McLeans Grassland Park Management Plan 2024





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Preface

The 2024 Management Plan for McLeans Grassland Park has been prepared by the Christchurch City Council in accordance with the Reserves Act 1977.

The draft Management Plan was approved by the Waimāero Fendalton-Waimairi-Harewood Community Board on April 2025.

> Once adopted, it is expected that this Management Plan will be operative for approximately 20 years before being reviewed again.

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1 Introduction

1.1. Purpose of the plan

This reserve management plan is to guide the management, protection, and use of McLeans Grassland Park, focusing on preserving its unique ecological, landscape, and cultural values. As one of the largest remaining areas of undisturbed alluvial grassland on the Canterbury Plains, the reserve is crucial for conserving biodiversity and safeguarding threatened and at-risk species.

The plan incorporates input from mana whenua Ngāi Tūāhuriri and the community, aligning with the Mahaanui Iwi Management Plan. It provides a framework for evaluating proposed activities for sustainable use of the reserve, balancing conservation with opportunities for public enjoyment while addressing challenges like climate change and invasive species.

1.2. Reserve location

McLeans Grassland Park is a 156-hectare scenic reserve located on the north-western edge of the city, west of the airport, between McLeans Island Road and the Old West Coast Road. It borders Environment Canterbury (ECan) land to the west, and is surrounded by residential lifestyle blocks, quarrying, farming, and airport activities.

2 Vision statement

McLeans Grassland Park is a thriving ecological heritage area where indigenous biodiversity, cultural values and landscapes are protected, enhanced, and restored. Conservation is balanced with compatible recreational opportunities, ensuring that all activities respect and preserve the reserve's natural values for future generations.



Micro shrublands of dwarf heath (Styphelia nesophila)



3 Management objectives and policies



3.1 Ecological protection, enhancement, and restoration

OBJECTIVES

- 1. The reserve's indigenous biodiversity and ecological values are protected and enhanced.
- 2. The resilience of rare and threatened species in is strengethened.
- 3. Depleted shrublands and tussock grasslands in are restored.
- 4. Natural regeneration of native plants is supported.
- 5. The impacts of public use and nearby land activities on biodiversity is minimised.
- 6. Research and education on the reserve's biodiversity is promoted.
- 7. Locally extinct species are reintroduced to aid ecosystem recovery.

POLICIES

- 1. Use research-based restoration plans and eco-sourced native plants.
- 2. Undertake integrated plant and animal pest management strategies aligned with Council and ECan policies and guidelines, and the Mahaanui Iwi Management Plan.
- 3. Permit strategic grazing practices and buffer planting to support native plant recovery.
- 4. Protect bird breeding during critical seasons.
- 5. Promote public awareness and education of the reserve's values.



3.2 Recreation and access

OBJECTIVES

- 1. Free and accessible visitor access is provided to the reserve to enjoy the natural environment.
- 2. Recreation is compatible with the reserve's ecological and landscape values.

POLICIES

- 1. Avoid permanent recreational infrastructure unless necessary to mitigate adverse environmental effects or for safety.
- 2. Limit vehicle access to authorized maintenance vehicles or emergency services.
- 3. Manage public access and informal walking routes to protect ecologically sensitive areas and wildlife.
- 4. Limit developed car parking to a level suitable for regular use of the reserve.

3.3 Occupation and use

OBJECTIVES

1. Public use of the reserve must support its ecological and landscape values.

POLICIES

- 1. Formal agreements are required for organised activities, aligned with the reserve's objectives.
- 2. Commercial activities will be permitted only if they align with the reserve's natural values.

3.4 Fire management

OBJECTIVES

1. Indigenous vegetation, wildlife and users will be protected from fire.

POLICIES

- 1. Maintain an operational fire management plan.
- 2. Schedule restoration and operational activities during low fire risk periods.
- 3. Ensure vehicles have spark management systems to minimize fire risk.
- 4. Manage large exotic grass areas to reduce fire risk.
- 5. Establish strategic firebreaks to prevent the spread of fire.
- 6. Maintain accessible water supplies for firefighting.

3.5 Buildings, structures and development

OBJECTIVES

- 1. Buildings and structures will be minimised preserve natural landscapes and ecological values.
- 2. Cultural and historical values will be preserved.

POLICIES

- 1. Permit structures only if essential for management and aligned with ecological values.
- 3. Allow visitor facilities like walk-bridges and signage compatible with natural values.
- 4. Preserve historical artefacts.
- 5. Te Ngāi Tūāhuriri will guide any design representing Māori culture.

4 Reserve values



4.1 Cultural values

Ko Ngāi Tūāhuriri, te mana whenua o tēnei rohe. Ngāi Tūāhuriri, are the people of the land in this area.

The reserve and its surrounding area hold great cultural significance for Ngāi Tūāhuriri and Ngāi Tahu, with Ngāi Tūāhuriri exercising rangatiratanga over any kōiwi tangata and taonga tūturu found here.

Situated on the floodplain of the Waimakariri River (awa), the reserve is deeply intertwined with the cultural identity of mana whenua, reflecting their connections to whakapapa and tūrangawaewae. Historically, the Waimakariri River served as a vital source of mahinga kai, especially as access to other traditional sites became severely restricted due to land seizures and government legislation. Unfortunately, the river's degradation has hindered mana whenua's ability to practice mahinga kai in the lower catchment areas. Though the reserve is some distance from the current channel of the Waimakariri River (awa), the Māori concept of 'Ki uta ki tai' (from the mountains to the sea) remains a guiding principle for Papatipu Rūnanga, emphasising the interconnectedness of land, water, biodiversity, and the sea in land management.

The whenua surrounding the Waimakariri, including the reserve, forms part of a broader cultural landscape rich with traditional place names and features that reflect extensive Māori usage. Archaeological sites, such as ovens and artifacts located west of the reserve, provide evidence of historic mahinga kai activities. Papatipu Rūnanga views the area around the reserve as potentially significant for Māori archaeology, with many sites regarded as 'Ngā tapuwae o ngā tūpuna' (the footsteps of our ancestors), reflecting the ancestral Māori occupation of Te Waipounamu.

4.2 Ecological and landscape values

This reserve is nationally significant for its indigenous biodiversity, representing one of the largest remaining areas of undeveloped alluvial soils on the Canterbury Plains. It supports critical dryland ecosystems that provide essential habitats for numerous threatened and at-risk species. In a landscape where less than one percent of the original ecosystems remain, McLeans Grassland Park plays a vital role in the protection and restoration of these acutely threatened environments, contributing significantly to national conservation efforts.

McLeans Grassland Park is situated within the Low Plains Ecological District (ED) of the Plains Ecological Region (ER). Its location corresponds to the J2 land environment (LENZ), characterized by mild, dry climates, high solar radiation, and moderate annual water deficits. The underlying substrate primarily consists of greywacke alluvium, with coarse gravels and sands. The soils belong to the Rangitata 6 series, which are generally recent, shallow, well-drained, moderately fertile, and exhibit very low moisture retention.

Despite its seemingly uniform appearance, the reserve features considerable fine-scale topographical and aspect variation, including numerous stony channels and mounds of deeper soils. These variations create important habitats that enhance the indigenous biodiversity of the area, making the park a crucial sanctuary for multiple threatened and at-risk species of flora and fauna. Many of the native species recorded in the Reserve can be seen <u>here</u> *McLeans Island grassland park (Christchurch City Council),* $NZ \cdot iNaturalist NZ$.

4.2.1 Threatened Plants

The reserve is home to several threatened plant species, reflecting its importance in preserving New Zealand's unique biodiversity. Below is a list of these species, along with their common names and threat rankings.

In addition to these threatened species, the reserve supports several plants that are rare at local and regional levels. These include Acaena anserinifolia, Carex breviculmis, Cheilanthes sieberi, Convolvulus waitaha, Coprosma atropurpurea, Styphelia inesophila, Ophioglossum coriaceum, Prasophyllum colensoi, Thelymitra pauciflora, Thelymitra longifolia, Scleranthus uniflorus, Sophora prostrata and Stackhousia minima.

The presence of these species underscores the reserve's critical role in conserving and protecting biodiversity that is no longer commonly found within the Plains Ecological Region.

Species	Common name	Threat rank ¹
Olearia adenocapa	Plains Olearia	Threatened – Nationally critical
Geranium retrorsum	Turnip-rooted geranium	Threatened – Nationally vulnerable
Muehlenbeckia ephedroides	Leafless pohuehue	Threatened – Nationally vulnerable
Raoulia monroi	Fan-leaved daisy	Threatened – Nationally vulnerable
Carex buchananii	Buchanan's sedge	At risk – declining
Carmichaelia australis	Common broom	At risk – declining
Geranium solanderi	Solander's geranium	At risk – declining
Leptinella serrulata	Button daisy	At risk – declining
Pterostylis tristis	Multi-headed orchid	At risk – declining
Raoulia australis	Scabweed	At risk – declining
Rytidosperma exiguum	Dwarf bunch grass	At risk – declining
Zoysia minima	Prickly couch	At risk – declining

Threatened plants

¹ de Lange P.J., Gosden J., Courtney S.P., Fergus A.J., Barkla J.W., Beadel S.M., Champion P.D., Hindmarsh-Walls R., Makan T. and Michel P. 2024: Conservation status of vascular plants in Aotearoa New Zealand, 2023. New Zealand Threat Classification Series 43. Department of Conservation, Wellington. 105 pp. (PDF 2,547 KB)

4.2.2 Invertebrates

McLeans Grassland Park plays a crucial role in providing vital habitats for various invertebrate taxa, including several threatened, at-risk, and locally rare species. Numerous surveys conducted over the years have highlighted the reserve as a significant site for these invertebrates. Among its notable inhabitants is the locally endemic "boulder copper" butterfly (Lycaena sp), which is found exclusively in the McLeans Island area.

While we have some knowledge of specific species present in the reserve, the complete range of invertebrate biodiversity remains largely unknown. Continued exploration and research are necessary to fully understand the richness and diversity of invertebrate life in this unique ecosystem.



Mcleans boulder copper butterfly

4.2.3 Birds

The reserve provides habitats for multiple native bird species. Below is a list of some of the bird species found within the reserve, along with their common names and threat rankings based on the 2017 revision.

Species	Common name	Threat rank 2017 revision ²	
Anthus novaeseelandiae	Pipit	Declining	
Charadrius bicinctus	Banded dotterels	Nationally vulnerable	
Chlidonias albostriatus	Black-fronted tern	Nationally endangered	
Circus approximans	Harrier hawk	Not threatened	
Egretta novaehollandiae	White faced heron	Not threatened	
Haematopus finschi	South Island Pied oyster catchers	Declining	
Haematopus unicolor	Variable oyster catchers	Recovering	
Tadoma variegata	Paradise shelduck	Not threatened	

Other birds that are infrequently seen include the whitefronted tern and black-fronted tern.

4.2.4 Lizards

McLeans Grassland Park is home to several lizard species, each playing a vital role in the ecosystem. Below is a list of the lizard species found in the reserve, along with their common names, scientific names, and conservation status.

Common name	Scientific name	Conservation status
Canterbury spotted skink	Oligosoma aff. Lineoocellatum 'central Canterbury'	Nationally critical
Southern grass skink	Oligosoma aff. olychrome Clade 5	At risk – declining
Canterbury/Waitaha gecko	Woodworthia cf. brunnea	At risk – declining
McCann's skink	Oligosoma maccanni	Not threatened

² Robertson et al. 2017. Conservation status of New Zealand birds, 2016. Department of Conservation, Wellington New Zealand.

 ³ Hitchmough R.A., Barr B., Knox C., Lettink M., Monks J.M., Patterson G.B., Reardon J.T., van Winkel D., Rolfe J. and Michel P. 2021: Conservation status of New Zealand reptiles, 2021. New Zealand Threat Classification Series 35. Department of Conservation, Wellington. 15 pp. (PDF, 3,224K). NOTE: This publication was updated in February 2024 to include a draft revised assessment of Oligosoma lineoocellatum (Canterbury spotted skink).
⁴ Not recorded in the reserve but a population is nearby at Orana Park.

4.3 Recreation values

While McLeans Grassland Park remains relatively unknown to the broader public, it holds significant value for those who do visit. The reserve is highly valued for its open spaces and rich natural heritage.

The Christchurch 360 Trail runs through the reserve offering visitors the chance to explore its unique natural history, rare dryland ecosystems, and the conservation of highly threatened species.

The reserve attracts a diverse range of visitors, including stargazers and aeroplane enthusiasts, who are drawn to the expansive and unobstructed views, particularly under the dark skies. Additionally, individuals seeking respite from the challenges of everyday life find solace within the reserve's peaceful environment.

4.4 Historic values

Within the reserve is an original Dobson Benchmark stone (No 5), part of a series named after Edward Dobson who was appointed as Canterbury's first Provincial Engineer in 1854. Originally, 28 stones were placed as benchmarks at 800m (½ mile) intervals over a total distance of approximately 21.7km (13.5 miles). They were established in the 1860s to aid early river engineering, helping measure changes in river channels and riverbed elevation. Today, only nine original stones remain in their original locations, two have been removed, and the remaining 17 are presumed to have been lost to development.



5 Issues to be addressed

The reserve faces significant challenges due to past ecological degradation, requiring strategic management of grazing, pest control, and restoration efforts. Enhancing research, implementing buffer zones through boundary planting, and carefully managing visitor access will be critical to balancing conservation and recreational use.

5.1 Reserve area

The Council has decided to legalise a narrow part of the reserve area along its northern boundary as road and stop the unformed legal road running through the eastern part of the reserve area. Survey plan SO 474377 outlining these changes was approved by Land Information New Zealand on 1 September 2014.

Sections 31–34 and 41–45 SO 474377, totalling 2.4839 hectares of the reserve, are to be acquired for road. Section 25 SO 474377, 1.7751 hectares, is road to be stopped and could be added to the reserve giving a net loss of reserve land of 0.7088 hectares.

This process is still to be actioned.

5.2 Ecological degradation and recovery

The reserve's ecosystems have suffered significant degradation due to decades of overgrazing, fire use, and removal of native vegetation. Moss-fields now dominate, and the competition from weeds, combined with environmental stressors, makes natural recovery unlikely. Effective restoration efforts should focus on:

- Strategic Grazing and Fencing: Implementing strategic grazing to control invasive species and prevent further damage. This includes upgrading fencing, particularly rabbit-proof fencing, to manage grazing pressures and protect native vegetation. Internal fencing will facilitate grazing experiments and safeguard ecological recovery areas. Fencing undertaken to facilitate restoration planting will be small scale, sympathetic to the landscape, and will be removed once restored shrublands are sufficiently resilient to stock grazing.
- Restoration Planting: Restoration planting is necessary to reintroduce key species lost and/or to increase the numbers of species vastly reduced in abundance. However, it is important that restoration planting is sympathetic to natural composition and historical patterns, so it is authentic and does not appear contrived. Planting should initially be small scale to understand more clearly the efficacy of planting to ensure future success that in turn leads to the expansion of areas planted in any one year. Planting needs to be undertaken sensitively and in accordance to best practice for dryland ecosystems to avoid damaging other values that could be present, and to increase the likelihood of survival in harsh environments.

- Invasive Species and Pest Control: Addressing the impact of invasive plants (e.g., gorse and broom) and animals (e.g., rabbits) that hinder the regeneration of native species. Integrated pest management strategies, including predator trapping, are essential to protect vulnerable bird species nesting in the reserve.
- Knowledge Gaps in Dryland Ecosystems: The lack of understanding regarding the reserve's dryland ecosystems complicates effective management and restoration. There is a critical need for research to identify effective strategies for restoring these ecosystems and managing invasive grasses. Key actions include conducting comprehensive biological surveys, implementing monitoring programmes for threatened species, and establishing a systematic process for tracking vegetation changes.
- Loss of Gravel Habitats: Gravel habitats support a distinctive component of the reserve's 'riverbed' flora, including mat plants such as Raoulia australis and Scleranthus uniflorus. With flooding no longer occurring through the reserve, gravel areas are being colonised by taller, denser perennial vegetation (both exotic and native), leading to a significant decline in riverbed species. Opportunities to 're-create' gravel channels within the reserve should be explored where appropriate, potentially utilising areas proposed for road removal and other highly modified sites, such as land adjacent to the new water race.

5.3 Fire risk

As ecological recovery progresses and vegetation increases, the risk of fire will grow, particularly in the context of climate change making dry and windy conditions more common. Effective fuel load management, especially around the reserve's perimeter, is crucial for preventing wildfires without harming ecological values.

5.4 Buffer zones

Edge effects from neighbouring land use contribute to ecological decline by introducing dust, soil, seeds, fertilizers, and moisture, which harm native vegetation. Effective buffer zones utilizing native species, such as kanuka, are needed to mitigate these impacts. However, careful planning is essential, as existing measures like the pine shelter belt have had negative effects.

5.5 Recreation and visitor management

Given the fragility of the reserve's ecosystems, recreational activities must be strictly limited to low-impact options to protect biodiversity. The area also faces challenges such as rubbish dumping and unsafe behaviours from car enthusiasts, particularly at night. Enhanced security measures are necessary to maintain the reserve as a safe, welcoming space while preserving its natural environment.

5.6 Restoration planting

Restoration planting efforts must be thoughtfully designed to reflect the natural patterns of the ecosystem and avoid a contrived appearance. Prioritizing small-scale planting trials will ensure plant survival and ecological alignment before scaling up restoration initiatives.





6 **Resource information**

6.1 Land information

The reserve comprises the following land parcels in certificate of title 991352.

Legal description	Area
Lot 1 DP 303530	83.46 ha
Lot 3 DO 364458	6.9 ha
Lot 2 DP 303530	51.92 ha
Lot 4 DP 364458	0.0585 ha
Lot 10 DP 303530	7.46 ha
Lot 3 DP 303530	4.67 ha
Lot 2 DP 515691	1.5186 ha
Total	155.9871 ha

All these parcels are currently classified as Scenic Reserve and form part of the McLeans Grassland Park. However, Sections 31–34 and 41–45 SO 474377, totalling 2.4839 hectares of the reserve, are to be acquired for road whilst section 25 SO 474377, 1.7751 hectares, is road to be stopped and could be added to the reserve, giving a net loss of reserve land of 0.7088 hectares.

6.2 Natural history

Historically, the reserve was part of the active flood plain of the Waimakariri River, which created a wide riverbed of rocks, gravel, silt/sand bars, dunes, and semi stable islands of deeper alluvial deposits.

Information available on the pre-human vegetation and fauna of the area is limited. Fires removed much of the original woody cover that is thought to have existed across stable alluvial surfaces of the lower Canterbury Plains. Early accounts contain scant detail but describe the plains as "grassland", "fernland", "broken ground", and "sandy knolls with scattered tussocks".

"The most abundant grasses are the tussock-grass...," "A few patches of shrubs were occasionally to be found on the plains, and were formed of Discaria toumatou, Coprosma parviflora⁵, Leptospermum scoparium⁶, Olearia virgata⁷ and Cassinia vauvilliersii. The common cabbage tree of the South Island, ...rather common, and helped to enliven what was at best a dreary scene."⁸

In the 1930s, permanent stop banks were built along the Waimakariri River to protect Christchurch's western suburbs from flooding. The cessation of flooding and associated disturbances allowed vegetation succession to occur, leading to the growth of native plant communities, particularly native shrubs. Aerial photos from around 1940 show a relatively widespread but sparse coverage of shrubs, likely dominated by matagouri (*Discaria toumatou*), silver tussock (*Poa cita*), and bracken (*Pteridium esculentum*). Scattered kowhai trees (*Sophora microphylla*) were also a characteristic feature of the stable flood plain.

Over the following years, land management practices unsympathetic to the natural ecology led to widespread degradation of the natural vegetation, with the loss of most kowhai trees and the depletion of shrubs and native tussock grasses that were once abundant. Over time, the reserve's vegetation became shorter, less diverse, and increasingly dominated by exotic species. A comparison of historical and present-day species lists reveals a notable decline in the diversity of native species that were previously present.

⁵ Probably Coprosma propinqua

⁶ The exception to the paucity of native trees and shrubs south of the Waimakariri River was dense kanuka that formed extensive cover on the north bank.

⁷ Probably *Olearia adenocarpa* that is today one of New Zealand's most threatened plant species with extinction.

⁸ Armstrong, J. B. 1879. A short Sketch of the Flora of the Province of Canterbury, with Catalogue of Species. Art . XLIX – Transactions. Botany.



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