

WALLUMATTA NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Sydney, February 1999

This plan of management was adopted by the Minister for the Environment on 9 February 1999.

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Cover photograph: Sydney Turpentine Ironbark Forest in Wallumatta Nature Reserve. This vegetation community was listed as an endangered ecological community in October 1998. Photo by Alison Ramasy.

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FOREWORD

Wallumatta Nature Reserve is a small reserve, only 6.195 hectares in size, located in the Sydney suburb of East Ryde. It is bounded by sealed roads and residential development.

Although small in area, the nature reserve conserves a rare example of open forest on Wianamatta Shale soil. The reserve is also important because it includes species from both wetter and drier shale forests as well as Hawkesbury Sandstone vegetation.

This plan of management emphasises the conservation of the reserve's uncommon Wianamatta Shale vegetation and the promotion of public understanding and awareness of the value of this small remnant area of bush within Sydney. It also recognises the local residents who were instrumental in pressuring for dedication of the reserve, and since then have provided outstanding assistance in bush regeneration and weed control on the reserve. Under this plan of management the loop walking track and information brochure for Wallumatta Nature Reserve will be upgraded, the bush regeneration program will be continued, and on-going scientific investigation and environmental education will be encouraged.

In accordance with section 76 of the National Parks and Wildlife Act 1974, this plan of management for Wallumatta Nature Reserve is hereby adopted.

Pam Allan
Minister for the Environment

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1. INTRODUCTION

The 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 the nature reserve will be managed in the years ahead.

The procedures for the adoption of a plan of management for a nature reserve are specified in the Act:

- where a plan of management has been prepared, the Director-General is required to refer the plan to the National Parks and Wildlife Advisory Council for its consideration and advice;
- the Director-General is required to submit the plan to the Minister, together with any comments or suggestions of the Advisory Council; and
- the Minister may adopt the plan without alteration or with such alterations as the Minister may think fit, or may refer it back to the Director-General and Council for further consideration.

Once a plan of management has been adopted by the Minister, no operations may be undertaken within the nature reserve except in accordance with the plan.

Although not a requirement under the Act to exhibit plans for nature reserves, a draft plan of management for Wallumatta Nature Reserve was placed on public exhibition from 21st November 1997 until 16th February 1998. Seven submissions were received which raised a total of 10 issues.

All comments received were referred to the National Parks and Wildlife Advisory Council for its consideration and advice. The comments and suggestions of the Advisory Council were in turn considered by the Minister before adopting this plan.

Additional information or enquires on any aspect of the plan can be obtained from Lane Cove National Park, Lady Game Drive, Chatswood 2067 or by telephone on (02) 9412 1811.

2. MANAGEMENT CONTEXT

2.1 NATURE RESERVES IN NEW SOUTH WALES

Reserving areas for nature conservation as a general purpose was introduced into Australia with the establishment of the Royal National Park in 1879.

Nature reserves in New South Wales arose out of fauna reserves. Fauna reserves were first established under the *Fauna Protection Act 1948*, which was replaced by the *National Parks and Wildlife Act 1967*. Under the latter Act, fauna reserves were re-classified as nature reserves. The 1967 Act has since been replaced by the *National Parks and Wildlife Act 1974*.

Under the National Parks and Wildlife Act, nature reserves are areas of special scientific interest containing wildlife or natural environments or natural phenomena.

The purpose of nature reserves are defined in the Act as:

- (a) the care, propagation, preservation and conservation of wildlife;
- (b) the care, preservation and conservation of natural environments and natural phenomena;
- (c) the study of wildlife, natural environments and natural phenomena; and
- (d) the promotion of the appreciation and enjoyment of wildlife, natural environments and natural phenomena.

Nature reserves are valuable refuge areas where natural processes, phenomena and wildlife can be studied. They differ from national parks which include as a major objective the provision of appropriate recreation opportunities.

2.2 WALLUMATTA NATURE RESERVE

2.2.1 Location and Regional Context

Wallumatta Nature Reserves covers an area of 6.195 hectares within the Sydney Metropolitan area. It was dedicated in November 1990 over land previously owned by the New South Wales Department of Health and cared for by the nearby Macquarie Hospital. The reserve is located on the corner of Twin Road and Cressy Road, East Ryde (see map, page 3). It is located within suburban Sydney, only 10 kilometres from the Central Business District, and surrounded by residential development, hospital facilities and sealed roads.

Wallumatta Nature Reserve protects one of the last remaining areas of native forest on shale soils within Sydney. Practically all fertile shale soils were cleared for farming in the nineteenth century, and as a result the majority of bushland reserves within Sydney are situated on the less fertile Hawkesbury sandstone soils, which support markedly different vegetation. Dalrymple-Hay Nature Reserve on Mona Vale Road at St Ives is also on shale but contains a wetter tall open forest with different species, while the shale west of Parramatta supports a drier woodland community.

2.2.2 The Significance of Wallumatta Nature Reserve

Wallumatta Nature Reserve was established to protect its Wianamatta shale vegetation. Its dedication was largely due to the efforts of community groups to preserve this small area of natural bush from urban development. At that time it was also recognised as being of importance as an area for students to study this vegetation community as it is one of the few stands of open forest on shale soil that is conserved in the Sydney metropolitan area. Benson and Howell (1994) estimated that only 0.5% of turpentine/ironbark forest on Wianamatta shale soils remains within the Sydney region.

Wallumatta Nature Reserve is located in a '*transition zone*' between Wianamatta shale and the more prevalent, less fertile Hawkesbury sandstone. The reserve contains soils derived from both rock types as well as an area where the soils are a mix derived from the two. The vegetation of the reserve reflects the soils and therefore there are distinct changes in plant species throughout the reserve.

The vegetation of Wallumatta Nature Reserve is also important because it contains species from both the wetter shale forests of the north shore of Sydney and drier shale woodlands west of Parramatta.

The range of soil and vegetation types within the reserve makes it a valuable area for environmental education and research. It is used by students from the nearby primary schools, horticulture school and universities for education and research purposes. A number of students have undertaken major projects based on the reserve.

Wallumatta Nature Reserve is part of a number of parks and reserves across Sydney which provide habitat for native animals. A wildlife corridor between the reserve and the nearby Lane Cove National Park is provided by a number of small local council reserves along Kittys Creek.

Although little physical evidence remains of past use of the reserve by Aboriginal or European people, the past Aboriginal occupation of the area is recognised in the name of the reserve and the reserve has an interesting recent history as part of the struggle to protect small remnant bushland within Sydney from development.

The importance of Wallumatta Nature Reserve was recognised in 1986 when an Interim Conservation Order under the NSW Heritage Act was placed over the area

to protect it from residential development. In 1990 the reserve was also listed by the Australian Heritage Commission on the Register of the National Estate.

Wallumatta Nature Reserve is predominantly used by local residents, many of whom take great pride in the site and have undertaken considerable work controlling weeds, restoring tracks and planting trees on the reserve. As such it is an important part of the local community.

The importance of Wallumatta Nature Reserve can be summarised as:

- it contains one of the last remaining open forests on shale soil in the Sydney metropolitan area, with species from both the wetter shale forests of the north shore of Sydney and drier shale woodlands west of Parramatta;
- it contains both Wianamatta shale and Hawkesbury sandstone soils and the vegetation species and communities associated with them;
- it is part of a wildlife corridor which provides habitat for native animals;
- it was the subject of major community action in the late 1980s, which built a strong level of support for the reserve within the local community which continues today;
- it is an important area for environmental education and scientific research; and
- it is listed by the Australian Heritage Commission on the Register of the National Estate.

3. OBJECTIVES OF MANAGEMENT

3.1 GENERAL OBJECTIVES

The following general objectives relate to the management of nature reserves in New South Wales:

- the protection and preservation of scenic and natural features;
- the maintenance of natural processes as far as is possible;
- the preservation of Aboriginal sites and historic features; and
- the encouragement of scientific and educational inquiry into environmental features and processes.

3.2 SPECIFIC OBJECTIVES FOR WALLUMATTA NATURE RESERVE

In addition to these general objectives, the following specific objectives also apply to the management of Wallumatta Nature Reserve:

- the conservation of the natural vegetation of the reserve, with priority given to the remaining Wianamatta shale vegetation;
- the restoration of natural vegetation communities where disturbed;
- the promotion of public awareness and appreciation of the features and processes of Wallumatta Nature Reserve and the need to protect remnant shale communities within the Sydney region; and
- the encouragement of environmental education, research and community involvement in the reserve.

4. POLICIES AND FRAMEWORK FOR MANAGEMENT

This chapter contains the policies and framework for the management of Wallumatta Nature Reserve, together with relevant background information. Policies are summarised under the following section headings :

- Natural and Cultural Heritage, and
- Use of the Area.

The policies established in this plan of management will provide the framework for management consistent with anticipated resources available to the Service and with anticipated community trends for the next five to ten years.

The actions identified are those immediate proposals which are to be undertaken in the next five years. Other management actions may be developed over the life span of this plan consistent with the policies set out in this plan.

4.1 NATURAL AND CULTURAL HERITAGE

4.1.1 Geology, Soils and Landforms

Wallumatta Nature Reserve is situated on a transition zone between Ashfield Shale, one of the Wianamatta group of shales and sandstones, and Hawkesbury Sandstone. It therefore contains soils derived from both rock types as well as an area of mixed shale and sandstone.

- **Wianamatta Shale** - The shale was deposited in a shallow marine environment and consists of dark claystone/siltstone and fine sandstone/siltstone laminates. This rock type produces a soil with a high nutrient content relative to most other soils occurring in the Sydney area. Shale soils generally occur along ridgetops within the Sydney region. The shale soils within Wallumatta Nature Reserve are located in the southern corner of the reserve and extend along most of the Twin Road and Cressy Road sides of the reserve (see map, page 3). These soils are highly erodible if disturbed and are in places impermeable due to a highly plastic clay sub-soil.
- **Hawkesbury Sandstone** - The underlying quartzose Hawkesbury sandstone was deposited earlier, during the Triassic period. The Hawkesbury sandstone within the nature reserve lies in a band approximately 100 metres wide along the north-eastern (Kittys Creek) boundary. Soils derived from Hawkesbury sandstone are common throughout the Sydney region and have a very low nutrient content. Sandstone soils are usually more porous and therefore drain better than shale soils, and are highly erodible if disturbed.

The area between these two distinctive rock types, which includes most of the western boundary of the reserve, consists of mixed lithology of both Wianamatta shale and Hawkesbury sandstone. This area has yellow-grey clay sub-soils

The Kittys Creek end of the reserve contains exposed sandstone with small rock shelves. Soil depths in this area fluctuate considerably. The Norfolk Green and Twin Road sides of the reserve are mostly level, with little exposed rock. The soil pH showed a uniform reading of 6 throughout the reserve, which indicates that the reserve has suffered little disturbance.

Wallumatta Nature Reserve is situated on a gentle slope, descending from west to east from the Twin Road/Norfolk Green corner, with an average grade of 1 in 15. The reserve forms part of the water catchment area for Kittys Creek, North Ryde, however there are no creeks or other watercourses within the reserve. This has limited the level of erosion, nutrient enrichment, pollution and weeds within the reserve. In 1993 a drainage line was however placed along the Kittys Creek boundary of the reserve to reduce water flowing through adjoining properties.

Until the late 1980s the soil in the centre of the reserve was compacted by vehicles, and rubbish dumping and fires were frequent occurrences. In the early 1990s the road edges of the reserve were fenced, many tracks were closed and allowed to revegetate, and a cleared and compacted area in the centre of the reserve turned over and planted with tube stock. However, a number of informal tracks have recently been formed within the reserve by people taking short-cuts through the reserve and by children with bicycles. These tracks channel water, destroy vegetation and are a source of weeds and other impacts on the surrounding vegetation. In addition, use of the loop walking track by bicycles has caused the removal of leaf litter from the track and increased erosion of the track.

Policies

- Where erosion has been accelerated by human activity or is threatening the conservation of the Wianamatta Shale vegetation, erosion control and prevention measures will be undertaken in accordance with Department of Land and Water Conservation Soil Conservation guidelines.
- No new walking tracks or other developments will be undertaken in the reserve so as to minimise erosion and other impacts.

Actions

- Stabilisation work will be undertaken along tracks and other places where necessary to prevent further erosion.
- Informal tracks not part of the loop walking track system will be closed and revegetated.
- The mounds of building waste and disturbed soil will be progressively removed and the sites rehabilitated.

4.1.2 Native and Introduced Plants

Native Plants

The vegetation of Wallumatta Nature Reserve is basically an open forest with shrub understorey and areas of grass where disturbance has occurred.

- **Turpentine/Grey Ironbark Association** - The Wianamatta shales at the Twin Road end of the reserve support an open forest dominated by turpentine *Syncarpia glomulifera* and grey ironbark *Eucalyptus paniculata*, with grey gum *E. punctata*, red mahogany *E. resinifera* and smooth-barked apple *Angophora costata* also present. There is a shrub understorey of pittosporum *Pittosporum undulatum*, elderberry panax *Polyscias sambucifolius*, hop bush *Dodonaea triquetra* and a number of wattles including flax wattle *Acacia linifolia* and sickle wattle *A. falcata*.
- **Scribbly Gum and Sydney Peppermint Association** - The Hawkesbury sandstone at the Kittys Creek end of the reserve supports an open forest dominated by scribbly gum *Eucalyptus haemastoma* and Sydney peppermint *E. piperita* with patches of red bloodwood *Corymbia gummifera*. The understorey is shrubby with some shale species present due to the downwash of shale soil from the higher areas, however this area also includes species restricted to the sandstone such as hair pin banksia *Banksia spinulosa*, old man banksia *B. serrata*, flannel flower *Actinotus helianthi* and *Trachymene incisa*.
- **Intermediate/Transition Forest** - Between the above two associations is an intermediate or transition zone. This forest is dominated by smooth-barked apple *Angophora costata*, white stringybark *Eucalyptus globoidea* and red mahogany *Eucalyptus resinifera*. Turpentines *Syncarpia glomulifera* become scarcer and grey gums *E. punctata* and grey ironbarks *E. paniculata* do not occur in this transition forest. Closer to the sandy soils at the Kittys Creek end of the reserve the occasional scribbly gum *E. haemastoma* and red bloodwood *Corymbia gummifera* begin to appear. The understorey in this intermediate forest is predominantly similar to that found in the turpentine/ironbark association, however a transition can be seen in dominant species.

The vegetation of Wallumatta Nature Reserve is also uncommon because it contains clay soil species representative of both the higher rainfall blackbutt *E. pilularis* / Sydney blue gum *E. saligna* tall open forests of the north shore ridge, and of the low rainfall grey box *E. moluccana* woodlands west of Parramatta. Species present in the reserve from the higher rainfall forests include rainbow fern *Calochlaena dubia*, handsome flat-pea *Platylobium formosum* and blueberry ash *Elaeocarpus reticulatus*, while white feather honeymyrtle *Melaleuca decora* and sickle wattle *Acacia falcata* are representative of the drier areas (Benson, 1990).

Regrowth of pittosporum *Pittosporum undulatum* is occurring through much of the reserve because of an absence of natural processes such as fire. The propensity for pittosporum to be spread by birds may give rise to a monoculture of the plant which is out of ecological balance.

Introduced Plants

Introduced plants are those species not locally indigenous to an area. Introduced plants within the nature reserve and on adjoining land are of concern because they have the potential to have detrimental effects on the important ecological values of the reserve.

Introduced plants are found predominantly around the street boundaries of Wallumatta Nature Reserve, many have grown from garden clippings dumped on the reserve or are garden escapees. The centre of the reserve is largely free of weeds except for isolated occurrences, mainly along the edges of tracks. Lantana *Lantana camara* and wandering jew *Tradescantia fluminensis* are the principal weed species. Kikuyu *Pennisetum clandestinum*, privet *Ligustrum sinense* and camphor laurel *Cinnamomum camphora* are found in the Norfolk Green/Kittys Creek corner of the reserve. Blackberry *Rubus ulmifolius* is concentrated along the Norfolk Green edge of the reserve, and Madeira vine *Anredera cordifolia* and moth vine *Araujia sericiflora* in the Norfolk Green/Twin Road corner. Asparagus fern *Protasparagus aethiopicus* and turkey rhubarb *Acetosa sagittata* are also present within the reserve.

The Noxious Weed Act 1993 places an obligation on local authorities to control noxious weeds on land they occupy to the extent necessary to prevent such weeds spreading to adjoining lands. Lantana, privet, camphor laurel, madeira vine and asparagus fern are listed as noxious weeds within the Ryde Council area.

Assistance in weed control and bush regeneration is given to the Service by local volunteers. Volunteer weed control has been occurring in the area since 1987, before the reserve was dedicated, when the National Trust received a National Estate Grant from the Commonwealth Government for a bush regeneration program. A further grant in 1988 and on-going commitment from a small band of volunteers has had a major impact on containing the spread of weeds within the reserve and regenerating a clearing in the centre of the reserve. Although all planting in the reserve was supposedly undertaken with tube stock germinated from seeds collected on the reserve, it now appears that some of the species planted in both the Norfolk Green/Kittys Creek corner and the centre of the reserve may not be indigenous to those sections of the reserve. Liaison is being maintained with the National Herbarium in order to determine as early as possible the species of the trees planted in the corner of the reserve and whether they are locally indigenous.

Policies

- Native vegetation on the reserve will be protected and regeneration of disturbed areas promoted.

- Natural regeneration will be preferred, however replacement planting with locally indigenous species may be undertaken if necessary.
- Only plant species endemic to Wallumatta Nature Reserve will be used in revegetation work. Where possible, plant material will be propagated from seed collected within the area to be treated.
- Regrowth of pittosporum within the reserve will be monitored and where required these plants will be thinned.
- Introduced plants will be controlled, and where practicable eradicated.
- Control of introduced plant species will be by techniques that cause minimal disturbance to the environment.
- Research into the ecology and distribution of native plants, particularly threatened and uncommon species and communities, will be encouraged.
- The continued involvement of the local community and other volunteer groups in researching, restoring and maintaining Wallumatta Nature Reserve will be encouraged.

Actions

- A weed control plan will be prepared for the reserve. Priority will be given to the control of lantana, privet, camphor laurel, blackberry and madeira vine.
- The co-operation of Ryde Council, Macquarie Hospital and neighbours will be sought to prevent the spread of weeds onto the reserve and to implement complementary weed control programs adjacent to the reserve.
- The reserve's volunteer bush regeneration program will continue to be promoted.
- Plantings in the reserve which are not indigenous to that section of the reserve will be removed and the area allowed to naturally regenerate.
- Advice will be sought to identify the species of the trees planted in the northern corner of the reserve.
- Pending advice on the tree species, the questionable trees in the northern corner of the reserve will be contained within the previously cleared section of the reserve. If found not to be locally indigenous, these trees will be progressively replaced with indigenous species.

4.1.3 Native and Introduced Animals

Native Animals

The small size of Wallumatta Nature Reserve and the surrounding urban development means that it cannot support large native animals. Reserves such as Wallumatta however are crucial to many species of native birds, small mammals and reptiles as they provide food, habitat and sanctuary. Wallumatta Nature Reserve is also important because it is one of a number of small parks and reserves along Kittys Creek which form a wildlife corridor to the nearby Lane Cove National Park.

No comprehensive animal surveys have been undertaken in Wallumatta Nature Reserve and records are consequently incomplete.

Only two native mammal species have been recorded in the Wallumatta Nature Reserve: the brush-tail possum *Trichosurus vulpecula* and grey-headed flying fox *Pteropus poliocephalus*.

Over 30 native birds have been recorded in the reserve including the black-shouldered kite, masked lapwing, galah, rainbow lorikeet, eastern rosella, crimson rosella, tawny frogmouth, kookaburra, sacred kingfisher, superb fairy wren, yellow-faced honeyeater and grey butcher bird.

Reptiles and amphibians recorded in the reserve include:

eastern blue-tongue lizard	<i>Tiliqua scincoides</i>
jacky lizard	<i>Amphibolurus muricatus</i>
red-bellied black snake	<i>Pseudechis porphyriacus</i>
long-necked tortoise	<i>Chelodina longicollis</i>

The reserve contains a good natural litter layer of tree bark and leaf material. This provides habitat for associated soil fauna, flora such as fungi, and micro-organisms.

Termite activity is evident in many areas of the reserve. The most obvious species of termite present is *Nasutitermes walkeri* (Isoptera: Termitidae) which builds large conspicuous exterior nests. These termites do not kill the trees but eat dead or decayed wood. Such termite activity provides essential habitat trees, especially for kookaburras and sacred kingfishers which utilise the termite nests for breeding. The reserve also contains a large population of the Sydney funnel web spider *Atrax robustus*.

Introduced Animals

Feral cats (*Felis catus*) and the European fox (*Vulpes vulpes*) are rarely sighted in the reserve but are a potential problem. In addition, domestic animals are a major problem within Wallumatta Nature Reserve. Dogs are sometimes exercised in the reserve, and domestic dogs and cats also enter the reserve from nearby properties. These animals disturb wildlife thus affecting their feeding and breeding, as well as posing a direct threat to small native animals.

Policies

- A diversity of habitats for native animals will as far as possible be maintained within the reserve.
- Research into the significance of Wallumatta Nature Reserve as habitat in a regional context will be encouraged.
- Fauna surveys of the nature reserve will be undertaken to assist management and for the use in environmental educational programs.
- Dogs and other introduced animals are prohibited in the reserve. People bringing or allowing introduced animals into the reserve will be prosecuted.
- Introduced animals within the reserve will be controlled, with the long term aim of eradication. Control of introduced animal species will be by techniques that cause minimal disturbance to the environment and avoid impact on non-target species.
- Liaison with local residents will be continued to minimise the introduction of non-native species into the reserve.

Actions

- Research into the distribution and abundance of native animal populations will be undertaken.
- Feral animal control programs will be continued in the reserve. Priority will be given to the control of feral cats and foxes.
- A program of talks and pamphlets explaining to local residents why domestic animals are prohibited within the reserve will be implemented.

4.1.4 Fire Management

Fire is regarded by the National Parks and Wildlife Service as a natural process, one of the established physical factors of the Australian environment to which native plant and animal communities adapted. The correct management of fire is essential to avoid extinction of native plant and animal species. Fire can also damage some types of Aboriginal sites, historic sites, visitor and management facilities, utility infrastructure and threaten neighbouring land.

Management of fire in the reserve is an important and complex issue. Management must aim to achieve both long and short term conservation of natural communities and on-going protection of life and property within and adjacent to the reserve.

The natural fire regime of the nature reserve is unknown. Aborigines are known to have occupied eastern NSW for longer than 20,000 years. There is evidence that the vegetation of south eastern Australia has changed since the arrival of Europeans because of their fire practices, although the exact effect on plants and animals is not well documented.

Fire frequency, intensity and season of occurrence are major factors influencing the distribution and composition of plant and animal communities. Whilst the ecological requirements for the management of fire on the surrounding Sydney sandstone environments have been well researched, little is known about the fire management requirements of shale associations.

Available records suggest that in recent years all fires in Wallumatta Nature Reserve have been the product of either children playing with matches or discarded cigarettes. These fires have been small but frequent (around two each year from 1987 until 1992). The frequency of such fires has significantly decreased since the reserve was fenced and more active management undertaken. It is believed that there have been no major fires in Wallumatta Nature Reserve for around 20 years (Gosling, 1995).

The Service is a designated fire authority under NSW bushfire legislation and is responsible for controlling fires in Wallumatta Nature Reserve. This includes the control and suppression of fires and the implementation of fuel management programs to protect life and property from fires. The Service may also assist with the control and suppression of fires adjacent to the nature reserve. An important part of the Service's fire management is participation in local co-operative fire management arrangements. The reserve is within the NSW Fire Brigade District.

Until recently Wallumatta Nature Reserve was bounded on two sides by public roads and on the other sides by open space. Recent development adjoining the reserve has placed pressure on the National Parks and Wildlife Service to undertake burning within the reserve to protect adjoining properties. In developing the Norfolk Green estate a decision was made by the developers to place fire protection measures within the development rather than to attempt to maintain a fire break between the reserve and the development. The Service however believes that any future development adjoining the nature reserve should include a fire protection zone as part of that development.

Policies

- The lighting of fires within Wallumatta Nature Reserve will be prohibited.
- Unscheduled fires will be contained and extinguished as soon as possible.
- Records of all fire occurrences will be maintained.
- The existing management track/easement along the Kittys Creek boundary of the reserve and the loop walking track will be maintained and provide access for fire

management and suppression purposes. No additional tracks or trails will be constructed.

- No fuel reduction zones will be provided within the reserve.
- Fire may be used within the nature reserve for:
 - the maintenance of species and habitat diversity;
 - the reduction of weeds; and/or
 - the protection of any rare species or communities of special significance.
- All planned fuel reduction activities will include post fire control of introduced plants and surveys and monitoring for native plants and animals.
- Liaison will be maintained with Ryde Council, the NSW Fire Brigade and neighbours to develop effective joint fire management strategies.
- The Service will seek to ensure the incorporation of fire protection measures in all new developments adjacent to the reserve in accordance with the Bush Fire Service's guidelines for "Development in Fire Prone Areas".

Action

- A fire management plan for Wallumatta Nature Reserve which incorporates the above policies will be prepared as a high priority.

4.1.5 Cultural Heritage

Wallumatta Nature Reserve lies within the area occupied by the Kuring-gai Aboriginal people, whose territory stretched from the northern shore of Sydney Harbour to Broken Bay. The immediate area around the nature reserve was occupied by a clan or group of the Kuring-gai called the Wallumedegal.

The word "Wallumatta" is believed to have been used by Governor Phillip to describe the area occupied by the Wallumedegal group. Although Phillip tried to promote friendly relations with the Aboriginal people around Sydney, European settlement was devastating to the Kuring-gai. Land was cleared for farms and forests were cut down to provide fuel and building materials. In the first decade of European settlement there were at least two outbreaks of disease which decimated the Aboriginal population.

In 1804 Governor King set aside 2,523 hectares in the area, including the area around what is now Wallumatta Nature Reserve, as the Field of Mars Common "for the preservation and increase of breeding stock". In 1874 the Field of Mars Resumption Sale Bill reverted the common to Crown land which could then be sold by the Government. Although most of the land around the reserve was cleared for orcharding the reserve was not, however there was some grazing of the area. In

1948 the forest was incorporated in land reserved for “hospital purposes” under the NSW Health Commission.

As early as 1973 the Ryde-Hunters Hill Flora and Fauna Preservation Society made representations to have the forest, then known as Heards Bush or Hicks Park, permanently preserved. In 1983 part of the forest was bulldozed to construct the Macquarie Hospital Auxiliary Workshop and there were proposals for the remaining land to be sold for housing. In 1986 local people and conservation groups concerned by the potential destruction of the forest lobbied to obtain an Interim Conservation Order over the area. The order lapsed in 1988 and no permanent order was sought because by then it had been agreed that a majority of the land would be dedicated as a nature reserve under the National Parks and Wildlife Act.

A survey of the reserve for Aboriginal sites was undertaken when preparing this plan of management and no Aboriginal sites were found. The reserve is within the area of the Metropolitan Local Aboriginal Land Council, who will be consulted on the management of any Aboriginal sites should they be found. One historic site has been located in the nature reserve: a hollow which has been chiselled into the sandstone. This is likely to have been a drinking trough for stock, possibly dating from around the turn of the century.

Policies

- All Aboriginal and historic cultural sites located on the nature reserve in the course of management operations will be recorded and protected from disturbance.
- Any Aboriginal sites found on the reserve the Service will be managed in consultation with the Metropolitan Local Aboriginal Land Council.
- The water trough will be left *in situ*. No clearing of vegetation will be undertaken around the trough and the location of the site will not be publicised.

4.2 USE OF THE AREA

It is an important aspect of the management of Wallumatta Nature Reserve to ensure that its use - whether by the general public, special interest groups, Service managers or other authorities - is “appropriate”, that is, in conformity with the Act and the management objectives and policies outlined in this plan.

The major categories of use that can be appropriate, to varying degrees, on nature reserves are :

- education and promotion of the area, the Service and the conservation of natural and cultural resources;

- research; and
- management operations, by the Service itself and other authorities with statutory responsibilities in the area.

The extent to which these categories of use are appropriate to Wallumatta Nature Reserve is indicated below.

4.2.1 Promotion, Interpretation and Education

Wallumatta Nature Reserve has only relatively recently been established and public use of the area was largely unregulated prior to its establishment. In recent years it has been used for grazing of horses and cattle, rubbish dumping and as a play area for local children. It was a popular area for the construction of cubby houses, bicycle and trail bike riding, cutting of wood and gathering of wildflowers.

Wallumatta Nature Reserve is at present predominantly used by local residents, many of whom take great pride in the site. The reserve is adjacent to residential areas, including the new Norfolk Green estate. Additional residential development is proposed along the Norfolk Green boundary of the reserve. It is also across the road from Ryde East Public School. Use of the reserve by children has continued and recently an increase in visitors using the reserve as a thoroughfare has occurred, with many local residents seeing the reserve as a short-cut from the footbridge over Kittys Creek to Twin Road (see map, page 3). The increasing population in the area surrounding the reserve is:

- increasing pressures on the reserve to be used as a play area and short-cut; and
- increasing the value of the reserve for nature conservation, environmental education and scientific research.

Lane Cove National Park and a number of other local parks and reserves in the vicinity of Wallumatta Nature Reserve cater to a broad demand for public recreation. The proximity of these neighbouring reserves and the recreational opportunities they offer, means Wallumatta Nature Reserve can be managed as it was proposed, for protection of the natural heritage, environmental education and research.

Wallumatta Nature Reserve is bordered on two sides by sealed public roads. On both these sides it is also fenced. A gap in the fence provides access into the reserve for pedestrians and a loop walking track has been constructed within the reserve (refer map, page 3).

It is an objective of management for Wallumatta Nature Reserve to promote public understanding of the natural features and processes operating in the reserve. This assists in the protection of the natural and cultural heritage of the reserve and increases the understanding and appreciation of visitors. The provision of a loop walking track with interpretation signs is seen as an appropriate means of promoting awareness and appreciation of Wallumatta Nature Reserve. Other recreational

uses of the reserve detract from this objective as well as having a direct impact on these natural processes.

Policies

- Promotion of Wallumatta Nature Reserve will be directed towards encouraging the appreciation and awareness by visitors of the rarity of the vegetation type contained in the reserve and the need for its protection.
- Interpretation on the important features and value of the reserve will be provided on signs at the main pedestrian entrances, along the loop walking track and in the reserve brochure. Visitors will be requested to remain on the formal loop walking track.
- The existing loop walking track will be formalised. This may include minor realignment to allow visitors access to features of interest.
- The levels of use of Wallumatta Nature Reserve will be monitored and regular assessment made of the impact of such use on the special natural features of the reserve. Sites showing unacceptable levels of disturbance from visitor use may be temporarily or permanently closed and rehabilitated.
- Liaison will be undertaken within the local community to emphasise the importance of restricting access to the loop walking track and the problems caused by children riding bicycles through the reserve.

Actions

- The loop walking track will be upgraded and realigned where necessary.
- Interpretative signs will be erected at the main reserve entrances and along the loop track at selected sites.
- The brochure on the reserve will be updated and distributed as a means of on and off site information.
- A community relations strategy emphasising appropriate use of the reserve will be prepared and implemented.

4.2.2 Research

The function of research in the nature reserve is to assist in the understanding of its resources, use of the area and, subsequently, to aid effective management. Important research topics have been included in other sections of this plan.

The Service has only limited staff and financial resources for research and efforts must be directed towards the areas of greatest need. Research by other

organisations and students can provide valuable information for management and increase understanding of the area.

Wallumatta Nature Reserve is located close to Macquarie University, Ryde School of Horticulture, University of Technology Sydney (Kuring-gai campus), Ryde East Public School and a number of other primary and secondary schools. A number of studies undertaken in the reserve in the past have been of great assistance to management, particularly by students from Macquarie University and Ryde School of Horticulture.

Policies

- Research into the natural and cultural features of Wallumatta Nature Reserve will be encouraged.
- All research will be subject to Service policy and procedures for the granting of permits, conduct of research and the production of results.
- Research applications will be granted only where the proposed research does not conflict with the primary management objectives of the reserve.

Action

- Research will be specifically encouraged into:
 - soils of the reserve and their effects on vegetation communities;
 - appropriate fire regimes for conserving the vegetation of the reserve;
 - the value of the reserve as wildlife habitat in a regional context;
 - micro-climatological influences on vegetation and fauna; and
 - the Aboriginal and European history and culture of the reserve.

4.2.3 Management Operations

Management of Wallumatta Nature Reserve is based at Lane Cove National Park, within the North Metropolitan District of the National Parks and Wildlife Service.

As the reserve is small and readily accessible from Lane Cove National Park, there is no foreseeable need to base management resources on Wallumatta Nature Reserve.

A loop walking track exists within the reserve and provides access for management purposes. In addition, the site is bounded on two sides by public roads and there are cleared easements along all of a third side and part of the remaining side which can provide vehicular access for weed control, fire management and other essential management purposes.

Some illegal access occurs along these easements, from vehicles gaining access through the gates and from the backs of adjoining houses. All gates into the reserve will be locked and boundary fences will be erected along unfenced properties.

Policies

- No permanent vehicle tracks or other management or storage facilities will be constructed in the reserve.
- Any tracks constructed during fire operations will be closed and rehabilitated as soon as practical after those operations.
- Boundary fencing to be upgraded and gates locked where necessary to prevent unauthorised access.

Action

- All unfenced boundaries of the reserve will be fenced and locks placed on the gates to the easement.

5. PLAN IMPLEMENTATION

This plan is part of a system of management developed by the National Parks and Wildlife Service. The system includes the National Parks and Wildlife Act, management policies, established conservation and recreational policies, and strategic planning at corporate, regional and district levels.

The orderly implementation of this plan will be undertaken within the annual programs of the Service's North Metropolitan District. Priorities determined in the context of district and regional strategic planning, will be subject to the availability of necessary staff and funds and to any special requirements of the Director-General or Minister.

District programs are subject to ongoing review, within which works and other activities carried out at Wallumatta Nature Reserve are evaluated in relation to the objectives laid out in this plan.

The environmental impact of all development proposals will continue to be assessed at all stages of their development and any necessary investigations undertaken in accordance with established environmental assessment procedures.

Section 81 of the Act requires that this plan shall be carried out and given effect to, and that no other operations shall be undertaken in relation to Wallumatta Nature Reserve unless they are in accordance with the plan. However, if after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 76(6) of the Act.

As a guide to the orderly implementation of the plan, identified activities are summarised below :

Activity	Plan Reference
High Priority	
Stabilise eroded areas	4.1.1
Close and revegetate informal tracks	4.1.1
Prepare fire management plan	4.1.4
Remove plantings which are not indigenous	4.1.2
Continue control programs for introduced plants	4.1.2
Upgrade and realign loop walking track where necessary	4.2.1
Fence unfenced sections of the reserve boundary	4.2.3

Medium Priority	Plan reference
Prepare weed management plan	4.1.2
Design, construct and install interpretative signs	4.2.1
Continue control programs for introduced animals	4.1.3
Inform local residents re domestic pets	4.1.3
Prepare and implement community relations strategy re appropriate use of the reserve	4.2.1
 Low Priority	
Remove building waste	4.1.1
Undertake research into native animals	4.1.3
Revise information brochure on reserve	4.2.1
Encourage research into priority areas	4.2.2

6. REFERENCES

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