



NSW National Parks and Wildlife Service

Kosciuszko National Park Wild Horse Heritage Management Plan

As amended October 2023



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About this plan

This Kosciuszko National Park Wild Horse Heritage Management Plan (the plan) identifies the heritage value of sustainable wild horse populations within identified parts of Kosciuszko National Park (the park) and sets out actions to protect those heritage values and maintain other environmental values of the park.

Once the plan is adopted, it must be carried out and given effect. The plan will prevail if there is any inconsistency with the *Kosciuszko National Park Plan of Management 2006* (Department of Environment and Conservation NSW 2006). The plan applies to any future additions of land to the park.

Executive summary

The Kosciuszko National Park Wild Horse Heritage Management Plan has been prepared to meet the requirements of section 5 of the *Kosciuszko Wild Horse Heritage Act 2018* (Kosciuszko Wild Horse Heritage Act).

The plan:

- identifies the heritage value of sustainable wild horse populations within identified parts of the park
- sets out how that heritage value will be protected while ensuring other environmental values of the park (including values identified in the plan of management for the park) are also maintained.

Preparation of the plan was informed by public feedback, including from Aboriginal stakeholders, advice from advisory bodies, including the Kosciuszko Wild Horse Community Advisory Panel, and a range of relevant sources.

The plan identifies 3 wild horse management areas in the park:

1. Wild horse retention areas (32% of the park)

- Sustainable wild horse populations will be retained in these areas because they reflect the wild horse heritage values identified in section 3 of the plan.
- The wild horse population in these areas will be reduced to a size that ensures that wild horse heritage values are protected, and other environmental values of the park are maintained.
- Across the wild horse retention areas, a population target of 3,000 wild horses will be attained by 30 June 2027.

2. Wild horse removal areas (21% of the park)

- All wild horses will be removed from these areas. The population of wild horses in wild horse removal areas will be maintained at zero.

3. Wild horse prevention areas (47% of the park)

- These areas do not currently contain wild horses and will be maintained at a population of zero wild horses.

Best practice capture and control methods will be used in implementing the plan, consistent with animal welfare requirements.

A wild horse advisory body that brings together community representatives and scientific experts will provide advice from time to time on the implementation of the plan.

1. Purpose of the plan

Section 5 of the *Kosciuszko Wild Horse Heritage Act 2018* (Kosciuszko Wild Horse Heritage Act) requires the preparation of a draft plan for the park.

The plan:

- identifies the heritage value of sustainable wild horse populations within identified parts of the park
- sets out how those heritage values will be protected while ensuring other environmental values of the park (including values identified in the plan of management for the park) are also maintained.

The plan addresses how wild horse management will occur in the park between the date the plan is adopted until it is amended or replaced.

2. Matters considered

As required by section 5 of the Kosciuszko Wild Horse Heritage Act, the plan:

- identifies the heritage value of sustainable wild horse populations within identified parts of the park
- sets out how that heritage value will be protected while ensuring other environmental values of the park (including values identified in the *Kosciuszko National Park Plan of Management* [2006]) are also maintained
- takes into account the object of the Kosciuszko Wild Horse Heritage Act
- takes into account the objects of the *National Parks and Wildlife Act 1974* (NPW Act) and the matters that are required (by section 72AA of that Act) to be taken into consideration in the preparation of the plan (see Appendix A).

The plan must also include any other matter prescribed by the regulations. As there are currently no regulations to the Kosciuszko Wild Horse Heritage Act, no other matters have been prescribed.

Consistent with the requirements of Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), the plan must also take into account all matters affecting or likely to affect the environment as result of undertaking activities to implement the plan. Section 6 of the plan addresses this requirement.

Preparation of the plan was informed by public feedback, including from Aboriginal stakeholders, advice from advisory bodies, including the Kosciuszko Wild Horse Community Advisory Panel, and a range of relevant sources.

Development of the plan is informed by a wide range of information, to the extent such information is required under the Kosciuszko Wild Horse Heritage Act, including scientific research, community views and commentary provided over time, population surveys, environmental research and monitoring, and review and assessment of wild horse management issues completed over time.

3. The heritage value of sustainable wild horse populations

Sustainable wild horse populations in the park are of heritage value to many people in the local community and across New South Wales and Australia. The heritage values attributed to these wild horses by the community vary from person to person, but commonly include associations with past historical periods, events and persons. Key heritage themes often identified by stakeholders include the role of horses in:

- pioneering history and pastoralism (including transhumance, which is the seasonal movement of livestock)
- traditional mountain practices associated with stock management, brumby running and horse trapping
- legends, stories and myths of the Snowy Mountains (Context 2015).

There are both tangible elements (e.g. huts, campsites, yards, traps and tracks) and intangible elements (e.g. personal and community connections) associated with these heritage themes. Some stakeholders also identify the aesthetic qualities of being able to see horses in identified parts of the landscape as a feature of their overall heritage value (Context 2015).

In addition, advice provided by the Kosciuszko Wild Horse Community Advisory Panel (2020) is that some specific types of horses may have heritage values:

- Kiandra greys
- McDonald Silver and Taffy horses
- Currango and Long Plain roans and bays
- Cascade horses
- Byadbo and Pilot horses.

The park is one of 11 parks and reserves across Victoria, New South Wales and the Australian Capital Territory that collectively comprise the Australian Alps National Parks and Reserves – a national heritage place listed and protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The listing refers, in part, to some of the heritage associations identified by community stakeholders (Box 1) (Commonwealth of Australia 2008; Department of Agriculture, Water and the Environment 2021).

Box 1 – example extracts from Australian Alps National Parks and Reserves National Heritage Listing

Included in the summary statement of significance and official values:

The pioneering history of the high country is valued as an important part of the construction of the Australian identity featuring in myths, legends and literature. The ballad of *The Man from Snowy River* epitomises horsemanship undertaken historically in the rugged landscape. The stories, legends and myths of the mountains and mountain lifestyles have been romanticised in books, films, songs, and television series and many such as the Elyne Mitchell's *Silver Brumby* novels are part of Australia's national identity.

Included in the place details:

Most early settlers that came to Australia were from the United Kingdom, and this applies to the first pastoralists into the Alps. The rapid uptake of land in the 1830s meant settlers and stockmen in eastern Australia were expanding into the Snowy Mountains looking for grazing country. Pastoral settlement of the Victorian high country started with the early journeys of exploration by George MacKillop, who travelled along the Snowy River and through to Omeo in 1835. Stock from permanent pastoral establishments such as Currango was moved from the high country for the winter months keeping only a small number of breeding-stock. In recent years 4-wheel drive vehicles have taken the role of the pack horse, but for many years horses carried horse feed, tucker, saddles, shoeing gear, tools, camp ovens, dog food, dogs and candles. Stock yards, often portable post structures, were used in the musters.

Included in the place details:

By the mid-1800s, Aboriginal people had become an important part of the region's pastoral industry, working as stockmen, station hands, house servants, and 'black trackers'. Many oral histories recollect stories of mustering brumbies from the Alps to be transported to the south coast then shipped to be used as cavalry horses; sometimes Aboriginal people would also trade horses for food (Wesson 1994).

The heritage values of wild horses in the park are the subject of an assessment by Context (2015), which found that the wild horse population is an attribute associated with the cultural heritage significance of the park.

4. Other environmental values of the park

Covering 689,600 hectares, the park is the largest national park in New South Wales and one of the largest conservation reserves in Australia (Department of Environment and Conservation NSW 2006).

The park has a range of environmental values that have been considered in preparing the plan. These values are described in the *Kosciuszko National Park Plan of Management* (2006) and summarised below. They include:

- natural environmental values
- Aboriginal cultural heritage values
- historic heritage values
- recreation values.

These environmental values are preserved in the park through a range of special places and other elements, including (Department of Environment and Conservation NSW 2006; Hope et al. 2012):

- the largest true alpine zone in mainland Australia, and extensive subalpine areas
- the highest mountains on the Australian mainland, including Mount Kosciuszko
- the most extensive peatlands in mainland south-east Australia
- important glacial landforms and karst (i.e. limestone) systems
- a large range of unusual plants and animals, including 21 alpine flowering plant species found nowhere else on earth
- the headwaters of major rivers, namely the Murray, Murrumbidgee and Snowy
- a significant range of historic and cultural places and objects.

4.1 Natural environmental values

The *Kosciuszko National Park Plan of Management* (2006) identifies significant natural environmental values of the park. These values may be assigned to a particular place or group of places or may refer to a value found throughout the entire park (Table 1).

Table 1 Examples of the significant natural features of the Park identified in the *Kosciuszko National Park Plan of Management* (2006).

Significant natural features	Examples
All threatened flora and fauna species and communities listed under the <i>Biodiversity Conservation Act 2016</i>	White box-Yellow box-Blakely's red gum woodland, mountain spider orchid (<i>Caladenia montana</i>), Perisher wallaby grass (<i>Rytidosperma vickeryae</i>), mountain pygmy possum (<i>Burramys parvus</i>)
All threatened fauna species listed under the <i>Fisheries Management Act 1994</i>	Stocky galaxias (<i>Galaxias tantangara</i>), trout cod (<i>Maccullochella macquariensis</i>), Macquarie perch (<i>Macquaria australasica</i>)
All threatened flora and fauna species and communities listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>	Alpine sphagnum bogs and associated fens, alpine spiny crayfish (<i>Euastacus crassus</i>), pale golden moths (<i>Diuris ochroma</i>), Monaro golden daisy (<i>Rutidosia leiolepis</i>)
All fauna species subject to an international treaty	Latham's snipe (<i>Gallinago hardwickii</i>)

Significant natural features	Examples
All flora and fauna species and communities with a restricted distribution outside the park	Northern corroboree frog (<i>Pseudophryne pengilleyi</i>), alpine water skink (<i>Eulamprus kosciuskoi</i>), Happy Jack's daisy bush (<i>Olearia stenophylla</i>), short alpine herbfield
Endemic invertebrate species	Metallic cockroach (<i>Polyzosteria viridissima</i>), cave beetle (<i>Teraphis cavicola</i>), stonefly (<i>Leptoperla ricki</i>), mountain earthworm (<i>Graphiophilus monikosciuskoi</i>)
Significant rocks and landforms	Glacial and periglacial features including moraines, granitoid rocks (Main Range), tertiary basalt flows (Round Mountain)
Significant karst areas and features	Cooleman Plain and Yarangobilly karsts; karst landscape features including 'A-tents'; tufa deposit, fossil sequence at Ravine
Significant soils features	Alpine humus soils, fossil soils, stratified deposits, especially peat deposits and former lake deposits
Significant lakes, wetlands and rivers	Blue Lake Ramsar site, wetlands at Rennix Gap, all alpine bogs and fens, Thredbo River
Nine distinct areas in the park declared under the <i>Wilderness Act 1987</i> . In total, these areas cover approximately 50% of the total area of the park	Jagungal, Pilot, Byadbo, Indi, Bimberi, Bogong Peaks, Bramina, Goobarragandra, Western Fall
Three identified areas of exceptional natural and cultural significance:	Alpine landscapes of the Main Range, Yarrangobilly karst catchment, Cooleman Plain karst catchment

The exceptional natural aesthetic values of the park are also recognised in the *Kosciuszko National Park Plan of Management* (2006).

Several areas in the park containing important habitat for threatened species have been declared as Assets of Intergenerational Significance under the NPW Act (Department of Planning, Industry and Environment NSW 2021).

4.2 Aboriginal cultural heritage values

The park is culturally significant and important to Aboriginal people as part of the broader Aboriginal cultural landscape setting. The connection is deep and founded at a spiritual level. Knowledge and understanding of Aboriginal people's connections with the area comes from a range of sources, including oral traditions, historical records and the archaeological record (Donaldson & Feary 2020).

Aboriginal people used a wide range of natural resources of the park as food, medicine, tools, clothing, in decoration or for ceremonial purposes. The annual bogong moth gathering was one of the most important Aboriginal cultural and social events in south-east Australia.

Descendants of Aboriginal tribal groups that once occupied and visited the Snowy Mountains hold spiritual attachments to the place, with traditional knowledge, family stories and memories illustrating their ongoing cultural connection with the mountains (Department of Environment and Conservation NSW 2006).

More than 1,000 Aboriginal heritage archaeological sites protected under the NPW Act are recorded in the park, reflecting the Aboriginal occupation of the area for more than 9,000 years. Created over millennia, archaeological sites are highly valued by Aboriginal people as the physical evidence of past lifestyles and cultures. They represent a direct, tangible link to the past, to the ancestors and to the ancestral beings. The protection of ancient Aboriginal

heritage sites and the cultural landscape (including both tangible and intangible values) is a key concern to Aboriginal people (Donaldson & Feary 2020).

4.3 Historic heritage values

The park has a strong association with Australia's pioneering and pastoral history, which is valued as an important part of the construction of the Australian identity. Alpine and sub-alpine high plains in the park were used in summer to graze stock, a practice that commenced in the 1830s and continued for 150 years.

The park features homesteads, huts, stock yards and many other historic structures which were constructed for summer grazing, mining and recreation. The stories, legends and myths of the mountains and mountain lifestyles have been represented in literature, films, songs and television shows.

The park's cultural significance also embodies history associated with mining, surveying, logging and milling, the Snowy Mountains hydro-electric scheme, scientific research, conservation and recreation. Today these activities leave a legacy that includes but is not limited to historic mining sites, trigonometric stations, walking tracks, viewpoints and scientific records that have formally recognised state and/or national cultural heritage significance (Department of Environment and Conservation NSW 2006).

4.4 Recreational values

The park's natural and cultural values also have tremendous economic value, attracting over 3 million visits each year (Roy Morgan 2019). This supports local businesses, employment and economic activity, particularly during the popular winter ski season but also increasingly into summer.

The park increasingly attracts large numbers of visitors and tourists to participate in activities such as camping, horse riding, fishing, mountain bike riding and walking. The park also offers the only snowfield destinations in New South Wales. The *Kosciuszko National Park Plan of Management* (2006) lists the alpine resorts at Charlotte Pass, Thredbo, Selwyn and Perisher Range as areas of exceptional recreational significance linked to winter activities (Department of Environment and Conservation NSW 2006).

5. Protecting wild horse heritage values while maintaining other environmental values

5.1 Wild horse impacts

As of November 2022, there were an estimated 18,814 wild horses in the park, with the 95% confidence interval for the estimate being 14,501-23,535 wild horses (*A survey of the wild horse population in Kosciuszko National Park, November 2022*). It is estimated wild horses currently occupy approximately 365,362 hectares, equating to 53% of the park (Figure 1).

Wild horses are listed as a key threat to native plants and animals under the *NSW Biodiversity Conservation Act 2016*. Habitat degradation and loss by feral horses is listed as a Key Threatening Process in Schedule 4 of the Act. The listing acknowledges the negative impact of wild horses on wetlands, watercourses and riparian systems; alteration of the structure and composition of vegetation; and reduction in plant biomass (NSW Threatened Species Scientific Committee 2018).

Scientific evidence shows that the distribution and abundance of wild horses in the park is causing significant negative impact on the environmental values of the park (Robertson et al. 2019; Foster and Scheele 2019; Eldridge et al. 2018; Ward-Jones et al. 2019; Porfino et al. 2017; Schulz et al. 2019; Scanes et al. 2021).

Some features of the alpine and subalpine environment are much more susceptible to damage from large, hard-hooved animals than most other Australian environments (Whinam & Comfort 1996) (Box 2).

Box 2 – examples of wild horse negative impacts to the natural environmental values of Kosciuszko National Park

Peat-forming bogs and fens – Peatlands form organic-rich soils that are small in size and occupy specific habitats in Australia (Whinam and Hope 2005). The park contains the most extensive peatlands in the Australian Alps. Peatlands are very important to the park environment as native animal habitat for species like crayfish, frogs, skinks and birds. They provide green feed during dry periods to a range of native animals and invertebrates and store sediment and water, gradually releasing high quality flows to the Murray–Darling Basin and other significant rivers (Hope et al. 2012).

Wild horses graze fens and other wet areas and can leave a dense network of tracks (Hope et al. 2012; Drying 1990). Wet soils are more susceptible to erosion than dry soils, and hooves displace soils (Drying 1990). Hooved animals walking through bogs and fens can trample vegetation, which leads to further loss of soil. Displacement of soil changes the hydrology of bogs and fens, creating channels through the wetland and potentially leading to draining of the wetland. This draining affects any soft plants such as sphagnum moss which relies on well aerated wet soils. Loss of vegetation in peatlands can affect native animal habitat and food sources (Hope et al. 2012).

Waterways – All alpine rivers in Australia are considered nationally significant, since they form only a very small percentage of all running waters in the country (Department of Environment and Conservation NSW 2006). Hard-hooved animals, including horses, graze and walk through waterways (Scanes et al. 2021). This can lead to a direct loss of riparian vegetation, increased run-off, damage to banks (Robertson et al. 2019) and resuspension of sediments in streams. Soil compaction through trampling (Scanes et al. 2021) can further increase run-off. Increased suspended sediments in streams can adversely impact aquatic life through disruption of life cycles of the benthic flora and fauna that form the base of food chains, and reducing the success of feeding and breeding of fish, including the critically endangered stocky galaxias (*Galaxias tantangara*). Loss of riparian vegetation means native species, including the broad-toothed rat and northern corroboree frog, lose habitat and food sources (Schulz 2019; Foster and Scheele 2018).

Broad-toothed rat (*Mastacomys fuscus*) – the broad-toothed rat is listed as a vulnerable fauna species under the *Environmental Protection and Biodiversity Conservation Act 1999*. It is a compact, chubby-cheeked animal most similar to native mice. It lives in a complex of runways through the dense vegetation of wet grass, sedge or heath, and under the snow in winter. It survives almost solely on greenery such as grass and sedge stems (NSW Office of Environment and Heritage 2021).

Wild horses are known to degrade the habitat of the broad-toothed rat by grazing and trampling grasses, which alters the vegetation structure and reduces grass height, making it less suitable as habitat for the broad-toothed rat (Eldridge et al. 2018). Scientific evidence suggests that as the negative impacts of horses increases, the presence and abundance of the broad-toothed rat decreases (Schulz et al. 2019).

Wild horse damage has been recorded at the historic sites of Tin Mines barn, Charlie Carter's hut and Bill Jones's hut. Wild horses are also damaging Aboriginal objects such as artefacts. Aboriginal people have expressed concern about negative impacts of wild horses on Aboriginal cultural landscapes (Donaldson & Feary 2020).

Negative interactions between visitors and problem or aggressive wild horses have been recorded on roads, and in campgrounds and other visitor use areas. Wild horses pose visitor safety risks and can negatively impact on some of the park's recreational values.

5.2 Wild horse management

The overlap between the location of wild horses (and their heritage values) and the full range of other environmental values in the park presents a challenge in meeting the requirements of the Kosciuszko Wild Horse Heritage Act. That is, it is a challenge to both recognise and protect the heritage value of sustainable wild horse populations within identified parts of the park, while also ensuring other environmental values are maintained.

This plan meets that challenge by dividing the park into 3 distinct management areas (Figure 2) and, for the management area in which wild horses will be retained, identifying a target (reduced) population for that area.

These areas have been defined based on analysis and consideration of wild horse heritage values relative to the other environmental values contained within them. Each management area has its own specific objectives:

Wild horse retention areas (32% of the park)

Wild horse populations will be retained in these areas because the populations represent the wild horse heritage values identified in section 3 of the plan.

The total population of wild horses across the wild horse retention management areas will be reduced to 3000 horses by 30 June 2027 (Figure 2). On the basis of available and current information, this target will enable wild horse heritage values to be protected.

Wild horse removal areas (21% of the park)

All wild horses will be removed from these areas. The population of wild horses in wild horse removal areas will be maintained at zero.

Wild horse prevention areas (47% of the park)

These areas do not currently contain wild horses. They will be maintained at a population of zero wild horses.

Kosciuszko National Park Wild Horse Heritage Management Plan

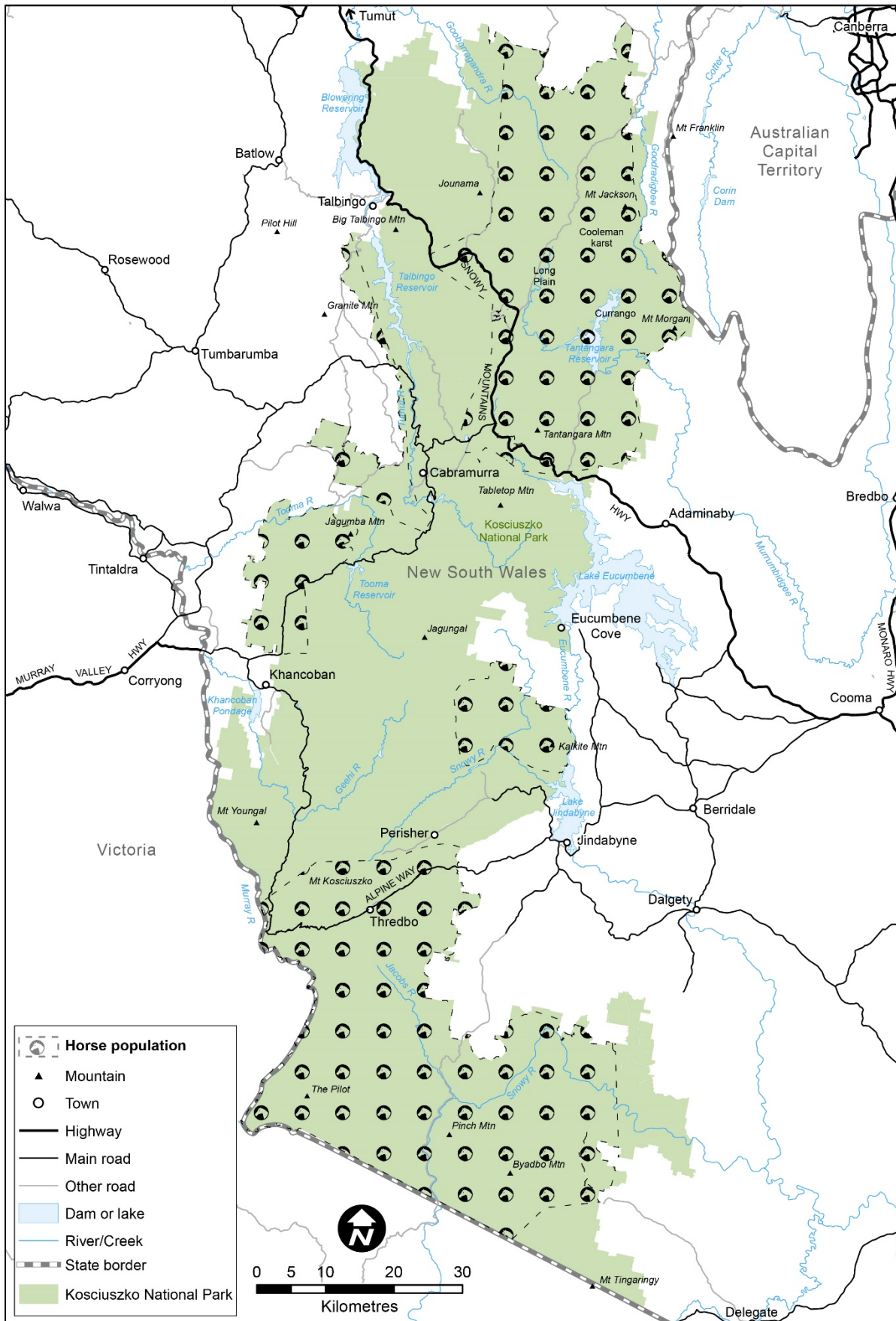


Figure 1 Kosciuszko National Park wild horse distribution

Kosciuszko National Park Wild Horse Heritage Management Plan

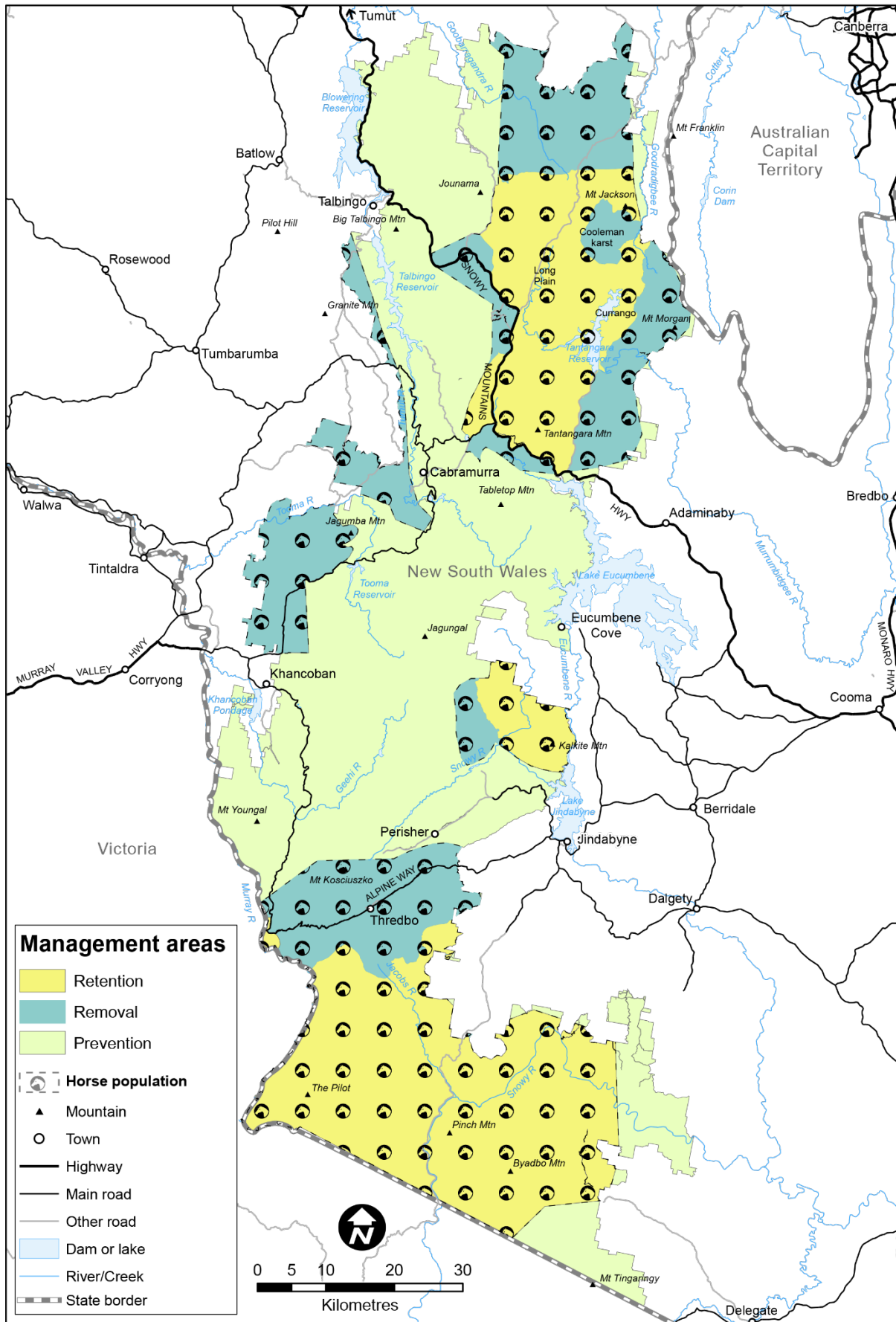


Figure 2 Wild horse management areas

5.3 Wild horse retention areas

Scope: 32% of the park (218,383 hectares)

Objective – Wild horse populations are retained, but populations are reduced to 3,000 wild horses by 30 June 2027 to ensure that wild horse heritage values are protected.

These areas have been selected as wild horse retention areas because the wild horse populations in these areas (noting the population target) capture the suite of wild horse heritage values identified in section 3 of the plan (Figure 2). The reduction of the wild horse population in the retention management areas to a size of 3,000 wild horses will be such that wild horse heritage values of the park are protected.

The wild horse population in the retention management areas represents and helps maintain existing tangible and intangible wild horse heritage values (Table 2). Important types of horses identified by the Kosciuszko Wild Horse Community Advisory Panel (2020) are located in these areas.

Table 2 Wild horse values represented within the retention management areas

(Context 2015; NSW Department of Environment and Conservation 2006; Commonwealth of Australia 2008)

Wild horse heritage value	Examples located in the management area
Huts and homesteads associated with pastoralism	Currango homestead, Cooinbul hut, Hainsworth hut and yards, Long Plain hut, Miller's hut, Old Currango homestead, Oldfields hut, Love nest in the sallees, Tin Mine (Charlie Carter's) hut
Traditional areas where brumby running was undertaken	Cascades hut, Sandy Creek hut, Slaughter House Creek hut
Areas associated with historical summer pastoral grazing	North-east Kosciuszko National Park pastoral landscape, Currango pastoral landscape
Old stock routes and watering points	Barry Way, Port Phillip fire trail, Kiandra Road stock route
Places associated with historical writings and stories	Cascades hut, Snowy River area
Areas where safe access is available to view wild horse	Long Plain Road, Merambago

Other environmental values are located in the retention management areas (Table 3). The retention management areas contain sites of particular cultural significance identified by Aboriginal custodians, including the Snowy River corridor, Kalkite mountain and the headwaters of the Murrumbidgee and Goobarragandra Rivers (Donaldson and Feary 2020). Achieving the population target by 30 June 2027 will significantly reduce the density of wild horses in retention management areas and so reduce the negative impact on other environmental values in these areas, such that other environmental values are maintained in the park.

Wild horses will be contained (at lower densities) to the identified retention management areas. Wild horses in the retention management areas, and throughout the park, will continue to be managed as wild (non-native) animals. The population will be subject to natural events that may cause fluctuations in wild horse numbers. Supplementary feeding and watering will not occur in response to natural events.

Wild horses will not be introduced or reintroduced to the park or translocated between different areas of the park to supplement or add to the population.

Table 3 Examples of other environmental values in the retention management areas

(NSW Department of Environment and Conservation 2006; NSW Office of Environment and Heritage 2012; NSW Threatened Species Scientific Committee 2018)

Other environmental values		Examples located in the management area
Natural	Identified areas of exceptional natural and cultural significance	Part of the Yarrangobilly and Cooleman Plain karst catchments
	Wilderness areas declared under the <i>Wilderness Act 1987</i>	Byadbo, parts of Pilot, Goobarragandra and Bimberi
	Commonwealth and/or state-listed threatened flora, including species under threat from wild horses included in the NSW <i>Biodiversity Conservation Act 2016</i> 'Habitat degradation and loss by feral horses' key threatening process listing	Max Mueller's burr-daisy (<i>Calotis pubescens</i>), mauve burr-daisy (<i>Calotis glandulosa</i>), leafy anchor plant (<i>Discaria nitida</i>), pale pomaderris (<i>Pomaderris pallida</i>), Kiandra leek orchid (<i>Prasophyllum retroflexum</i>) (noting important habitats for some listed flora species are declared as Assets of Intergenerational Significance)
	Commonwealth and/or state-listed Threatened Ecological Community	White box (<i>Eucalyptus albens</i>) – white cypress pine (<i>Callitris glaucophylla</i>), alpine sphagnum bogs and associated fens
	Commonwealth and/or state-listed threatened fauna, including species under threat from wild horses included in the NSW <i>Biodiversity Conservation Act 2016</i> 'Habitat degradation and loss by feral horses' key threatening process listing	Broad-toothed rat (<i>Mastacomys fuscus</i>), alpine tree frog (<i>Littoria verreauxii alpina</i>), eastern pygmy possum (<i>Cercartetus nanus</i>), stocky galaxias (<i>Galaxias tantangara</i>), spotted tailed quoll (<i>Dasyurus macuatus</i>), alpine she-oak skink (<i>Cyclodomorphus praealtus</i>) (noting important habitats for some listed fauna species are declared as Assets of Intergenerational Significance)
	Flora and fauna species and communities with a restricted distribution outside the park	Small bedstraw (<i>Galium roddii</i>), alpine water skink (<i>Eulamprus kosciuskoi</i>), austral dandelion (<i>Taraxacum aristum</i>)
	Fauna species subject to an international treaty	Latham's snipe (<i>Gallinago hardwickii</i>)
	Significant rivers, lakes and wetlands	Upper Murray and Snowy Rivers
	Significant rocks and landforms	Graptolite fossils, remnant tertiary basalt flows, tertiary sediments
	Significant soils	Alpine humus
Significant karst areas and features	Cowombat flat karst, Indi karst	
Aboriginal cultural heritage	All Aboriginal heritage sites, including those listed under the NSW <i>National Parks and Wildlife Act 1974</i>	Modified trees, artefacts, potential archaeological deposits
Historic heritage	Items listed on the NSW State Heritage Register	Currango homestead, Kiandra courthouse/chalet, Matthews cottage

Other environmental values	Examples located in the management area
Recreational	Walking, fishing, vehicle-based camping, cycling

Reaching the population target will involve a combination of best practice management and control methods (section 6).

5.4 Wild horse removal areas

Scope: 21% of the Park (146,978 hectares)

Objective – Remove all wild horses from the removal management areas by 30 June 2027 and prevent recolonisation to maintain other environmental values.

Wild horses will be removed from the removal management areas by 30 June 2027 to ensure the maintenance of other environmental values. The wild horse population will be maintained at zero in the wild horse removal management areas.

Retaining wild horses in the removal areas is not required to protect the heritage value of sustainable wild horse populations, which are protected in the wild horse retention management areas. Removing wild horses from the removal areas is necessary to maintain other environmental values in the park.

Rehabilitation of other environmental values may be undertaken in removal management areas as required.

Table 4 Examples of other environmental values in the removal management areas

(NSW Department of Environment and Conservation 2006; NSW Office of Environment and Heritage 2012; NSW Threatened Species Scientific Committee 2018)

Other environmental values	Examples located in the management area
Natural	Identified areas of exceptional natural and cultural significance
	Alpine landscapes of the Main Range, parts of the Yarrangobilly karst catchment and Cooleman Plain karst catchment
	Wilderness areas declared under the <i>Wilderness Act 1987</i>
	Bramina, parts of Goobarragandra, Bimberi and Jagungal
	Commonwealth and/or state-listed threatened flora, including species under threat from wild horses included in the NSW <i>Biodiversity Conservation Act 2016</i> 'Habitat degradation and loss by feral horses' key threatening process listing
	Leafy anchor plant (<i>Discaria nitida</i>), mauve burr-daisy (<i>Calotis glandulosa</i>), Monaro golden daisy (<i>Rutidosis leiolepis</i>), austral toadflax (<i>Thesium australe</i>), shining cudweed (<i>Argyrotegium nitidulum</i>), Kiandra leek orchid (<i>Prasophyllum retroflexum</i>), anemone buttercup (<i>Ranunculus anemoneus</i>) (noting important habitats for some listed flora species are declared as Assets of Intergenerational Significance)
	Commonwealth and/or state-listed Threatened Ecological Community
	Snowpatch feldmark, snowpatch herbfield, alpine sphagnum bogs and associated fens
	Commonwealth and/or state-listed threatened fauna, including species under threat from wild
	Broad-toothed rat (<i>Mastacomys fuscus</i>), alpine tree frog (<i>Littoria verreauxii alpina</i>), alpine spiny crayfish (<i>Euastacus crassus</i>),

Other environmental values		Examples located in the management area
	horses included in the NSW <i>Biodiversity Conservation Act 2016</i> 'Habitat degradation and loss by feral horses' key threatening process listing	southern corroboree frog (<i>Pseudophryne corroboree</i>), Boorolong frog (<i>Litoria booroolongensis</i>), northern corroboree frog (<i>Pseudophryne pengilleyi</i>), spotted-tree frog (<i>Litoria spenceri</i>), mountain pygmy possum (<i>Burramys parvus</i>), smoky mouse (<i>Pseudomys fumeus</i>), Guthega skink (<i>Liopholis guthega</i>), alpine she-oak skink (<i>Cyclodomorphus praealtus</i>) (noting important habitats for some listed fauna species are declared as Assets of Intergenerational Significance)
	Flora and fauna species and communities with a restricted distribution outside the park	Fairy bluebell (<i>Wahlenbergia densifolia</i>), northern corroboree frog (<i>Pseudophryne pengilleyi</i>), mountain pygmy possum (<i>Burramys parvus</i>)
	Fauna species subject to an international treaty	Latham's snipe (<i>Gallinago hardwickii</i>)
	Significant rivers, lakes and wetlands	Alpine fens and bogs, Thredbo and Goobarragandra Rivers
	Significant rocks and landforms	Kosciuszko glaciated area, Crackenback fault, remnant tertiary basalt flows
	Significant soils	Alpine humus
	Significant karst areas and features	Coolleman Plain karst, Yarrangobilly karst
Aboriginal cultural heritage	All Aboriginal heritage sites, including those listed under the NSW <i>National Parks and Wildlife Act 1974</i>	Modified trees, artefacts, stone quarry
Historic heritage	Kosciuszko homestead complexes, huts, ruins and hut sites	Peden's hut and associated elements, Brayshaw's hut, Cotterill's cottage
Recreational	Identified areas of exceptional natural and cultural significance	Selwyn, Thredbo, Charlotte Pass and Perisher Range alpine resort areas

5.5 Wild horse prevention areas

Scope: 47% of the park (324,238 hectares)

Objective: – Prevent wild horses entering and remaining in the prevention management areas.

Wild horses are not currently known to exist in the identified wild horse prevention areas. Allowing wild horses to become established in these areas is not necessary to protect the heritage values of sustainable wild horse populations. New incursions of wild horses into these areas will be removed from the park to maintain other environmental values. Surveillance will occur to monitor for immigration into the areas.

The wild horse population will be maintained at zero in the wild horse prevention management areas.

Table 5 Examples of other environmental values in the prevention management areas

(NSW Department of Environment and Conservation 2006; NSW Office of Environment and Heritage 2012; NSW Threatened Species Scientific Committee 2018)

Other environmental values		Examples located in the management area
Natural	Identified areas of exceptional natural and cultural significance	Yarrangobilly karst catchment
	Wilderness areas declared under the <i>Wilderness Act 1987</i>	Goobarragandra, Bogong Peaks, Jagungal
	Commonwealth and/or state-listed threatened flora, including species under threat from wild horses included in the NSW <i>Biodiversity Conservation Act 2016</i> 'Habitat degradation and loss by feral horses' key threatening process listing	Perisher wallaby grass (<i>Rytidosperma vickeryae</i>), Archer's carex (<i>Carex archeri</i>), anemone buttercup (<i>Ranunculus anemoneus</i>) (noting important habitats for some listed flora species are declared as Assets of Intergenerational Significance)
	Commonwealth and/or state-listed Threatened Ecological Community	Alpine sphagnum bogs and associated fens, aquatic ecological community in the catchment of the Snowy River in New South Wales
	Commonwealth and/or state-listed threatened fauna, including species under threat from wild horses included in the NSW <i>Biodiversity Conservation Act 2016</i> 'Habitat degradation and loss by feral horses' key threatening process listing	Northern corroboree frog (<i>Pseudophryne pengilleyi</i>), broad-toothed rat (<i>Mastacomys fuscus</i>), southern corroboree frog (<i>Pseudophryne corroboree</i>), spotted-tree frog (<i>Litoria spenceri</i>), smoky mouse (<i>Pseudomys fumeus</i>), mountain pygmy possum (<i>Burramys parvus</i>) (noting important habitats for some listed fauna species are declared as Assets of Intergenerational Significance)
	Flora and fauna species and communities with a restricted distribution outside the park	Mountain pygmy possum (<i>Burramys parvus</i>), alpine she-oak skink (<i>Cyclodomorphus praealtus</i>), woolly daisy bush (<i>Olearia lasiophylla</i>)
	Fauna species subject to an international treaty	Latham's snipe (<i>Gallinago hardwickii</i>)
	Significant rivers, lakes and wetlands	Goobarragandra river, Rennix gap wetlands, Blue Lake Ramsar site
	Significant rocks and landforms	Devonian lava flows forming cliffs, skarn rock with garnets and occurrence of babingtonite, tertiary sediments
	Significant soils	Alpine humus
	Significant karst areas and features	Ravine karst, tufa deposits, Jounama Creek karst
Aboriginal cultural heritage	All Aboriginal heritage sites, including those listed under the NSW <i>National Parks and Wildlife Act 1974</i>	Modified tree, artefacts, potential archaeological deposits
Historic heritage	Kosciuszko homestead complexes, huts, ruins and hut sites	Grey mare hut and mining precinct, Wheeler's hut, Swamp creek mine hut and associated structures

Other environmental values		Examples located in the management area
Recreational	Identified areas of exceptional natural and cultural significance	Perisher Range, Selwyn and Charlotte Pass alpine resorts

The prevention management areas also contain the Jagungal wilderness area, which is a site of cultural significance identified by Aboriginal custodians (Donaldson and Feary 2020).

6. Control methods

Control methods will be selected for use based on maximising animal welfare outcomes (section 6.1), control effectiveness and taking into account management variables specific to the area. Staff, contractor and public safety during control operations is also a critical factor in identifying appropriate control methods. Management variables such as terrain, accessibility, weather and wild horse demographics, effectiveness, efficiency and cost also need to be considered (Kosciuszko Wild Horse Scientific Advisory Panel 2020).

Both lethal and non-lethal control methods will be required to achieve the plan's targets. All approved control methods will be available for use on all wild horses across the park.

Capture and control methods that are available for use in the park are outlined below.

6.1 Environmental assessment of control methods

The control methods in section 6.2 of the plan may include actions that are considered 'activities' for the purposes of Part 5 of the EP&A Act. In order to meet the environmental impact assessment requirements for 'activities' under the EP&A Act, all matters affecting or likely to affect the environment by reason of the relevant control methods have been examined and taken into account before the final plan was adopted under section 9 of the Kosciuszko Wild Horse Heritage Act.

Further assessment of environmental impacts will be undertaken to comply with the EP&A Act before the implementation of relevant control actions in the park or parts of the park.

6.2 Animal welfare

Ensuring optimal animal welfare outcomes is a key priority for the management of wild horses in the park. All control methods will be implemented consistent with relevant Commonwealth and/or NSW animal welfare legislation, regulations, codes of practice and standard operating procedures. Currently, these include but are not limited to:

Commonwealth

- *Australian Animal Welfare Standards and Guidelines: Land transport of livestock* (AHA 2012)
- *Model Code of Practice for the Welfare of Animals – Feral Livestock Animals: Destruction or capture, handling and marketing* (SCAAHC 2002)
- *Model Code of Practice Humane Control of Feral Horses* (Sharp & Saunders 2014) and associated standard operating procedures:
 - *HOR001 – Ground shooting of feral horses* (Sharp 2011a)
 - *HOR002 – Aerial shooting of feral horses* (Sharp 2011d)
 - *HOR003 – Mustering of feral horses* (Sharp 2011b)
 - *HOR004 – Trapping of feral horses* (Sharp 2011c)
 - *GEN 001 – Methods of euthanasia* (Sharp 2013)

New South Wales

- *Prevention of Cruelty to Animals Act 1979*
- *Prevention of Cruelty to Animals Regulations 2012*
- Prevention of Cruelty to Animals (Land Transport of Livestock) Standards (NSW Government 2013)
- *Welfare scoring nutritionally deprived beef cattle, dairy cattle and their crosses, sheep and horses* (NSW Department of Primary Industries 2013)

For those control methods where an Australian or state standard operating procedure, standard or guideline exists, an animal welfare assessment of the method was completed by the Kosciuszko Wild Horse Independent Technical Reference Group (ITRG) (2015) and reviewed by the Kosciuszko Wild Horse Scientific Advisory Panel (2020). The assessments were undertaken using the *Model for Assessing the Relative Humaneness of Pest Animal Control Methods* (Sharp and Saunders 2011).

For some control methods, such as euthanasia via lethal injection, an Australian or state standard operating procedure has not yet been developed. In these cases, a standard operating procedure will be developed, and an animal welfare assessment completed before the control method is used (Kosciuszko Wild Horse Scientific Advisory Panel 2020).

The following actions will be undertaken for each control method available for use on wild horses in the park:

1. **Develop standard operating procedures that are tailored for use in the park.** The standard operating procedures will be consistent with national and/or state procedures where available. Standard operating procedures will be developed following engagement with the Royal Society for the Prevention of Cruelty to Animals (RSPCA) and relevant specialists as required. Standard operating procedures will be approved by the Deputy Secretary of the National Parks and Wildlife Service (NPWS).
2. **Animal welfare assessments will be undertaken** for those methods where a national or state standard operating procedure is not currently available before the method is used in the park.
3. **Annual review of standard operating procedures** to update and adjust control methods based on best practice approaches to animal welfare and the outcomes of any animal welfare assessments undertaken during use of the control method.

Implementation of control methods will be undertaken with consideration of the following variables to ensure welfare outcomes are optimised:

- skilled personnel (Hampton et al. 2017; Kosciuszko Wild Horse Scientific Advisory Panel 2020)
- strict adherence to procedures (Kosciuszko Wild Horse Scientific Advisory Panel 2020)
- minimising cumulative welfare impacts inherent in multi-staged methods (Kosciuszko Wild Horse Scientific Advisory Panel 2020; ITRG 2015).

6.3 Capture and control methods that are available for use in the park

The following control methods **are available for use** in the park. The list of available methods does not imply any hierarchy or preference for one control method over another. The choice of methods at any point in time will depend on operational factors, noting the requirements of the plan.

Capture methods

Method	Example application
Passive trapping	Areas that are safely accessible by vehicle with trailer and/or truck. Areas where transport duration permits daily checking of traps.
Aerial and/or ground mustering into yards	Areas that are safely accessible by vehicle with trailer and/or truck. Areas with suitable terrain for safe mustering.

Control methods

Method	Example application
Removal from the park for domestication (rehomeing)	Where there is pre-identified demand from suitable and approved individuals or organisations for removed horses for rehomeing. Areas that are safely accessible by vehicle with trailer and/or truck and where transport of live horses does not cause unacceptable welfare impacts.
Removal from the park for transport to abattoir or knackery that meets specific animal welfare criteria	For wild horses that were removed for rehomeing, but rehomeing did not eventuate. Areas that are safely accessible by vehicle with trailer and/or truck and where transport of live horses meets animal welfare requirements.
Shooting in trap yards	Areas that are safely accessible by vehicle.
Tranquilising in trap yards followed by euthanasia via a captive bolt or lethal injection	Areas that are safely accessible by vehicle.
Ground shooting	For use in any area of the park.
Aerial shooting	For use in any area of the park.
Reproductive control	In retention management areas after the population is at target level, if scientific evidence suggests it will be effective.

The following will **not be considered** for use in the management or control of wild horses in the park:

1. translocation to other parts of the park or other national parks or reserves
2. brumby running and roping.

Reproductive control

Reproductive control is a potentially viable option only where horse densities are low, and the objective is to gradually reduce or maintain the population at a low density. Currently, there are no reproductive control methods available that are highly effective, easily delivered, affordable and do not alter the behaviour or physiology of horses in some way (Kosciuszko Wild Horse Scientific Advisory Panel 2020).

Reproductive control options will remain under consideration over the long-term as a complement to other control measures. As the population moves towards the target level, scientific research and understanding of likely efficacy in the context of the park will be easier to achieve. This information, together with consideration of expected costs and benefits, will guide decisions about the appropriate timing of any application of reproductive control, and the type of reproductive control methods that may be used.

Exclusion fencing

While exclusion fencing will not reduce the number of horses in the park, it may be used to protect areas containing high value assets that are at immediate risk of irreversible harm to natural environmental values due to the negative impacts of wild horses. Fencing is considered a short to medium term method of excluding all wild horses from a specific area while other methods of control reduce the population.

Euthanasia of injured, ill or problem horses

Wild horses will continue to be euthanised in accordance with standard operating procedures if they are:

1. sick, suffering, injured or diseased wild horses and if their welfare is compromised
2. unusually aggressive or dangerous and represent an unacceptable safety risk to staff or visitors
3. injured, ill or problem wild horses encountered during capture and control activities.

Carcass management

Disposal of carcasses presents logistical challenges, including number, access, available resources and environmental constraints. There are a range of management options available which will be considered on a case-by-case basis. Methods used will vary and be based on site-specific requirements.

7. Review of the plan

In accordance with the concept of adaptive management, the plan will be reviewed after 30 June 2027 and at any time as directed by the Minister. The review will take into account any monitoring and research data, including data that may have been collected over the life of the plan and that is available at that time, including:

- evidence on the retention of wild horse values
- science-based wild horse population estimates
- scientific evidence of the impact of wild horses on natural environment values in the park including evidence obtained as a result of the measurement and reporting of the overall ecological health of the park
- evidence of the impact of wild horses on cultural heritage values in the park
- information on the cost effectiveness of control methods
- information on the potential benefits from emerging technologies or alternative measures for the control of wild horse populations.

Subject to the outcomes of the review, any amendment to the plan will be made following:

- public exhibition of the plan's amendments for a period of not less than 30 days
- consultation with the Advisory Council and Heritage Council
- the Minister's review of the plan's amendments and representations received after public exhibition and consultation
- the Minister's adoption of the amended plan.

8. Community and stakeholder involvement

Ongoing input in relation to the plan's implementation will be sought from a variety of key stakeholders. This includes the Southern Ranges Regional Advisory Committee, the RSPCA, rehoming organisations, and research institutions and organisations.

NPWS will continue to engage with Aboriginal stakeholders during implementation of the plan. Engagement will occur formally through the NPWS Southern Snowy Mountains Aboriginal Community Executive Committee and Northern Kosciuszko Aboriginal Working Group.

In recognition of the importance of having a range of different perspectives about wild horse management, implementation of the plan will also be informed by advice from time to time from a wild horse advisory body comprising both community representatives and scientific experts.

8.1 Cooperative management

To minimise movement of wild horses across park boundaries, NPWS will liaise and work collaboratively with neighbouring landholders, including the relevant land management agencies of Victoria and the Australian Capital Territory. As part of this cooperative effort, NPWS may decide to introduce specific management strategies along park boundaries.

9. References

- Animal Health Australia (2012) *Australian Animal Welfare Standards and Guidelines: Land transport of livestock*. Animal Health Australia, Canberra.
- Commonwealth of Australia (2008) Environmental Protection and Biodiversity Conservation Act 1999, Inclusion of a place in the National Heritage List: Australian Alps National Parks and Reserves. *Commonwealth of Australia Gazette*, No. S237, 7 November 2008. <https://www.environment.gov.au/system/files/pages/5049d4dd-060e-40fb-8dbf-eaa5496cd18d/files/10589104.pdf>
- Context Pty Ltd (2015) *National Cultural Heritage Values Assessment and Conflicting Values Report: The wild horse population, Kosciuszko National Park*. A report to NSW National Parks and Wildlife Service. Brunswick, Victoria. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/Kosciuszko-wild-horses/national-cultural-heritage-values-assessment-conflicting-values-report-2015.pdf>
- Department of Agriculture, Water and the Environment (2021) *Place Details: Australian Alps National Parks and Reserves, The Alpine Way, Thredbo Village, NSW, Australia*. Australian Heritage Database. Australian Government. https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105891
- Department of Environment and Conservation NSW (2006) *Kosciuszko National Park Plan of Management*. Department of Environment and Conservation NSW, South Sydney. <https://www.environment.nsw.gov.au/research-and-publications/publications-search/kosciuszko-national-park-plan-of-management>
- Department of Planning and Environment NSW (2022) *A survey of the wild horse population in Kosciuszko National Park, November 2022*. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/Kosciuszko-wild-horses/kosciuszko-national-park-wild-horse-population-survey-2022.pdf>
- Department of Planning and Environment (2022) Evaluation of the implementation of the Kosciuszko National Park Wild Horse Heritage Management Plan (2021). <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/Kosciuszko-wild-horses/kosciuszko-national-park-wild-horse-heritage-plan-2021-evaluation-report.pdf>
- Department of Planning, Industry and Environment NSW (2021) *Assets of Intergenerational Significance*. <https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-management/assets-of-intergenerational-significance>
- Department of Urban Affairs and Planning NSW (1999) *Is an EIS Required? Best practice guidelines for Part 5 of the Environmental Planning and Assessment Act 1979*. NSW Government.
- Donaldson S and Feary S (2020) *Aboriginal Cultural Values Report: Investigating Aboriginal cultural values associated with wild horses in Kosciuszko National Park for the development of the draft wild horse heritage management plan*. Prepared for the Department of Planning, Industry and Environment.
- Eldridge DJ, Travers SK, Val J, Zaja A and Veblen KE (2019) Horse activity is associated with degraded subalpine grasslands structure and reduced habitat for a threatened rodent. *Rangeland Ecology and Management*. 72, 3:467 – 473.
- Foster C N and Scheele B C (2018) Feral horse impacts on corroboree frog habitat in the Australian Alps. *Wildlife Research*. 46(2) 184 – 190.

Hampton JO, Edwards GP, Cowled BD, Forsyth DM, Hyndman TH, Perry AL, Miller CJ, Adams PJ, Collins T (2017) Assessment of animal welfare for helicopter shooting of feral horses. *Wildlife Research*. 44(2), 97-105.

Hope GS, Nanson R and Jones P (2012) *Peat-forming bogs and fens of the Snowy Mountains of New South Wales*. Technical Report. Sydney, Australia. Office of Environment and Heritage.

Independent Technical Reference Group (ITRG) (2015) *Final Report of the Independent Technical Reference Group*, Supplementary to the Kosciuszko National Park Wild Horse Management Plan. NSW Office of Environment and Heritage, Sydney.

Kosciuszko Wild Horse Community Advisory Panel (2020) *Final Report of the Kosciuszko Wild Horse Community Advisory Panel*. Prepared for the Department of Planning, Industry and Environment.

Kosciuszko Wild Horse Scientific Advisory Panel (2020) *Final Report of the Kosciuszko Wild Horse Scientific Advisory Panel: Advice to assist in preparation of the Kosciuszko National Park 2020 Wild Horse Management Plan*. Prepared for the Department of Planning, Industry and Environment.

NSW Department of Primary Industries (2013) *Welfare scoring nutritionally deprived beef cattle, dairy cattle and their crosses, sheep and horses*. NSW Department of Primary Industries.

NSW Government (2013) *Prevention of Cruelty to Animals (Land Transport of Livestock) Standards No. 2*. Made under Part 4 of the Prevention of Cruelty to Animals Regulation 2012.

NSW Office of Environment and Heritage (2012) *Kosciuszko National Park Geodiversity Action Plan 2012 – 2017*. Prepared for the National Parks and Wildlife Service.

NSW Office of Environment and Heritage (2016) *Draft Wild Horse Management Plan: Kosciuszko National Park*. Office of Environment and Heritage, Sydney NSW.
<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/Kosciuszko-wild-horses/kosciuszko-national-park-draft-wild-horse-management-plan-160271.pdf>

NSW Office of Environment and Heritage (2021) *Broad-toothed rat – profile*.
<https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10510>

NSW Threatened Species Scientific Committee (2018) Habitat degradation and loss by feral horses (brumbies, wild horses), *Equus caballus* Linnaeus 1758. Final Determination to list a key threatening process under the *Biodiversity Conservation Act 2016*. NSW Threatened Species Scientific Committee, Hurstville NSW. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2018/habitat-degradation-loss-feral-horses-equus-caballus-final-determination.pdf>

Porfirio L, Lefroy E, Hugh S and Mackey B (2017) Monitoring the impacts of feral horses on vegetation condition using remotely sensed fPAR: a case study in Australia's alpine parks. *Parks*. 23, 9–20.

Robertson G, Wright J, Brown D, Yuen K, Tongway D (2019) An assessment of feral horse impacts on treeless drainage lines in the Australian Alps. *Ecological Management and Restoration*. 20: 21 – 30.

Roy Morgan (2019) *Annual Visits to NPWS Managed Parks in New South Wales*.
<https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Research/Our-science-and-research/annual-visits-npws-managed-parks-nsw-state-final-report-august-2019.pdf>

Scanes P, McSorley A and Dickson A (2021) Feral horses (*Equus caballus*) increase suspended sediment in subalpine streams. *Marine and Freshwater Research*. <https://www.publish.csiro.au/mf/pdf/MF20353>

SCAAHC (2002) *Model Code of Practice for the Welfare of Animals: Feral Livestock Animals – Destruction or capture, handling and marketing*. SCA Technical Report Series No. 34. Standing Committee on Agriculture, Animal Health Committee (SCAAHC), CSIRO Publishing, Canberra.

Schulz M, Schroder, M and Green, K (2019) The occurrence of the broad-toothed rat *Mastacomys fuscus* in relation to feral horse impacts. *Ecological Management and Restoration*. 28: 31 – 36.

Sharp T (2011a) Standard Operating Procedure HOR001: Ground shooting of feral horses. Invasive Animals Cooperative Research Centre.

Sharp T (2011b) *Standard Operating Procedure HOR003: Mustering of feral horses*. Invasive Animals Cooperative Research Centre.

Sharp T (2011c) *Standard Operating Procedure HOR004: Trapping of feral horses*. Invasive Animals Cooperative Research Centre.

Sharp T (2011d) *Standard Operating Procedure HOR002: Aerial shooting of feral horses*. Invasive Animals Cooperative Research Centre.

Sharp T (2013) *Standard Operating Procedure GEN001: Methods of euthanasia*. Invasive Animals Cooperative Research Centre.

Sharp T and Saunders G (2011) *A model for assessing the relative humaneness of pest animal control methods* (Second edition). Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT.

Sharp T and Saunders G (2014) *Model Code of Practice for the Humane Control of Feral Horses*. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Ward-Jones J, Pulsford I, Thackway R, Bishwokarma D and Freudenberger D (2019) Impacts of feral horses and deer on an endangered woodland in Kosciuszko National Park. *Ecological Management and Restoration*. 20, 37–46.

Whinam J and Comfort M (1996) The impact of commercial horse riding on sub-alpine environments at Cradle Mountain, Tasmania. *Australia Journal of Environmental Management*, vol.47, 61–70.

Whinam J and Hope G (2005) The Peatlands of the Australasian Region. *Stapfia*. 85.

Appendix A

Consistent with section 5(2)(d) and (e) of the *Kosciuszko Wild Horse Heritage Act 2018*, preparation of the plan has taken into account:

- the objects of the NPW Act
- the matters required under section 72AA of the NPW Act with respect to the preparation of park plans of management
- any matter prescribed by the regulations.

The following table summarises these considerations.

Objects of the NPW Act (section 2A)	
Objects	Consideration
<p>(1)(a) the conservation of nature, including, but not limited to, the conservation of –</p> <ul style="list-style-type: none"> i. habitat, ecosystems and ecosystem processes ii. biological diversity at the community, species and genetic levels iii. landforms of significance, including geological features and processes iv. landscapes and natural features of significance, including wilderness and wild rivers 	<p>The management actions and directions set out in the plan are directly focused on protecting wild horse heritage values and supporting the maintenance of other environmental values in the park (including natural and cultural values) by addressing known risks to environmental values associated with the presence of wild horses. For example, the plan will support the conservation of nature and areas of cultural values (Objects (1)(a) and (b) NPW Act) by reducing the population size in the retention areas, and by preventing or removing wild horses from other areas with high conservation values. This will be done using relevant capture and control methods.</p>
<p>(1)(b) the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to—</p> <ul style="list-style-type: none"> i. places, objects and features of significance to Aboriginal people ii. places of social value to the people of New South Wales iii. places of historic, architectural or scientific significance 	<p>The plan also supports the public use and enjoyment objects of the NPW Act by balancing the protection of wild horse heritage values (which are of community significance and attract some visitors to the park), with the benefits that will accrue from control actions (e.g. reduced risks to park visitors in some locations, improved amenity and visitor experience, etc.).</p>
<p>(1)(c) fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation</p>	<p>The removal of wild horses from identified areas will increase public enjoyment of these locations by improving the condition of the park and allowing visitors to freely move around without a risk of danger to safety. The retention of wild horses in some areas will enhance public appreciation of the wild horses and their heritage values in those locations. Members of the public will also be able to view the wild horses from retention areas which will further foster public appreciation of the wild horses.</p>
<p>(1)(d) providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation (see discussion below with respect to Matters in 72AA of the NPW Act).</p>	
<p>(2) The objects of this Act are to be achieved by applying the principles of ecologically sustainable development.</p>	

Objects of the NPW Act (section 2A)

Key principles of ecologically sustainable development (ESD) have been considered, as follows:

precautionary principle – after carefully considering and weighing potential environmental risks, the plan recognises the need to take effective management action to reduce wild horse populations in parts of the park, taking account of existing information but noting the need for ongoing research and monitoring to inform the review, assessment and adaptation of management directions as needed

intergenerational equity – implementation of the Plan will support protection of environmental quality and the maintenance of wild horse heritage values for the benefit of future generations

conservation of biodiversity and ecological integrity – the Plan will support long-term improvement to biodiversity values, including threatened species and ecological communities known to be at risk from the impacts of wild horses

improved valuation, pricing and incentives – development of the plan has considered the resource implications of the various control options, together with animal welfare and environmental objectives.

(3) In carrying out functions under this Act, the Minister, the Chief Executive and the Service are to give effect to the following—

- (a) the objects of this Act
- (b) the public interest in the protection of the values for which land is reserved under this Act and the appropriate management of those lands.

The plan gives effect to the public interest in protecting the values of the park by setting out the priority areas for wild horse management and the steps towards achieving a long-term population in parts of the park.

Matters to consider in preparing plans of management (section 72AA NPW Act)

Matters in 72AA

Consideration

- (a) Relevant management principles

The management principles for national parks are set out in section 30E of the NPW Act. Section 30E states that the purpose of reserving land as a national park is to ‘identify, protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor or tourist use and enjoyment’, so as to enable those areas to be managed in accordance with the management principles.

In summary, those management principles emphasise: the conservation of biodiversity, geological features and natural landscapes; conservation of cultural values; protection of ecological integrity for present and future generations; provision of sustainable visitor uses;

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	<p>sustainable use of buildings, structures, or modified natural area; provision for appropriate research and monitoring.</p> <p>The plan takes account of and is consistent with the management principles for national parks. It includes actions, such as identification of management areas and capture and control methods, that will support the conservation of the values identified in section 30E of the NPW Act.</p>
(b) Conservation of biodiversity, including the maintenance of habitat, ecosystems and populations of threatened species	The plan supports long-term efforts to reduce risks to all these values by managing wild horse numbers in management areas and facilitate ongoing actions to repair, restore and improve the health and condition of the park.
(c) Protection and appreciation of objects, places and structures of cultural significance, and tracts of land	The identification of actions and target management areas for the reduction of wild horse numbers has been directly informed by available information on the presence of these conservation values, condition trends over time and risk factors.
(d) Protection of landscape values and scenic features	
(e) Protection of geological and geomorphological features	
(f) Protection of wilderness values and the management of wilderness areas	
(g) Maintenance of natural processes	
(h) Rehabilitation of landscapes and the reinstatement of natural processes	
(i) Fire management	Bushfire management is a core and high priority for NPWS, to manage risks to life, property and the environment. Actions to manage these risks are set out in the reserve fire management strategy for the park.
(j) In the case of a plan of management for a national park, nature reserve or karst conservation reserve, the prohibition of the execution of any works adversely affecting the natural condition or special features of the park or reserve	Not directly relevant to the plan. The plan does not propose to prohibit works impacting park values, rather it sets out pro-active actions that will be taken over time to protect those values and maintain the heritage values of wild horses in parts of the park.
(k) Potential for the reserved land to be used by Aboriginal people for cultural purposes	The plan has been prepared in consultation with Aboriginal stakeholders. Broader approaches to the use of the park for Aboriginal cultural purposes are set out in the <i>Kosciuszko National Park Plan of Management (2006)</i> .
(l) Provision of opportunities for public understanding and appreciation of natural and cultural heritage values, including opportunities for sustainable visitor or tourist use and enjoyment of the reserved land	The plan will protect the heritage values of sustainable horse populations in parts of the park. It recognises that the ability to view wild horses in the park is valued by some park visitors and makes provision for such opportunities to continue in suitable locations.
(m) Adaptive reuse of buildings and structures	Not applicable to the plan – these matters are addressed by the <i>Kosciuszko National Park Plan of Management (2006)</i> .
(n) Appropriate (including culturally appropriate) and ecologically sustainable	There are a range of activities in the park that are undertaken by third parties, including commercial

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use of the reserved land, including use by lessees, licensees and occupiers of the land	operators and utility providers, under lease, licence and similar arrangements. Preparation of the plan has considered potential implications for these parties. Overall, and on balance, it is considered that implementation of the plan will be consistent with the activities of these parties.
(o) Preservation of catchment values	The plan will support the protection and improvement of catchment values over time, by reducing wild horse numbers in targeted locations. Ongoing research and monitoring will assist in tracking changes in catchment health associated with implementation of the plan (such as the condition of watercourses).
(p) Encouragement of appropriate research into natural and cultural features and processes, including threatening processes	The plan has been prepared taking into account a wide range of available information and research relevant to park values and wild horses.
(q) Identification and mitigation of threatening processes	Habitat degradation and loss by feral horses is a declared key threatening process under the <i>Biodiversity Conservation Act 2016</i> . The plan sets out actions that will assist to address the specific risks to the environmental values of the park, including those flagged in the declaration.
(r) Statutory natural resource management, land use management plans and land management practices of land surrounding or within a region of the reserved land	Preparation of the plan has taken account of relevant plans either in place or being developed for wild horse control in the Australian Capital Territory and Victoria. It is also consistent with land management frameworks agreed as part of the Australian Alps National Parks Cooperative Management Program.
(s) Regional, national and international context of the reserved land, the maintenance of any national and international significance of the reserved land and compliance with relevant national and international agreements, including the protection of world heritage values and the management of world heritage properties	Preparation of the plan has taken account of the recognised heritage significance of the park, including its national heritage listing under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
(t) Benefits to local communities	The plan seeks to balance the range of community views with respect to the future management of wild horses in the park. It recognises the need to both protect sustainable populations in parts of the park to support maintenance of heritage values (which are important to many in the community), with maintenance of other environmental values (incorporating social, cultural and historical aspects) which are also significant to the local and wider community.
(u) Social and economic context of the reserve so as to ensure, for example, that the provision of visitor or tourist facilities is appropriate to the surrounding area or that pest species management programs are coordinated across different tenures	The park is a significant contributor to social and economic activity in the region. Visitation to the park supports local businesses, employment and other benefits. It is recognised that the ability to view the wild horses is one reason that some people come to the park, and the actions in the

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	<p>plan will support continued opportunities for viewing to occur (especially retention areas).</p> <p>Pest species programs in the park target a range of priority species and are coordinated with other agencies, such as Local Land Services, other public land managers and park neighbours.</p>
(v) Protection and management of wild rivers	<p>Not applicable – there are no rivers in Kosciuszko National Park that have been declared as wild rivers under section 61 of the NPW Act.</p>
(w) Impact of the management and the use of land acquired under Part 11 on the reserved land’s management	<p>Not applicable – the plan does not apply to any Part 11 land.</p>

Any other matter prescribed by the regulations

Matter	Consideration
Not applicable	<p>No regulations have been established under section 14 of the <i>Kosciuszko Wild Horse Heritage Act 2018</i>.</p>