

ARALUEN NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Climate Change

July 2008

This plan of management was adopted by the Minister for Climate Change and the Environment on 21st July 2008.

Acknowledgments

This plan of management was prepared by staff of the Far South Coast Region of the National Parks and Wildlife Service, part of the Department of Environment and Climate Change.

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FOREWORD

Araluen Nature Reserve covers 656 hectares near the village of Araluen in the Southern Tablelands of NSW. The reserve was established in 2001 as a result of the Southern Regional Forest Agreement.

Araluen Nature Reserve protects a range of vegetation communities, including dry shrub forest, herb/grass dry forest, river oak forest, and moist forest, important habitat for a variety of fauna and works associated with gold mining in the 1890s.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each nature reserve. A plan of management is a legal document that outlines how an area will be managed in the years ahead.

A draft plan of management for Araluen Nature Reserves was placed on public exhibition from 10th November 2006 until 12th February 2007. The submissions received were carefully considered before adopting this plan.

This plan contains a number of actions to help achieve Priority E4 in the State Plan, *Better environmental outcomes for native vegetation, biodiversity, land, rivers, and coastal waterways*, including weed and feral animal control programs, fire management, and ongoing revegetation of disturbed areas.

This plan of management establishes the scheme of operations for Araluen Nature Reserves. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.

Verity Firth
Minister for Climate Change and the Environment

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1. MANAGEMENT CONTEXT

1.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of nature reserves in NSW is undertaken within the context of a legislative and policy framework. This primarily consists of the *National Parks and Wildlife Act 1974* (NPW Act) and Regulations, the *Threatened Species Conservation Act 1995* (TSC Act), the statewide policies of the NSW National Parks and Wildlife Service (NPWS), and internationally accepted principles of park management. Section 72AA of the NPW Act lists the matters to be considered in the preparation of a plan of management. These include nature conservation, Aboriginal and historic heritage conservation, recreation, commercial use, research and communication.

Other legislation, international agreements and charters may also apply to the management of Araluen Nature Reserve. In particular, the *Environmental Planning and Assessment Act 1979* (EPA Act) requires the assessment and mitigation of the environmental impacts of any works proposed in this plan.

A plan of management is a statutory document under the NPW Act. Once the Minister has adopted this plan, no operations may be undertaken within Araluen Nature Reserve except in accordance with the plan. The plan will also apply to any future additions to the nature reserve. Where management strategies or works are proposed that are inconsistent with this plan, an amendment to the plan will be required.

1.2 MANAGEMENT PURPOSES AND PRINCIPLES

Nature reserves are reserved under the NPW Act to protect and conserve areas containing outstanding, unique or representative ecosystems, species, communities or natural phenomena.

Under the Act, nature reserves are managed to:

- Conserve biodiversity, maintain ecosystem functions, and protect geological and geomorphological features and natural phenomena;
- Conserve places, objects, features and landscapes of cultural value;
- Promote public appreciation, enjoyment and understanding of the reserve's natural and cultural values; and
- Provide for appropriate research and monitoring.

2. ARALUEN NATURE RESERVE

2.1 LOCATION, GAZETTAL AND REGIONAL SETTING

Araluen Nature Reserve is located near the edge of the Southern Tablelands of NSW, 2 kilometres west of the village of Araluen. The reserve protects a portion of the north-eastern face of the Benmanang Range, which forms part of the watershed of Araluen Creek. The “L-shaped” reserve encompasses 656 hectares (refer Map 1).

The nature reserve was proclaimed on 1st January 2001 as an outcome of the Southern Regional Forestry Agreement following the passage of the *National Park Estate (Southern Region Reservations) Act 2000*. Prior to gazettal, the area consisted of three parcels of Crown land under permissive occupancies for the grazing of livestock and a small trig reserve centred on the Araluen trig station (refer Map 2).

In the north-east, the nature reserve adjoins a parcel of Crown land with a permissive occupancy for grazing. This land, which is located within the lower catchment of Oak Creek, remains forested. Elsewhere, the reserve abuts freehold land. The properties adjoining the northern and eastern ends of the reserve, occupying the lower, gentler slopes of the Benmanang Range, have been cleared for grazing. By contrast, those parts of the private properties adjoining the southern and western boundaries, which cover the undulating crest and relatively steep slopes of the range, are forested.

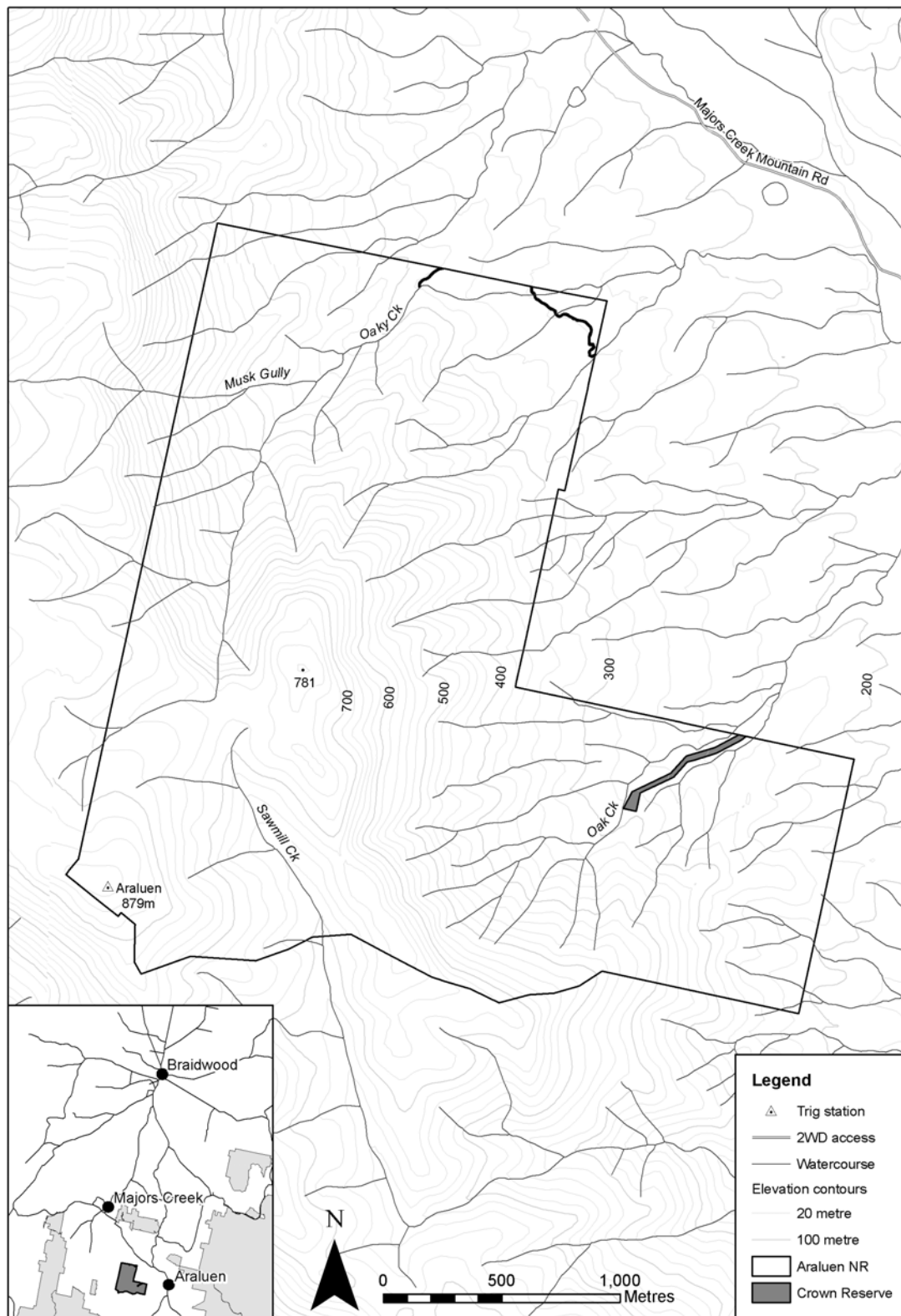
An old road reserve borders the south-west corner of the nature reserve near Araluen Trig. A second such reserve extends for a distance of 500 metres into the eastern end of the nature reserve. Roads have not been constructed in either of these reserves. Two narrow Crown reserves in the northern part of the nature reserve cover disused water races designed to divert water from tributaries of Oak Creek into the main creek channel.

The nature reserve is located within the Palerang Shire and the boundaries of the Batemans Bay Local Aboriginal Land Council.

2.2 LANDSCAPE

Natural and cultural heritage and ongoing use are strongly inter-related and together define the landscape of an area. Much of the Australian environment has been influenced by past Aboriginal and non-Aboriginal land use practices, and the activities of modern day Australians continue to influence bushland through recreational use, cultural practices and the presence of introduced plants and animals.

The geology, landforms, climate and plant and animal communities of the reserve, together with its location, have determined how the area has been – and continues to be – used by humans. Prior to the arrival of Europeans, the plant and animal resources of the area would have been utilised by Aboriginal people for a variety of purposes including food, clothing, shelter and medicinal uses. Europeans scoured the



Map 1 Araluen Nature Reserve

watercourses of the Benmanang Range for gold, and later cut timber and grazed livestock in the area. The legacy of these past uses is largely confined to the lower and gentler slopes of the reserve and includes the presence of water races and dams, fencelines, cleared areas and various weed and feral animal species. Other likely modifications include changes to forest composition, structure and age classes. Despite these impacts, the area has retained important natural values typical of the open forests of the Araluen district.

Both Aboriginal and non-Aboriginal people place cultural values on natural areas, including aesthetic, social, spiritual and recreational values. Cultural values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness, natural and cultural heritage, public use and threats to the values of the reserve are dealt with individually, though their inter-relationships are recognised.

2.3 NATURAL HERITAGE

2.3.1 Landforms, Geology, Soils and Hydrology

Araluen Nature Reserve primarily consists of a section of the steep north-eastern face of the Benmanang Range. Araluen Trig is the only part of the crest of the range included in the reserve. At 879 metres above sea level, the trig is both the highest point within the reserve and on the range. A saddle joins Araluen Trig to a slightly lower secondary ridge (high point of 781 metres) that runs parallel to the main ridge of the range. The steep relief of the upper slopes and creeklines that drain the eastern and north-eastern sides of these two ridges eases towards the base of the range. The far eastern end of the nature reserve, at 220 metres elevation, is the lowest part of the reserve.

The majority of the reserve consists of Devonian granodiorite, which is commonly exposed on ridges and along creeklines. Low cliffs are especially prevalent on the steep slopes of the range, especially those in the upper valley of Oaky Creek. The only variation in this geology occurs in the western part of the Oaky Creek catchment where sedimentary rocks such as siltstone, mudstone, shale and slate are present. The course of Sawmill Creek, in the southern part of the reserve, follows a fault line which extends northwards across the watershed into the upper valley of Oaky Creek.

The granitic soils that occur across most of the reserve are coarse-grained and highly erodable. The erosion risk is most evident in the relatively disturbed lower parts of the reserve where deeply entrenched creeklines and gullies are common.

All of the watercourses in the reserve drain into Araluen Creek which forms part of the Deua River catchment. In the northern part of the reserve, Oaky Creek flows in a northerly then an easterly direction, fed by tributaries that drain the main ridge of the Benmanang Range. The saddle linking Araluen Trig with the secondary ridge forms the watershed between Oaky Creek and Sawmill Creek which flows in a south-

easterly direction. The watercourses that drain the eastern face of the secondary ridge, the largest of which is Oak Creek, are all tributaries of Oak Creek.

Surface flow in all of the watercourses of the reserve is episodic. The natural hydrology of the lower reaches of a number of the streams has been altered through the previous construction of farm dams (in the far eastern and north-eastern parts of the reserve) and water races (linking a number of tributaries of Oak Creek with the main creek channel). The most recent works were constructed in the 1990s on Oak Creek and consist of a low concrete dam wall with a gate that opens to an excavated channel that diverts water from the creek into a dam on a neighbouring property.

2.3.2 Native Plants

The vegetation of Araluen Nature Reserve is typical of that which occurs along the length of the Benmanang Range. A number of related forest communities intergrade or merge across the reserve with changes in species composition and dominance primarily reflecting changes in aspect and elevation.

The forest ecosystems of the reserve were mapped as part of the comprehensive regional assessment process that preceded the finalisation of a regional forest agreement for the South Coast in 2000. The vegetation classification system developed during that process has been adopted for use in this plan. In places, this vegetation mapping has been corrected through ground-truthing.

Southern Escarpment Herb/Grass Dry Forest dominated by rough-barked apple (*Angophora floribunda*) and forest red gum (*E. tereticornis*) covers almost two-thirds of the reserve. This community occupies all of the dry north and east-facing slopes of the secondary ridge of the Benmanang Range, and the lower and middle valleys of Oak Creek and its tributaries. The forest understorey and groundcover are very open and sparse and are dominated by low grasses. The steep ridges are dotted with kurrajongs (*Brachychiton populneus*), cherry ballart (*Exocarpus cupressiformis*) and occasional patches of spiny-headed mat-rush (*Lomandra longifolia*), while isolated individuals of sweet pittosporum (*Pittosporum undulatum*) persist along creeklines and on the more sheltered aspects of the ridges. Several species of low shrubs, including dolly bush (*Cassinia aculeata*), commonly occur on the upper parts of the dry ridges, as do golden everlastings (*Xerochrysum bracteatum*) and stands of black wattle (*Acacia mearnsii*).

In the lower parts of the reserve, this forest community commonly consists of groves of relatively young trees and the occasional large forest red gum, indicating a history of past disturbance. The understorey here is also very open and dominated by low grasses. Other species commonly present include berry saltbush (*Eianadia hastata*), Australian indigo (*Indigofera australis*) and wombat berry vine (*Eustrephus latifolius*). Thickets of Australian blackthorn (*Bursaria spinosa*) and black wattles are present, as are patches of spiny-headed mat-rush. Weed species associated with past livestock grazing are common in the forest understorey of these lower slopes and valleys where native species such as headache vine (*Clematis glycinoides*) and black stem maidenhair (*Adiantum formosum*) are also present.

A corridor of river oaks (*Casuarina cunninghamiana*) occurs along the length of Oaky Creek and some of the other larger creeklines together with sweet pittosporum trees and clumps of sickle fern (*Pellaea falcata*). River oaks and pittosporum form a closed riparian corridor in the middle and upper reaches of Oaky Creek. This community includes subtropical elements, such as giant stinging trees (*Dendrocnide excelsa*), and has an open understorey dominated by vines, mosses and ferns. The mixed dry forest adjacent to this riparian community includes messmate (*E. obliqua*), which is more commonly found in wetter forest types.

Towards the top of the dry north and east facing slopes of the secondary ridge, the rough-barked apples and forest red gums are replaced by silvertop ash (*Eucalyptus sieberi*). Known as Southern Coastal Foothills Dry Shrub Forest, this forest community covers nearly a quarter of the reserve area. It occupies most of the crest and top slopes of the secondary ridge and the Benmanang Range and the saddle joining the two. The understorey of this forest community is also very open and dominated by low grasses. Common understorey species shared with adjoining vegetation types include golden everlastings, spiny-headed mat rushes, black wattles and cherry ballarts.

The eastern side of the valley of Sawmill Creek is primarily covered by Araluen Acacia Herb/Grass Dry Forest, in which the canopy is dominated by yellow box (*Eucalyptus melliodora*) and Maiden's gum (*E. maidenii*). This community also occurs in two places along the western boundary of the reserve on the steep eastern slopes of the main ridge of the Benmanang Range.

Southern Escarpment Shrub/Fern/Herb Moist Forest occupies the headwaters of Sawmill Creek. The dominant canopy species in this forest type are mountain grey gum (*E. cypellocarpa*), brown barrel (*E. fastigata*) and messmate (*E. obliqua*). Understorey species include sweet pittosporum, rough tree ferns (*Cyathea australis*), golden everlastings, sickle ferns and low grasses and herbs.

Several small areas in the far eastern and northern parts of the reserve that adjoin private property have previously been cleared for livestock grazing. Totalling about 9ha in extent, these areas support severe infestations of agricultural weeds, though there is limited regrowth of wattles, eucalypts and blackthorn bushes.

2.3.3 Native Animals

The vegetation communities of the reserve provide habitats for a variety of native animals that are commonly found in the tableland and escarpment forests.

Fauna surveys have not been undertaken in the reserve, though common wombats (*Vombatus ursinus*), swamp wallabies (*Wallabia bicolor*) and red-necked wallabies (*Macropus rufogriseus*) are known to be present. A number of arboreal mammal species are also expected to be present, including the common brushtail possum (*Trichosurus vulpecula*), common ring-tailed possum (*Pseudocheirus peregrinus*) and

several species of gliders. Several species of forest bats, including the common bentwing bat (*Miniopterus schreibersii*), are likely to forage over the reserve.

The reserve is inhabited by a diversity of forest birds including lyrebirds (*Menura novaehollandiae*), Australian magpies (*Gymnorhina tibicen*), white-throated treecreepers (*Cormobates leucophaeus*), Australian ravens (*Corvus coronoides*), pied currawongs (*Strepera graculina*), gang-gang cockatoos (*Callocephalon fimbriatum*), red wattlebirds (*Anthochaera carunculata*), galahs (*Eolophus roseicapillus*), sulphur-crested cockatoos (*Cacatua galerita*) and kookaburras (*Dacelo novaeguineae*). Of these, the gang-gang cockatoo is listed as vulnerable under the NSW *Threatened Species Conservation Act 1995*. A large number of small forest birds are also likely to be present including various fantails, honeyeaters, whistlers, thornbills, wrens, finches and robins.

Little is known of the amphibian, reptile or invertebrate fauna, though red-bellied black snakes (*Pseudechis porphyriacus*) are known to be present.

2.4 CULTURAL HERITAGE

2.4.1 Aboriginal Heritage

Araluen Nature Reserve lies in the country of the Walbunja people, whose territory included the valleys of the Deua River and its tributaries. Araluen is the phonetically-derived Aboriginal word (Arr-a l-yin) for “waterlily” in the local dialect of the Monaro language.

Very little information has been recorded concerning the Aboriginal presence and use of the Araluen Valley, though it would have formed part of a travel route linking the tablelands with the coast. Archaeological surveys have not been undertaken in the reserve.

2.4.2 Non-Aboriginal Heritage

The first Europeans to explore the Araluen district were William Kearns, Henry Marsh and William Packer. In 1821 they entered the Araluen Valley while searching for a route for a track between Batemans Bay and Limestone Plains (now Canberra). They were followed in 1828 by Assistant Surveyor Ogilvie who mapped the tributaries of the Deua River for the purpose of delineating the southern boundary of the County of St Vincent. Within a few years the first European settlers had occupied parts of the valley and established cattle grazing ventures.

The 1851 discovery of gold near the junction of Araluen Creek and the Deua River by Alexander Waddell rapidly transformed the valley. By early the following year the township of Araluen consisted of a long chain of settlements along the valley floor with a population of 1,600 with a further 1,000 prospectors and miners scattered across smaller nearby mining fields. By the mid-1860s the population of the valley peaked at around 7,000 people.

The district (including the area that now constitutes the nature reserve) was proclaimed the Araluen Gold Field on 4th November 1893 under the provisions of the *Mining Act 1874*. While there is no evidence of actual mining within the reserve, water was collected from the area for use in nearby mining operations. Once the easily won alluvial gold deposits were exhausted, hydraulic stripping and sluicing were introduced. Within the reserve area, water races and associated earthworks were constructed across the lower slopes of the Benmanang Range to collect and divert water from Oaky Creek and its tributaries to a gold mining operation located to the north of the reserve boundary.

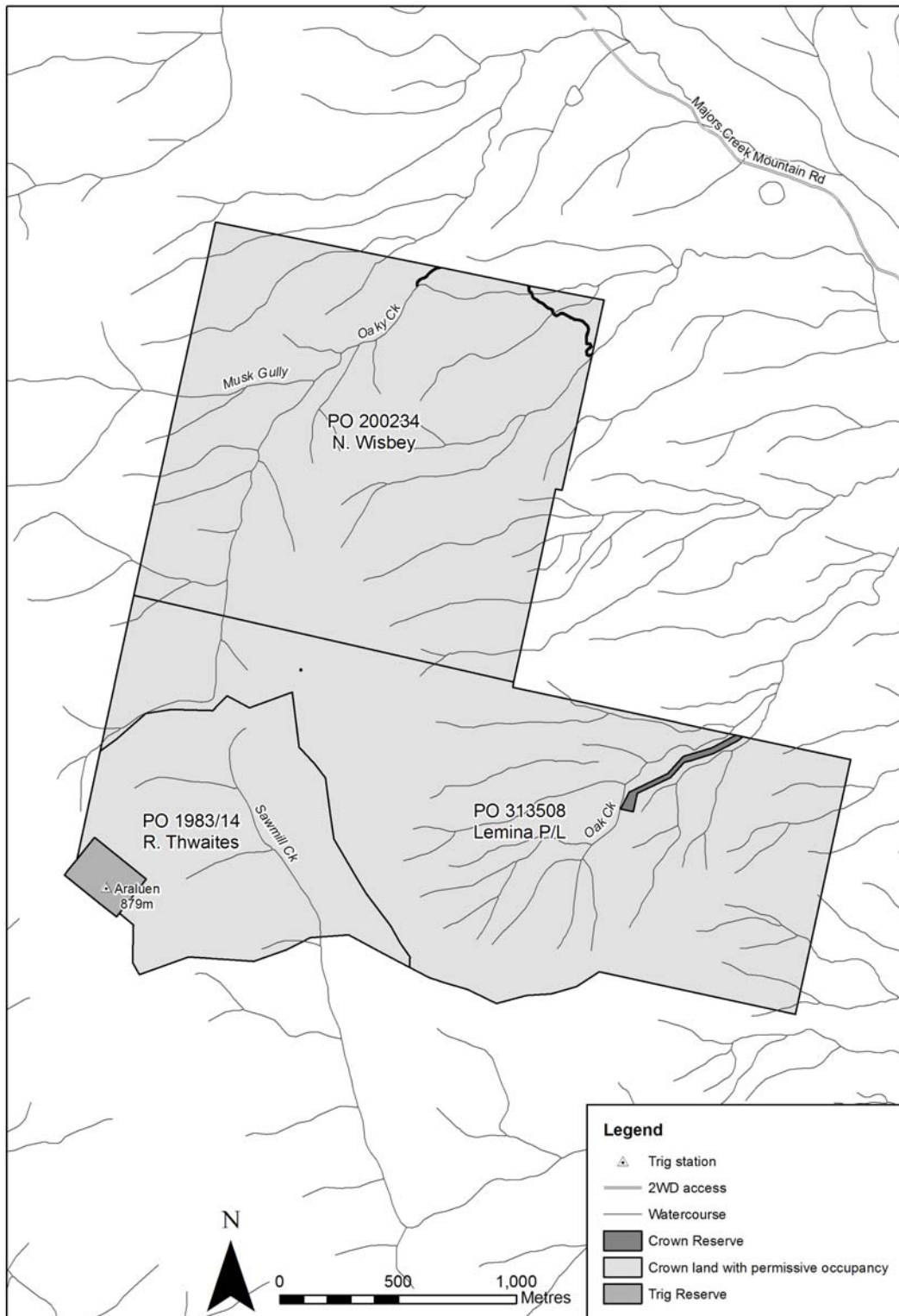
An 1893 map of the region has the Araluen Trig marked, and shows the area that now forms the reserve covered by three adjoining grazing holdings. The headwaters of Sawmill Creek (now within the nature reserve) is named "The Springs". On a 1931 map most of the reserve area is marked as a Temporary Common "notified 10th Nov 1909". Grazing rights over this Crown land were subsequently formalised through the creation of three separate permissive occupancies and a small trig reserve was gazetted centred on Araluen Trig Station (refer Map 2).

Livestock grazing in the reserve area was largely confined to the lower and gentler slopes, though the remains of an old fenceline crosses the crest of the secondary ridge indicating that higher areas were at one time also utilised. Cattle were last grazed on the permissive occupancy covering the northern part of the reserve area in the early 1980s, highlighting the marginal nature of most of this country.

The remaining evidence and impacts associated with grazing include cleared areas, weeds, fences, tracks, cut tree stumps, and various earthworks. Small cleared areas exist in the far northern and eastern ends of the reserve near where it abuts private property. These areas support a range of exotic plant species (refer Section 2.6.1). The stock fences that mark the boundary of the lower parts of the reserve are of varying ages and states of repair. Not all of them are stockproof, nor do they all follow the actual boundary of the reserve.

A small number of old benched tracks exist in the lower parts of the reserve. The most obvious of these are located in the valley of Oaky Creek and environs and around the lower slopes of the far eastern end of the reserve. Cut tree stumps are sometimes found in the lower slope forests. Trees were occasionally felled in the reserve area to provide fencing timbers, though they may also have been cut during the gold mining era to fuel steam engines.

As with the gold mining era, the main use of the reserve area during the grazing period was for the harvesting of water. A number of farm dams, together with earth banks and channels, were constructed in the far northern and eastern ends of the reserve. The earliest of the dams were excavated during the 1960s. More recently, a concrete dam with a gate was constructed across the main channel of Oaky Creek during the 1990s. The gate opens onto a diversion channel which directs water into a dam on a neighbouring property for stone fruit irrigation. Consent was neither sought nor granted for any of these works.



Map 2 Land Tenure Prior To Reservation

The area was proclaimed as Araluen Nature Reserve on 1st January 2001 as an outcome of the Southern Regional Forestry Agreement following the passage of the *National Park Estate (Southern Region Reservations) Act 2000*.

2.5 PUBLIC USE

Visitation to Araluen Nature Reserve is likely to be very low. This is largely due to the lack of public access to the reserve, which is completely surrounded by freehold and leasehold land. Other influencing factors include the lack of promotion of the reserve, the steepness of the terrain and the absence of obvious drawcard features that are likely to attract large numbers of visitors.

Recreational infrastructure has not been developed in the reserve. Although a number of old disused roads exist across some of the lower slopes, none of these are considered to have recreational use potential. Araluen Trig, the highest point of the Benmanang Range, has some attraction as a recreational destination for experienced walkers despite the lack of views available from the trig station.

2.6 THREATS TO RESERVE VALUES

2.6.1 Introduced Plants

Weed infestations are primarily, though not exclusively, concentrated in the lower parts of the reserve that were formerly grazed by livestock. The relatively remote western half of the reserve is virtually weed-free.

The highly-disturbed lower slopes of the far northern and eastern ends of the reserve have been invaded by weed species such as mullein (*Verbascum thapsus*), purple top (*Verbena bonariensis*) and St John's wort (*Hypericum perforatum*). Infestations are most pronounced in those areas that were cleared for grazing. Ornamental species such as sweet briar (*Rosa rubiginosa*) and firethorn (*Pyracantha fortuneana*) are present in the cleared land at the eastern end of the reserve, as is the tree of heaven (*Ailanthus altissima*) which occurs in certain creeklines.

Serrated tussock (*Nassella trichotoma*) is also present on the lower eastern and northern parts of the reserve. The species has spread over the last 15–20 years and now infests approximately 50ha of the reserve. The NPWS initiated a spraying program in late 2001 to control the species.

The valley of Oaky Creek supports a variety of weed species, the most noticeable of which include Jerusalem cherry (*Solanum pseudocapsicum*) and inkweed (*Phytolacca octandra*). Infestations of blackberry (*Rubus fruticosus*) are neither common nor extensive but do exist in places along a number of watercourses.

Prickly pear (*Opuntia sp*) is the most widespread weed in the reserve. This species has extended from the highly-disturbed lower slopes to infest virtually all of the eastern and northern parts of the reserve. It occupies all of the steep ridges and

valleys of the northern and eastern faces of the secondary ridge to just below the ridge crest. Within the reserve, the species is present as individual plants spaced apart rather than as dense impenetrable infestations. Biocontrol programs for prickly pear have previously been undertaken in the Araluen valley and it is likely that the Argentine moth (*Cactoblastus cactorum*) and conchinela are present on plants in the reserve.

2.6.2 Introduced Animals

Feral goats (*Capra hircus*) are present in the reserve and on neighbouring properties. They appear to favour the steep north and east-facing slopes and have been observed foraging along the length of the valley of Oaky Creek. A feral goat control program was undertaken in 2003, with a contractor capturing and removing more than 50 goats from the area.

Rutting damage from wild pigs (*Sus scrofa*) is evident in places in the valley of Oaky Creek. Rabbits (*Oryctolagus cuniculus*) occur in the reserve, but appear to be largely confined to the lower and gentler slopes. By contrast, foxes (*Vulpes vulpes*) are likely to be present throughout the reserve.

2.6.3 Fire

This section of the plan outlines the basis and proposed strategies for fire management within Araluen Nature Reserve. In this respect, the following information constitutes a Type 1 Reserve Fire Management Strategy as defined by the NPWS Fire Management Planning Policy 2.1.

Fire is a natural feature of many environments and is essential to the survival of some plant communities. Inappropriate fire regimes however can lead to loss of particular plant and animal species and communities. Fire can also damage cultural heritage sites, recreation and management facilities and can threaten visitors and neighbouring land.

The reserve area was last burnt in 1944, when a wildfire that originated near Majors Creek burnt across the entire northern face of the Benmanang Range. Despite this fire-free period of more than 60 years, very little fuel has accumulated in the forests of the reserve. Fuel loads on the dry ridges are typically less than 7t/ha. Most forest types support an extremely sparse understorey and patchy groundcover. Given this and the lack of access for the general public, the likelihood of fires originating within the reserve is regarded as low. Lightning strikes represent the only likely ignition source of wildfires within the reserve.

The main fire threats to the reserve are from fires originating on adjoining properties, especially those located to the east and north of the reserve, or from large bushfires burning during high fire danger periods under west to north-westerly winds.

The NPWS has assessed Araluen Nature Reserve for fire management planning purposes and has zoned the entire reserve as a Heritage Management Zone (HAMZ).

The primary fire management objectives within this zone are to prevent the extinction of all species that are known to occur naturally within the reserve, and to protect cultural heritage values. The reserve has been designated as a HAMZ because it does not have a history of frequent bushfire ignitions. The HAMZ does not require intensive management and focuses on those actions appropriate to conserve biodiversity and cultural heritage values. The steepness of the terrain precludes the development of fire trails or breaks within the reserve.

A diversity of fire regimes is needed to maintain natural plant diversity in forested areas. Management of fire should ideally aim to provide a pattern of fires of high, moderate and low intensity, frequency and extent. Extinctions are most likely when fire regimes of relatively fixed intensity, frequency and extent prevail without variation. Further, areas burnt too frequently are reduced to pyrogenic species that accumulate fuel quickly and are capable of supporting further frequent burning.

Although the fire frequency in the dry forests of the reserve is less than the threshold recommended to maintain biodiversity in such communities, the deliberate introduction of fire into the reserve is not recommended. This is due to:

- The general lack of fuel in the understorey of these forests;
- The vegetation communities present;
- The steepness of the terrain and absence of vehicular access making fire containment difficult; and
- The absence of any strategic fire protection advantages in burning part(s) or all of the area.

The NPWS maintains cooperative arrangements with the Lake George Rural Fire Service brigade and is actively involved in the Lake George Bush Fire Management Committee.

3. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
<p>Natural Heritage</p> <p>The reserve contains a number of vegetation communities, though information regarding their distribution and composition is limited.</p> <p>The reserve is inhabited or utilised by one known threatened species, the gang gang cockatoo.</p> <p>Parts of the reserve have previously been cleared for grazing.</p>	<p>Improved knowledge of native plant and animal species and communities present.</p>	<p>Investigate and pursue opportunities to survey and map the flora and fauna of the reserve through the involvement of field naturalists or other appropriate groups or individuals.</p>	<p>Low</p>
	<p>All native plant and animal species are conserved.</p>	<p>Implement the relevant actions in the Threatened Species Priorities Action Statement for the gang gang cockatoo and any other threatened species found in the reserve.</p>	<p>High</p>
	<p>Previously cleared areas are restored to a natural or near-natural condition.</p>	<p>Manage weeds, feral animals and fire so as to enhance the natural values of the reserve, including the ongoing natural revegetation of disturbed areas (refer also to the Introduced Species and Fire Management prescriptions).</p>	<p>High (o)</p>
		<p>Prepare and implement restoration strategies for those parts of the reserve that have previously been cleared. These strategies will consist of integrated weed control and revegetation programs for these areas.</p>	<p>Medium</p>
		<p>Establish and maintain photo points to monitor the effectiveness and progress of restoration strategies.</p>	<p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priority
<p>Cultural Heritage</p> <p>There is incomplete knowledge of the cultural heritage values of the reserve, although a number of structures associated with past use of the area have been recorded.</p> <p>There is only limited appreciation of changes in the condition and conservation requirements of known cultural heritage sites and features.</p>	<p>Improved knowledge of the cultural heritage values of the reserve.</p> <p>All cultural heritage values are appropriately conserved.</p>	<p>Undertake a survey of Aboriginal sites in conjunction with the Batemans Bay Local Aboriginal Land Council.</p> <p>Undertake a survey of non-Aboriginal sites in the reserve.</p> <p>Investigate and pursue opportunities to record oral histories of people with connections to the reserve through the involvement of appropriate organisations and individuals.</p> <p>Undertake documentary research concerning the history of the reserve area.</p> <p>Fully record cultural heritage sites and features in the reserve, including:</p> <ul style="list-style-type: none"> - Araluen Trig Station; - Early water races and associated earthworks; and - Early fencing and other infrastructure associated with grazing. <p>Initiate a periodic monitoring program to identify changes in the condition of these and other heritage sites and features. Undertake maintenance work as necessary.</p>	<p>Medium</p> <p>Medium</p> <p>Low</p> <p>Low</p> <p>Medium</p> <p>Low (o)</p>

Current Situation	Desired Outcomes	Strategies	Priority
<p>Public Use</p> <p>Visitation to the reserve is currently at low levels.</p>	<p>Visitation is not encouraged.</p>	<p>Allow walking throughout the reserve.</p> <p>Do not promote the reserve as a recreational destination.</p> <p>Do not provide any recreational infrastructure in the reserve.</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>
<p>Introduced Species</p> <p>There is incomplete knowledge of the weed species present and their distributions.</p> <p>There have been reductions in the distributions of major weed species, though the impact of some weeds on the values of the reserve remains considerable.</p>	<p>Improved knowledge of weed species present and their distributions.</p> <p>The impact of weed species on the values of the reserve is minimised.</p>	<p>Survey and map all major weed species present in the reserve.</p> <p>Continue weed control programs in accordance with the Regional Pest Management Strategy. Priority will be given to controlling Declared Noxious Weeds in the Palerang Shire, namely:</p> <ul style="list-style-type: none"> - serrated tussock; - prickly pear; - blackberry; - sweet briar; and - St John's wort. <p>Eradicate weed species of localised distribution, including known populations of firethorn and tree of heaven.</p>	<p>High (o)</p> <p>High (o)</p> <p>High</p>

Impacts of certain feral animal species, such as goats, may be significant.	The impact of introduced animal species on the values of the reserve is minimised.	Undertake weed control programs targeting multiple species as part of restoration strategies for previously cleared areas (refer Natural Heritage prescriptions).	Medium
		Test for the presence of the Cactoblastus moth and conchinea in prickly pear infestations. Introduce and facilitate spread if necessary.	High
		Undertake a monitoring program to measure the effectiveness of biocontrol agents on prickly pear.	High (o)
		Monitor and map changes in the distribution of major weed species in response to control programs. Alter control programs as required in response to monitoring results.	High (o)
		Liaise with neighbouring landowners concerning the coordination of weed control programs.	High (o)
		Continue feral animal control programs in accordance with the Regional Pest Management Strategy. Coordinate goat control programs with neighbouring landowners.	High (o)

Current Situation	Desired Outcomes	Strategies	Priority
<p>Fire Management</p> <p>The incidence of wildfires in the reserve in the recent past is low.</p>	<p>Manage fire to:</p> <ul style="list-style-type: none"> • protect human life and property within and adjacent to the reserve; • maintain plant and animal species and communities through the provision of fire regimes compatible with their conservation; and • protect Aboriginal and European cultural sites, and management infrastructure. <p>Control all wildfires occurring in the reserve and minimise impacts associated with fire suppression operations.</p>	<p>Map and enter burnt areas into the NPWS corporate GIS database.</p> <p>Continue to participate in the Lake George District Bush Fire Management Committee.</p> <p>Maintain coordination and cooperation with Rural Fire Service brigades, Council fire control officers and neighbours with regard to fuel management and fire suppression.</p> <p>Exclude fire from the reserve for the period of this plan.</p> <p>Control all unplanned fires in the reserve as soon as possible.</p> <p>Rehabilitate any areas disturbed by fire suppression operations as soon as practical after a fire.</p>	<p>High (o)</p> <p>High (o)</p> <p>High (o)</p> <p>High (o)</p> <p>High (o)</p> <p>High (o)</p>

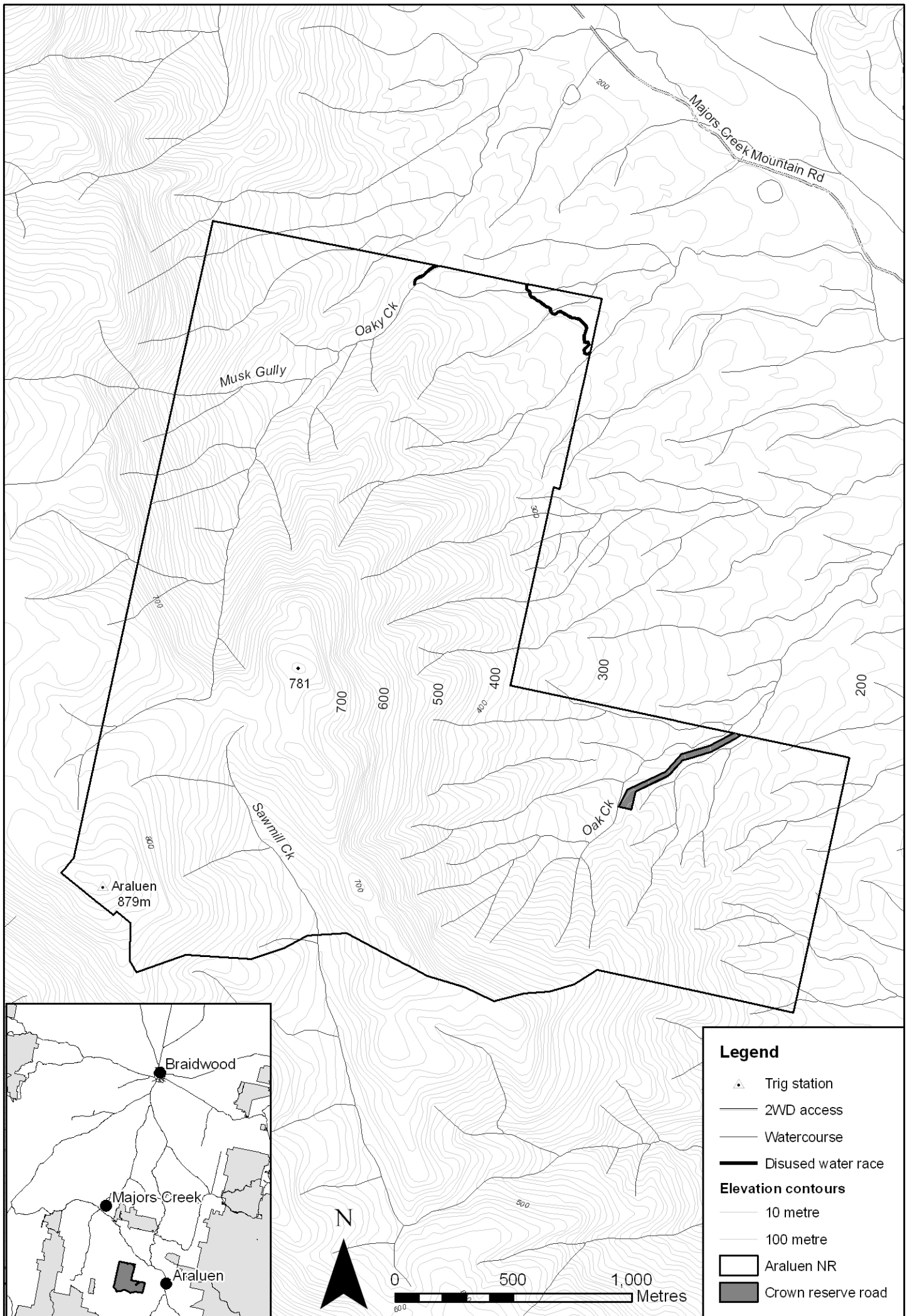
Current Situation	Desired Outcomes	Strategies	Priority
<p>Reserve Boundaries & Unauthorised Developments</p> <p>Several redundant Crown reserves extend into or across parts of the nature reserve.</p> <p>In places the boundary fencing is not stock proof or does not follow the actual reserve boundary. In the northern part of the reserve, the boundary fencing is located well inside the reserve.</p> <p>Various dams, channels and other earthworks have previously been constructed for grazing purposes in the reserve area without authorisation. A concrete dam constructed in the reserve in the 1990s impedes water flows in Oaky Creek.</p>	<p>All internal Crown reserves are incorporated into the nature reserve.</p> <p>All boundary fences are stock proof and follow the correct boundary alignment.</p> <p>The impact of unauthorised structures on natural values is minimised.</p>	<p>Seek to have all internal Crown reserves incorporated into the nature reserve.</p> <p>Seek to have all of the fences along the lower parts of the reserve boundary repaired and maintained to a stock proof standard.</p> <p>Inspect the boundary fences along the lower parts of the reserve to ensure they correspond with the actual boundaries of the reserve. Change fence alignments as necessary.</p> <p>Assess the heritage significance and environmental impact of farm dams, channels and other earthworks associated with grazing. Determine the future management of individual developments based upon the results of these assessments and the likely financial and environmental costs and benefits of remediating each site.</p> <p>Remove the gate in the concrete dam constructed during the 1990s across the main channel of Oaky Creek.</p>	<p>Low</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p>

High priority activities are those imperative to achievement of the management objectives and desired outcomes for the reserve. They must be undertaken in the near future to avoid significant deterioration in the natural or cultural values of the reserve.

Medium priority activities are those that are necessary to achieve the management objectives and desired outcomes but are not urgent.

Low priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.

(o) Ongoing activities are those that are undertaken in the course of day-to-day reserve management or those that are generally permitted.



Legend

- ▲ Trig station
- 2WD access
- Watercourse
- Disused water race
- Elevation contours**
- 10 metre
- 100 metre
- Araluen NR
- Crown reserve road