropriate provenance, * Replacement of open areas by trees (and increased risk of aerial predation), * Changes in vegetation structure and decomposition processes. |
| Vehicle use | * Soil and crust damage from vehicles (which may in turn encourage weed invasion) * Transportation of weed propagules (including by slashers) * Death to animals or physical destruction of animal habitat (burrows, etc.). |
| Vandalism | * Damage to cultural heritage sites (including dry stone walls), * Removal of cultural material (including aboriginal artefacts), * Dumping of spoil and rubbish, leading to ugliness, soil invasion and invasion of pests, * Damage to fences and other necessary farm infrastructure. |
| Climate change and drought | * Altered conditions leading to poor germination, * Drought leading to increased mortality of native species, * Niche shifts causing uncertainty in management goals. |
| Lack of knowledge or capacity | * Loss of indigenous management practices and cultural associations, * Lack of scientific inventory knowledge, * Inability to judge the risks and benefits of competing management interventions, * Insufficient or insecure funding to manage, * Insufficient expertise to manage (including in government agencies) |

## Regulation and compliance

X.

## Cultural heritage in a living landscape

The different phases of historic land-use have left physical traces on the landscape. These include several remaining campsites and numerous artefacts scatters from indigenous management and use. Establishing the WGR will help in preserving these cultural assets.

Under the Victorian *Aboriginal Heritage Act 2006*, the Wadawurrung Traditional Owners Aboriginal Corporation, Bunurong Land Council Aboriginal Corporation and Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation are the statutory authorities for cultural heritage and will be engaged in this capacity, as required.

## Future management of the Western Grassland Reserve

X.

# Management of private land in the interim period

## Overview

Reiterate the objective of interim management and provide an up-to-date overview of the current ownership and land uses of the private land in the WGR.

## Landowner engagement and participation

X.

## Collecting biodiversity information on private land

X.

### Prioritising areas for protection

### Melbourne Strategic Assessment Adaptive Management Working Group

## Interim management delivered through strategic partnerships

## Adaptive management and continued improvement

# Funding interim management

## Funding for interim management outcomes

The cost for achieving the interim management objectives identified in this strategy will be funded by an Environment Mitigation Levy imposed in urban development in Melbourne’s Growth Areas. The levy is a legal requirement imposed on development collected under the MSA Act. The Commonwealth Government’s approval for urban development under the EPBC Act requires that the conservation outcomes for the MSA program are delivered as urban development occurs. Current forecasting indicates urban development of the growth areas is likely to near completion between 2050 and 2060. Accordingly, the levy amounts will be adjusted over time to keep pace with inflation and other changes to land purchase, land management and administration costs. The funds to deliver interim management are collected as land is subdivided for development. The rate of implementation is therefore determined by the rate at which development occurs and levies are paid. Estimating the rate of development over a long time period is extremely difficult which makes committing to a timeline for land protection problematic.

Revenue collected from the Environment Mitigation Levy is held in a trust account managed by DEWLP and can only be spent on the delivery of the conservation outcomes.

The applicable levy rate for clearing a hectare of native vegetation or habitat type is calculated by dividing:

* the total cost of delivering the conservation outcomes which mitigate or offset the impact, by
* the number of hectares of native vegetation or habitat type.

Delivering conservation outcomes in the WGR – which includes interim management – is directly attributed to mitigating clearing of native vegetation patches and habitat for threatened species. As such, the cost for establishing and managing the WGR for conservation outcomes are delivered from the Native Vegetation, Spiny Rice-flower, Golden Sun Moth and Striped Legless Lizard component levies.

Estimating the timing and rate of development and therefore the cost of delivering the conservation outcomes over a long period of time involves an inevitable amount of uncertainty. The MSA Act requires a review of the estimates costs and levy rates every five years to ensure that cost estimates remain accurate.

## Funding for cultural heritage or social outcomes

Achieving conservation outcomes in the WGR will in many cases be aligned with achieving cultural heritage and social objectives outlines in this strategy. Where achieving cultural heritage and social objectives are independent of achieving conservation outcomes, they will be funded through alternative funding sources, where possible. DELWP will work with the Melbourne Strategic Assessment Budget Working Group and key stakeholders and delivery partners to identify and seek funding sources and partnership opportunities for activities that are not relatable to achieving conservation outcomes.

# Monitoring and reporting on progress towards conservation outcomes

Under the MSA Act, the Commissioner for Environmental Sustainability is required to report publicly on the MSA program conservation outcomes every two years. The *Melbourne Strategic Assessment Monitoring and Reporting Framework, 2015* (MRF) outlines how DELWP will measure progress towards the conservation outcomes and is based on the principles of adaptive management. The MRF includes regular reporting on interim management in the Western Grassland Reserve, including:

* the number of landowners and properties participating in interim management, and
* the type and amount of interim land management undertaken (i.e., hectares of weed control).

Routine progress reporting to DELWP of management actions undertaken by landowners and lessees will be a key requirement of all interim management funding agreements made. This progress reporting will enable an understanding of vegetation state changes in response to the management actions applied, and to inform the adaptive management approach to land management. Access to private land to enable monitoring of vegetation will be required through negotiated conditions in interim management funding agreements. The opportunity to collet monitoring data will depend on the number of, and duration of time that, landowners and lessees agree to participate in interim management incentives and support programs.

To demonstrate if the management approaches applied during interim management are conserving the composition, structure, and function of NTG, the private land will be monitored against the same series of Key Performance Indicators (KPIs) used for the WGR as a Crown land reserve. Management approaches will be considered successful if:

* the extent of NTG is stable or increasing
* the quality of NTG vegetation is stable or improving
* the threatening processes to NTG and species habitat are discontinued or minimised
* the impacts of threatening processes are reduced, and/or
* sustainable land management is being applied across private property.

The MRF is a MSA program-wide framework which will need to be reviewed and updated to align with the objectives and scope of this strategy. The KPIs need to align with the program outputs and outcomes for NTG in the MRF. The Adaptive Management Working Group may develop additional KPIs that report on the specific interim management objectives of this strategy. The MRF will have an important role in providing feedback to inform cycles of adaptive management for both interim and Crown land management. Findings will identify the effects of current management actions in order to adapt future management and will identify knowledge gaps to be addressed through further research.

Maps showing weed distributions and interim management efforts across the WGR can be found on the MSA program website at <https://www.msa.vic.gov.au/conservation-actions/western-grassland-reserve/western-grassland-reserve>. These will be periodically updated as new data becomes available.

# Timing of actions

A summary of the key actions required to deliver this strategy is presented in Table 2. Current actions have already begun, immediate actions are planned to commence within six to 12 months and medium term actions are planned to commence in one to two years after the publication of this strategy.

Table 2: Actions and the estimated timing

|  |  |  |  |
| --- | --- | --- | --- |
|  | Action | Timing | Lead agency |
| 1 | Develop and commence a Landowner and Community Engagement Program | Immediate and ongoing until the WGR is complete | DELWP |
| 2 | Formalise a Partnership Agreement with the Department of Jobs, Precincts and Regions to utilise remote sensing technology to collect up to date information on biodiversity condition and extent and weed extent | Immediate | DELWP |
| 3 | Develop a scientific method for assessing the condition of ecological values on private land in the WGR to inform and improve interim management strategies | Current | DELWP |
| 4 | Undertake on-ground site assessments in Spring 2021 and 2022 where Private landowners agree to provide access to collect information on biodiversity condition and extent and weed extent | Current | Wyndham City Council |
| 5 | Revise the method for monitoring and surveying NTG under the MSA program to better track degradation risk and improve decision making for prioritising properties for protection via interim management and/or acquisition. | Current | DELWP |
| 6 | Design and commence interim management programs aimed at conserving NTG and biodiversity values in the WGR as well as preventing noxious and emerging weed establishment and spread.  Imbed ecological values condition assessment surveys across all interim management programs and initiatives. | Immediate and ongoing until the WGR is complete | DELWP |
| 7 | Investigate Partnership Agreements with Port Philip and Westernport Catchment Management Authority and Melton City Council to deliver interim management initiatives | Immediate | DELWP |
| 8 | Engage with Traditional Owners to investigate how interim management programs and initiatives can support Traditional Owners goals for healthy Country. | Immediate and ongoing until the WGR is complete | DELWP |
| 9 | Ensure consistent data collection standards are applied across all delivery partners. | Immediate |  |

1. Footnote text here

# References

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Threatened Species Scientific Committee (TSSC) (2008). Commonwealth Listing Advice on Natural Temperate Grassland of the Victorian Volcanic Plain. [Online]. Department of the Environment, Water, Heritage, and the Arts.

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# Appendix

Add appendixes.