

CULGOA NATIONAL PARK
PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

December 2003

This plan of management was adopted by the Minister for the Environment on 19 December 2003.

Acknowledgments

This plan of management was prepared by staff of the Upper Darling Region of the National Parks and Wildlife Service with the assistance of Policy and Science Directorate.

Cover photograph of the Culgoa River by Allan Fox.

NSW National Parks and Wildlife Service

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FOREWORD

Culgoa National Park is located in north-western NSW, 40 km west of Goodooga and 100 km north of Brewarrina. The park was reserved in 1996 and has an area of 22,430 hectares.

The park protects a section of the Culgoa River and associated floodplains. It conserves several vegetation communities which have been extensively cleared or modified by agriculture in nearby areas and are otherwise poorly represented in NSW reserves.

Inland riverine woodlands and open grasslands such as are found in Culgoa National Park are important habitats for a number of species which are threatened in NSW, including the plant *Capparis loranthifolia* and animals such as the Australian bustard, grey falcon, painted honeyeater, pink cockatoo, brolga, koala, striped-faced dunnart and little pied bat.

The national park lies within Morowari country and contains a significant number of Aboriginal sites including open camp sites and scarred trees. The landscape of the park is important to local Aboriginal communities and management of the park will actively involve Aboriginal people.

European heritage in the park is associated with the three pastoral properties that make up the park and includes homesteads, shearing sheds, tanks, bores and fences.

The diversity of the natural and cultural features of the park earned the World Wide Fund for Nature's "New Reserve of the Year Award" for the best addition to Australia's conservation reserves in 1997.

Culgoa National Park offers visitors a rare opportunity to experience a remote north-western floodplain. Basic visitor facilities are available in the park. These include a day-use area, walking tracks, interpretive information and camping area.

This plan of management establishes the scheme of operations for Culgoa National Park. In accordance with section 75 of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.

BOB DEBUS
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 national park. A plan of management is a legal document that outlines how the park will be managed in the years ahead.

The procedures for the adoption of a plan of management are specified in the Act and involved the following five stages:

- * The Director-General gave notice that a plan of management had been prepared.
- * The plan was placed on public exhibition for at least one month and any person could comment on it.
- * The plan and copies of all representations were referred to the National Parks and Wildlife Advisory Council for consideration.
- * The Director-General submitted the plan, together with the recommendations of the Advisory Council, to the Minister.
- * The Minister adopted the plan after considering the recommendations of the Advisory Council.

A draft plan of management for Culgoa National Park was placed on public exhibition for a period of four months from 14th December 2001 until 5th April 2002. The exhibition of the draft plan attracted three submissions which raised three issues. All submissions received were carefully considered by the National Parks and Wildlife Advisory Council and the Minister for the Environment before adopting this plan.

Now a plan has been adopted by the Minister, no operations may be undertaken within Culgoa National Park except in accordance with this plan.

The planning process leading to the development of this plan involved the collection and use of a large amount of information which, for reasons of document size, has not been included in this plan. For additional information or enquiries about any aspect of Culgoa National Park or this plan of management, contact the National Parks and Wildlife Service Bourke Office at 51 Oxley Street, Bourke or by phone on (02) 6872 2744.

2. MANAGEMENT CONTEXT

2.1 NATIONAL PARKS IN NEW SOUTH WALES

National parks are reserved under the National Parks and Wildlife Act to 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 use.

Under the Act, national parks are managed to:

- conserve biodiversity, maintain ecosystem functions, protect geological and geomorphological features and natural phenomena and maintain natural landscapes;
- conserve places, objects, features and landscapes of cultural value;
- protect the ecological integrity of one or more ecosystems for present and future generations;
- promote public appreciation and understanding of the park's natural and cultural values;
- provide for sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values;
- provide for sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of natural and cultural values; and
- provide for appropriate research and monitoring.

2.2 CULGOA NATIONAL PARK

2.2.1 Location, Gazettal and Regional Setting

Culgoa National Park is located in north-western NSW, adjacent to the Queensland border. It is within the country of the Morowari people and situated 40 km west of Goodooga and 100 km north of Brewarrina. The 22,430 ha park was gazetted in April 1996, with a major addition in 1998. It is comprised of three former pastoral leases - 'Byerawering,' 'Cawwell' and 'Burban Grange'.

The surrounding district is part of the semi-arid pastoral zone of NSW and is used primarily for sheep and cattle grazing. Some cropping occurs on floodplain areas, especially in Queensland where water from the Balonne River is extensively utilised for irrigation cropping. The 42,800 hectare Culgoa Floodplain National Park managed by Queensland Parks and Wildlife Service adjoins the park at the north-western boundary.

2.2.2 Landscape Context

Natural and cultural heritage and on-going use are strongly inter-related and together form 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 the land through

recreational use, cultural practices, the presence of introduced plants and animals and in some cases air and water pollution.

Both Morowari and non-Morowari people place cultural values on natural areas, including aesthetic, social, spiritual, recreational and other values. Cultural values may be attached to the landscape as a whole or to individual components. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness natural and cultural heritage and on-going use are dealt with individually, but their inter-relationships are recognised.

2.2.3 Importance of Culgoa National Park

The natural values of Culgoa National Park are very high and it is extremely important for the conservation of many of the native plants and animals of the region. The diversity of the natural and cultural features of the park earned the Service the World Wide Fund for Nature's "New Reserve of the Year Award" for the best addition to Australia's conservation reserves in 1997.

The park is centred on the Culgoa River and protects a large area of floodplain. Together with the adjoining Culgoa Floodplain National Park it conserves diverse plant and animal communities along a significant corridor of the Culgoa River floodplain.

The most important conservation values of Culgoa National Park are outlined below. More detailed information is provided in sections 4.1 and 4.2.

Geomorphological values

Culgoa National Park samples six landsystems: Wombeira, Upper Darling, Tatala, Toulby, Nidgery and Myuna. The first five landsystems are alluvial plains. Myuna is a plains landsystem. The park contains a number of landforms, including floodplain outwash areas and drainage flats, claypans, lakes, sand dunes and gibber plains.

Biological values

The park conserves several vegetation communities that are otherwise poorly represented in the reserves of NSW. The park protects a section of possibly the largest contiguous tract of coolibah (*Eucalyptus coolabah*) woodland remaining in NSW and a portion of the native grasslands characteristic of northern NSW. The western section of the park conserves brigalow (*Acacia harpophylla*) and gidgee (*Acacia cambagei*) woodlands and chenopod shrublands. These communities have been progressively cleared or modified through agricultural activities and continue to be degraded by grazing in NSW.

Twelve plant species of conservation significance in NSW have been located in the park. Two of these, *Capparis loranthifolia* var. *loranthifolia* and *Euphorbia sarcostemmoides*, are listed as endangered under the *Threatened Species Conservation Act 1995*. A further ten species of restricted distributions have been found in the park. (Bowen & Pressey 1992, Hunter & Earl 2002).

The park has a diverse fauna, with 24 mammal, 170 bird, 29 lizard, 7 snake and 15 frog species having been recorded (Dick and Andrew 1993 and D. Egan pers.obs 1997). The NPWS Wildlife Atlas and RAOU (Birds Australia) records for the Weilmoringle and Goodooga areas indicate that at least an additional 3 mammal, 60 bird, 10 lizard, 2 snake and 2 frog species may occur within the park.

A number of threatened native animals have been recorded in the park. The endangered Australian bustard (*Ardeotis australis*) has been recorded in grassland areas in the eastern section of the park. An endangered skink *Anomalopus mackayi* has also been recorded. Vulnerable species recorded are the striped-faced dunnart (*Sminthopsis macroura*), koala (*Phascolarctos cinereus*), little pied bat (*Chalinolobus picatus*), sandy inland mouse (*Pseudomys hermannsburgensis*), grey falcon (*Falco hypoleucos*), painted honeyeater (*Grantiella picta*), pink cockatoo (*Cacatua leadbeateri*), red-tailed black cockatoo (*Calyptorhynchus banksii*), freckled duck (*Stictonetta naevosa*), Hall's babbler (*Pomatostomus halli*) and the brolga (*Grus rubicundus*) (Dick and Andrew 1993).

The park also supports a number of species of regional conservation significance, which have restricted distributions or are at the edge of their ranges. The skink *Proablepharus kinghorni*, which is found in cracking black soils on tussock grass plains (Cogger 1996), the snake *Unechis (Suta) spectabilis* and the northern dtella (*Gehyra dubia*) have restricted distributions in NSW.

The stripe-faced dunnart (*Sminthopsis macroura*) has declined from southern and north-eastern parts of the state during the twentieth century and is otherwise sparsely distributed across the arid interior of Australia (Dickman and Read 1992, Dickman *et al.* 1993). Both planigale species found in the park (narrow-nosed planigale *Planigale tenuirostris* and paucident planigale *Planigale gilesi*) are dependent on cracking earth soils and could become threatened in the future through expansion of cropping activities (Dickman *et al.* 1993).

The koala, common brushtail possum (*Trichosurus vulpecula*), swamp wallaby (*Wallabia bicolor*), water rat (*Hydromys chrysogaster*), little red flying fox (*Pteropus scapulatus*), a glider (*Petaurus* sp.), black-chinned honeyeater (*Melithreptus gularis*), crested shrike-tit (*Falcunculus frontatus*), olive-backed oriole (*Oriolus sagittatus*) and noisy friarbird (*Philemon corniculatus*) are at the edge of their NSW distribution limits in or near the park.

Other species of conservation concern likely to occur in the area are the kultarr (*Antechinomys laniger*), yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*), letter-winged kite (*Elanus scriptus*), bush stone curlew (*Burhinus grallarius*), barking owl (*Ninox connivens*), Latham's snipe (*Gallinago hardwickii*), broad-shelled river tortoise (*Chelodina expansa*), long-necked tortoise (*Chelodina longicollis*), eastern water skink (*Eulamprus quoyii*), the skink *Ctenotus strauchii* and frog *Cyclorana verrucosa* (Dick and Andrew 1993).

Cultural values

The park lies within the traditional lands of the Gandugari group of the Morowari people and remains highly significant in terms of archaeological, traditional and contemporary social significance to local Aboriginal people. A large number of archaeological sites have been recorded in the park and detailed archaeological assessment could reveal evidence of occupation which is of great antiquity, possibly of the Pleistocene period (English 1997). The landscape is imbedded with group and individual history. Post-contact experiences form a strong element of the landscape's contemporary significance.

Overlaying and intertwining the Morowari experience is the European history associated with pastoral activity in the area from the 1850s to the present day. The park area was formerly three pastoral properties - Byerawering, Cawwell and Burban Grange. Several blocks in the park were part of original runs selected by Thomas Hungerford, a figure of considerable importance in the pastoral and political history of NSW (Veale 1997).

The park retains the infrastructure of this pastoral history, with homesteads, shearing sheds and quarters, tanks, bores and fences. These structures have varying degrees of historical importance both to local Morowari people and non-Morowari people. They enable the social, political and economic context of the past to be explored. This provides an opportunity to convey information to visitors about the changes and continuity of human activities in remote semi-arid environments.

Tourism and education

With the increasing popularity of nature tourism, remote areas offering interesting and educative experiences are highly sought. The diverse ecosystem of the Culgoa floodplain and richness of cultural heritage presents tourism opportunities uncommon in this area.

Basic visitor facilities are available in Culgoa National Park. These include a campground, day use area, walking tracks and interpretive information.

Research value

The park presents an opportunity for research into the floodplain flora and fauna, and Aboriginal and historic culture in a semi arid landscape. There is a high potential for external organisations such as school and university groups to become involved in research.

Summary Statement of Significance

Culgoa National Park is of significance for the following reasons:

- it samples the Culgoa floodplain ecosystem, which is one of the most ecologically rich floodplain environments remaining in semi-arid NSW;
- it reserves large and important tracts of floodplain woodlands, native grasslands, brigalow/gidgee woodlands and chenopod shrublands and is one of the few reserves in NSW to contain these vegetation assemblages;
- it provides habitat for the endangered bustard and a number of vulnerable species, as well as habitat for a large number of species of regional conservation significance;
- it contains a suite of Aboriginal sites including extensive archaeological deposits with a high potential to add to knowledge about Aboriginal use of north western NSW;
- it is of considerable traditional and contemporary cultural significance to the Morowari Aboriginal people;
- it conserves European heritage associated with pastoral activities in north western NSW during the 19th and 20th centuries;
- it provides opportunities for informative and enjoyable nature tourism within an inland riverine environment;
- it provides opportunities for research into factors influencing a north western floodplain ecosystem and promotion of a greater understanding of these environments.

3. OBJECTIVES OF MANAGEMENT

3.1 SPECIFIC OBJECTIVES FOR CULGOA NATIONAL PARK

In addition to the above general objectives the management of Culgoa National Park will be subject to the following more specific objectives:

- * protection of representative samples of riverine and plains woodland and grassland communities of north-western NSW, particularly of old growth coolibah;
- * protection of populations of the threatened and significant plant and animal species;
- * involvement of Morowari people in park management and encouragement of on-going use of the park;
- * promotion of visitor and community appreciation of the values of inland riverine communities and of Morowari and non-Morowari cultural heritage; and
- * provision of a variety of low key recreational opportunities which encourage appreciation of the environments of inland northern NSW.

3.2 OVERALL STRATEGY

The park will be managed to maintain and enhance the natural and cultural values of its floodplain and plain environments. A secondary role of the park will be the provision of a range of visitor opportunities.

The following strategies will be implemented in managing the national park:

- * Impacts of introduced plants and animals on the floodplain ecosystem and associated cultural heritage sites will be monitored and appropriate control programs will be implemented. Impacts of total grazing pressures will also be investigated.
- * Bushfire will be managed in accordance with a fire management plan to protect lives, property, conservation values, infrastructure and ecological communities. The effects of wildfire and prescribed burns will be monitored and research into the fire ecology of the area will be encouraged.
- * In collaboration with the Morowari Tribal Aboriginal Corporation, the Service will record and endeavour to conserve Aboriginal cultural heritage sites and landscapes in Culgoa National Park. Appropriate on-going cultural use of the park will be encouraged.

- * Conservation plans for significant heritage buildings within the park will be prepared and these buildings will be maintained in accordance with these plans.
- * Total catchment management principles will be encouraged to protect water quality and the integrity of the floodplain.
- * A small number of basic visitor facilities will be provided.
- * Scientific research that will assist park management will be encouraged.
- * The Service will foster on-going consultation and co-operation with neighbours, local communities and other stakeholders.

4. POLICIES AND FRAMEWORK FOR MANAGEMENT

This chapter contains the policies and framework for the management of Culgoa National Park together with relevant background information. Policies are summarised under the following section headings:

- 4.1 NATURE CONSERVATION
- 4.2 CULTURAL HERITAGE
- 4.3 USE OF THE AREA

Where not specifically provided for in this plan, management of Culgoa National Park will also be in accordance with the National Parks and Wildlife Act and with general Service policies.

4.1 NATURE CONSERVATION

4.1.1 Landform and Soils

The park lies in the Surat Basin, an area dominated by Quaternary alluvial and riverine plain deposits related to the Darling River and its tributaries (Cramsie and Hawk 1984). The central feature of the park is the distributary floodplain of the Culgoa River. The Culgoa floodplain extends for 120 km in NSW and averages 65 km in width. The park contains a length of approximately 20 km of this floodplain. The river flows intermittently as a result of heavy rain in Queensland.

The central section of the park is dominated by heavy grey cracking clays of the Culgoa River floodplain. These cracking clays continue eastward outside the park, interspersed with sandier soils and non-cracking clays associated with large claypans and sandy rises. The eastern portions of the park are characterised by large numbers of gilgais and prior stream channels. A large lagoon, Burrarwerda Lagoon, extends into the park across the northern eastern boundary. The lagoon is fed mostly by the Brenda bore drain but receives influxes of water from the Culgoa River during floods.

On the western side of the Culgoa River, cracking clays continue away from the river until they reach scalded non-cracking clays and a large sandhill complex. This sandhill complex consists of red and white sands and extends in a north-south orientation for the full length of the park. The junction between clay soils and the sandhills is often sharp and characterised by scalded areas and some alluvial sand deposits.

Several minor creeks cross the park to the west of the river. The largest are Nebine, Burban and Pickerjerry Creeks. Nebine Creek is a temporary stream which begins in south-eastern Queensland and flows through the western section of the park where it joins with Burban Creek. Burban and Pickerjerry Creeks traverse the park in a south westerly direction, eventually joining with Widgeegoara Creek and flowing out into the Culgoa River south of Weilmoringle. These minor creeks flow intermittently after heavy rains in the local area, with Nebine Creek also occasionally

receiving overflows from the Warrego River. Small swamps and waterholes are associated with the upper catchments of Burban and Pickerjerry Creeks.

To the west of the sandhills, the floodplain grades from a non-cracking clay into heavy cracking clays. Large claypans and sandy rises, many of which are degraded, are scattered across the plain before the cracking clays commence.

In the westernmost sections of the park is Quaternary talus material obscuring Cretaceous sediments. This comprises boulders of silicified sandstone and conglomerate (mainly as scree and talus material) with varying amounts of red and brown clayey silt and sand. This 'gibber plain' is the only section of the park which reflects the more elevated topography found west of the park.

Erosion is evident in several sections of the park, especially on texture contrast soils where a sandy substrate overlies compact grey clays. Watersheeting is evident on some of the red soils in the park. Such accelerated erosion is largely due to grazing pressures.

Policies

- * Erosion is recognised as a naturally occurring process in the park. Where erosion has been accelerated by human activity, excessive grazing or is threatening significant habitats or other values, appropriate rehabilitation measures will be undertaken where necessary.
- * All works will be undertaken in a manner which avoids erosion and water pollution.

Actions

- * Soil erosion monitoring and rehabilitation programs will be developed where needed.

4.1.2 Native Vegetation and Introduced Plants

Native vegetation

The vegetation of the park was formally surveyed by Hunter and Earl (2002). In addition the Wombiera and Upper Darling systems, which comprise a significant portion of the central and eastern sections of the park, have been surveyed (Dick, 1990).

The communities within the park form structurally simple groups that can roughly be distinguished by amount of flooding and length of time and time since water was held.

River red gums (*Eucalyptus camaldulensis*) and river paperbark (*Melaleuca trichostachya*) line the Culgoa River. Other common plant species in the riverine communities include river cooba (*Acacia stenophylla*) and eurah (*Eremophila*

bignoniiflora). Couch (*Paspalidium jubiflorum*) and sedge (*Cyperus concinnus*) are common understorey plants.

Lignum and coolibah woodlands with river cooba and eremophila (*Eremophila bignoniiflora*) dominate the channelled floodplain of the Culgoa River. The floodplain vegetation includes old coolibah (*Eucalyptus coolabah*) woodlands and dense coolibah regeneration dating from the 1950s. The understorey of these coolibah woodlands varies from grasses to sedges and dense lignum (*Muehlenbeckia florulenta*) depending on location and level of tree cover. In densely regenerating areas there is very little understorey vegetation.

To the east of the Culgoa River the coolibah woodlands grade into treeless grasslands which are dominated by blown grass (*Agrostis arenacea*) and neverfail (*Eragrostis setifolia*) with scattered lignum. Areas of scalded or sandy rises on the floodplain have a higher proportion of daisies and chenopods such as *Helipterum floribundum*, *Atriplex pseudocampanulata* and *Sclerolaena muricata*.

The vegetation communities west of the Culgoa River are more variable due to changes in topography and soil type. Black box woodlands dominated by black box (*Eucalyptus largiflorens*) and coolibah are situated on slight elevated sights on quaternary alluvium, primarily with light brown and grey clays. These areas are periodically inundated but less so than the previous communities. A number of wattles are co-dominant and the dominant understorey may be either chenopods or grasses depending on topography and flooding history.

Chenopod Low Open Black Box Woodlands are also found on slightly elevated areas on quaternary alluvium but with reddish clay soils. Black box, rosewood (*Alectryon oleifolius*), gidgee (*Acacia cambagei*) and river cooba are dominant. Chenopods are dominant in the understorey particularly in areas where scalding has occurred. Brigalow (*Acacia harpophylla*) is of sporadic importance.

Layed woodlands and shrublands are associated with elevated dune areas and are dominated by cypress pine (*Callitris glaucophylla*) and bimple box (*Eucalyptus populnea* subsp. *bimbi*). These sandy reddish to orange soils are restricted to the south central and southern boundary of the park. This community is the most distinctive for Culgoa National Park and is unrelated to the other vegetation communities. Other common plants within this community include sandhill rice flower (*Pimelea penicilliaris*), hop bush (*Dodonaea viscosa*) and various acacias.

There is limited knowledge about managing the Culgoa River floodplain. Further investigation into the specialist requirements of species and communities is necessary, particularly for the sandhill riceflower and the endangered species *Capparis loranthifolia* and *Euphorbia sarcostemmoides*. Floods and fires are major factors and will play a significant role in the conservation of the Culgoa floodplain. Communities including coolibah and river red gum rely on flood cycles to promote germination and vigour, while others such as the native grasses thrive post-fire. Water and fire management are discussed further in sections 4.1.4 and 4.1.5.

Under the Threatened Species Conservation Act a recovery plan must be prepared for endangered (Schedule 1) and vulnerable (Schedule 2) species, populations or

ecological communities. The purpose of a recovery plan is to promote the recovery of a threatened species, population or ecological community to a position of viability in nature. Information on threatened species, populations or ecological communities found in Culgoa National Park will be gathered to assist in the preparation of recovery plans.

Effects of landuse practices

The present vegetation communities in the park are those that have persisted during the past 150 years of European agricultural practices. These practices, which included clearing, logging, grazing by domestic stock and cessation of Aboriginal firing, are likely to have contributed to changes in abundance and distribution of some plant species. It is likely that the regeneration of some species, especially perennial grasses, was suppressed by grazing. Grazing pressures are most obvious in the vicinity of ground tanks where damage to surrounding vegetation is prominent. Some evidence suggests that existing vegetation along the Culgoa River does not reflect 19th century patterns of sparse distribution. It is argued that extensive areas of coolibah regrowth along the Culgoa River are the result of increased flooding frequencies from the 1950's as well as reduced grazing pressure in the second half of this century (Dick 1993).

Introduced plants

An introduced species is defined in this plan as any plant or animal not native to the area. Introduced species in the park and on adjoining land are of concern as they have the potential to have detrimental effects on ecological values and can spread to and from adjoining land. Several of the introduced plant species occurring in the park are declared noxious. The *Noxious Weeds Act 1993* places an obligation upon public authorities to control noxious weeds on land that they occupy to the extent necessary to prevent such weeds spreading to adjoining lands.

Spiny burr grass (*Cenchrus incertus*) is listed as a noxious weed in the Brewarrina Shire. It inhabits the sandhills and areas surrounding the Cawwell homestead. There is potential for spiny burr grass to spread both in and outside of the park as seeds are readily dispersed by vehicle and animal movements. Eradication of spiny burr grass is considered the highest priority of all introduced species in the park.

African boxthorn (*Lycium ferrocissimum*) is also listed as a noxious weed. Boxthorn is scattered across the park and will be eliminated where possible.

Noogoora burr (*Xanthium occidentale*) and bathurst burr (*Xanthium spinosum*) occur in small areas on the floodplain and near ground tanks across the park. Both plants are listed as noxious weeds and will be controlled to prevent their spread, reduce numbers and limit distribution.

Buffel grass (*Cenchrus ciliaris*), saffron thistle (*Carthamus lanatus*) and mother-of-millions (*Bryophyllum tubiflora*) also occur in the park. Buffel grass and saffron thistles are common in disturbed areas and mother-of-millions has established in the old Cawwell rubbish tip. These are not scheduled pests within the Brewarrina Shire

but their distribution will be monitored and control will be undertaken as needed to prevent spread to other areas.

House yard escapees such as white cedar (*Melia azedarach*) are found in the park and will be progressively removed from areas outside the homestead yards.

A number of other introduced species also occur in the park but are not currently considered to threaten the integrity of native communities. These species will be monitored and their threats evaluated.

Policies

- * Native vegetation will be managed to:
 - maintain floristic and structural diversity;
 - conserve threatened and uncommon communities and species;
 - encourage regeneration of areas previously cleared or grazed; and
 - maximise habitat values for native animal species.
- * Management work will not be undertaken in the vicinity of threatened and uncommon plant species except where it is necessary for their protection.
- * Introduced plant species will be controlled in accordance with the Upper Darling Region Pest Control Strategy. Priority for treatment will be given to those which have been declared noxious in the Brewarrina Shire or are new isolated occurrences.
- * The co-operation of park neighbours, Brewarrina Shire Council and other authorities will be sought in implementing weed control programs.
- * Retention or removal of exotic plants in homestead gardens and historic sites will be based on an assessment of their historic and landscape significance and their potential to invade native communities.
- * Heavily disturbed areas, with the exception of the residence house yards, will be allowed to regenerate. Revegetation strategies will be implemented if necessary.

Actions

- * Introduced species, with priority to noxious weeds, will be treated utilising best practice control methods.
- * Monitoring sites will be established in a variety of vegetation associations to record and monitor changes in vegetation over time.

- * Recovery plans and conservation strategies for threatened species and communities will be implemented.
- * The historical value and dispersal potential of introduced plants around homesteads precincts will be determined. Any species which spread beyond the homestead precincts will be removed.

4.1.3 Native and Introduced Animals

Two fauna surveys have been conducted in the area and provide valuable information about fauna known or likely to occur in the park: surveys of the Culgoa and Birrie floodplains by Dick and Andrew (1993), and the Brigalow Belt surveys to the west and south of the park by Ellis and Wilson (1992). Despite this, knowledge of native animal species occurring in Culgoa National Park remains limited and further research is required.

Large mammals recorded from the park include the eastern grey kangaroo (*Macropus giganteus*), western grey kangaroo (*Macropus fuliginosus*), red kangaroo (*Macropus rufus*) and swamp wallaby (*Wallabia bicolor*). Medium sized mammals include the short-beaked echidna (*Tachyglossus aculeatus*), the common brushtail possum (*Trichosurus vulpecula*) and a glider (*Petaurus* sp.). The small mammal community is diverse with the narrow-nosed planigale (*Planigale tenuirostris*), paucident planigale (*Planigale gilesi*), fat-tailed dunnart (*Sminthopsis crassicaudata*) and the water rat (*Hydromys chrysogaster*) all occurring in the park. Small insectivorous bats in the area include Gould's wattled bat (*Chalinolobus gouldii*), little forest bat (*Vespadelus [Eptesicus] vulturnus*), lesser long-eared bat (*Nyctophilus geoffroyi*), little broad-nosed bat (*Scotorepens greyii*) and a mastiff bat (*Mormopterus* sp.). The fruit bats are represented by the little red flying fox (*Pteropus scapulatus*) which has been recorded feeding on flowering river paperbarks (*Melaleuca trichostachya*). Mammals of conservation concern are listed in section 2.2.2.

One hundred and seventy species of native birds have been recorded in the park (Dick and Andrew 1993). Species recorded include those common to inland Australia such as emus (*Dromaius novaehollandiae*), apostle birds (*Struthidea cinerea*), mallee ringnecks (*Brandies zonarius barnardi*) and white-winged wrens (*Malurus leucopterus*) plus a number of species of conservation concern (see section 2.2.2).

Fifteen amphibian species have been recorded in the park (D. Egan pers obs. 1997) including the new holland frog (*Cyclorana novaehollandiae*), long-thumbed frog (*Limnodynastes fletcheri*) and salmon-striped frog (*Limnodynastes salmini*). Four additional frog species have been recorded near the park (Ellis and Wilson 1992).

A total of 36 native reptiles species have been recorded in the park including De Vis' banded snake (*Denisonia devisi*), the olive legless lizard (*Delma inornata*), *Lerista muelleri* and Grey's skink (*Menetia greyi*) (Dick and Andrew 1993, Wildlife Atlas).

Management requirements

Compared to historical times, the present fauna of the Culgoa area is depauperate. Twenty seven native mammals in western NSW have become extinct and it is important to manage habitats to prevent any further extinctions. Many of the remaining species of conservation concern in the region depend on retention of woodland areas. In the Culgoa River area at least 35 species of mammals and birds are hollow dependant. The loss of old hollow-bearing trees which provide critical fauna habitat may take hundreds of years to replace, given the slow maturation of Eucalypts and the limited number of germination events on the floodplain (Dick and Andrew 1993). Anecdotal evidence suggests that koalas and brushtail possums have declined in the region in the latter half of this century (Ellis and Wilson 1992; Maher 1995) because of habitat loss. Koalas appear to occupy coolibah woodland in low population densities and may depend on river red gums near waterholes as drought refuges (Gordon *et al.* 1990). The swamp wallaby and the glider species recorded are also dependent on woodlands. It is evident that to support viable plant and animal communities along the Culgoa River system, large areas of woodlands with varying age and structural classes must be retained.

Although the ecology of semi-arid and arid frog species is poorly known, most species depend on temporary water bodies for reproduction (Tyler 1989). Gilgais and lignum swamps are probably important for this purpose. Preliminary observations also suggest flooded lignum channels are important for reproduction of at least some species (David Egan, pers obs.).

Management of the park will aim to maintain woodland and wetland habitats. This will be dependent to a large extent on receipt of sufficient levels of flooding, as discussed in section 4.1.4.

Introduced animals

Pigs (*Sus scrofa*), cats (*Felis catus*), foxes (*Vulpes vulpes*), goats (*Capra hircus*), rabbits (*Oryctolagus corniculatus*) and hares (*Lepus capensis*) inhabit the park. Pigs are common in the area and pose a serious threat to native vegetation and fauna. Aerial shooting and trapping programs are undertaken but additional pig control efforts are needed. Rabbits are primarily restricted to small sandhill areas but potentially cause significant impact in those habitats. Cats also present an ongoing threat to native fauna. Numbers of goats and foxes are relatively low but control of these species is essential.

The Service will continue to work closely with the Brewarrina Rural Lands Protection Board and neighbours to control feral animal numbers in the national park and adjacent areas.

High numbers of introduced and native grazing species, particularly kangaroos, may pose a threat to the habitats and biodiversity of the park. Further investigation of total grazing pressures in the park is essential, as is the development of programs to manage these impacts.

Policies

- * Management will aim to maintain and enhance habitat diversity and quality and populations of native animals, with priority to threatened species.
- * Conservation measures included in recovery plans for threatened native animals occurring in the park will be implemented.
- * Introduced animals will be managed in accordance with the Upper Darling Region Pest Control Strategy. Control programs will continue to be undertaken in collaboration with the Brewarrina Rural Lands Protection Board and neighbouring landholders.

Actions

- * Further surveys will be undertaken to determine the presence and abundance of native animal species in various habitats within the park.
- * On-going pest animal control programs will be conducted, with priority to pigs, cats, goats and foxes.
- * The Service will investigate the total grazing pressures on the park and programs will be developed to manage these pressures.
- * Options for, and the costs/benefits of, reintroducing animals that are now locally extinct will be investigated.

4.1.4 Water Management

The Condamine/Balonne/Culgoa River system commences in south eastern Queensland and flows in a south westerly direction across the New South Wales border to meet the Barwon River. The Culgoa River is one of four branches of the Balonne River, which divides near the NSW/Qld border (the others being the Birrie, Bokhara and Narran Rivers).

Semi-arid river systems such as the Culgoa River are characterised by highly variable flow regimes. Flood events occur mainly in summer and autumn and are generally channel floods. Fluctuations in river height primarily result from changes in rainfall in Queensland but also rainfall in the local area and diversion of water for domestic and agricultural purposes. Heavy rainfall in Queensland causes large quantities of water to move through the river system and inundate the channel country. The frequency and size of the flooding is highly variable and difficult to predict.

The catchments of the Culgoa River, especially the Balonne, have become progressively modified for agricultural and domestic purposes. This regulation has the effect of reducing both overall flow and flow variability. Beardmore dam is the main water storage in the catchment. In addition there are approximately 13 weirs in

Queensland along the Condamine/Culgoa system and four bifurcation weirs. As a result natural flows have been significantly modified.

Anecdotal evidence obtained from landholders suggests that floods in the area have become more frequent, larger in volume and remain for shorter periods. This theory is based on the abundance of coolibah regrowth when compared to earlier decades when the vegetation was relatively sparse. Flooding lengths may have been reduced due to accelerated run-off caused by vegetation removal thus allowing water to move quickly back into the river system. This contradicts with the knowledge that through the creation of headwater dams, weirs, water diversion and irrigation licences, river heights and flooding frequency are reduced. Although there has been some increase in the frequency of smaller flows, there has been up to a 45% decrease in the frequency of larger flows; with each flow lasting a shorter period.

These flow changes have predominantly occurred in the past decade and there have not yet been any obvious signs of system collapse (Mike Maher pers Comm.) but the long term effect on the floodplain vegetation due to changes in flooding regime is unknown. It appears that species such as coolibah and river red gum that rely on periodic inundation to maintain vigour and to regenerate may decline. Consequently, severe impacts on the native animals dependent on woodland habitats may occur.

At present there is a fragmented approach to flow management, with stakeholder groups vying for improved allocations and conditions. Conservation of the habitat values of the Culgoa River floodplain requires a catchment wide approach involving landholders and agencies in Queensland and New South Wales. The aim of catchment management for wildlife conservation is to minimise the effects of river regulation and withdrawal of water. The Queensland Department of Natural Resources has been conducting a Water Allocation and Management Plan (WAMP) for the Condamine-Balonne system. This includes the Culgoa River. The objective is to identify stresses to river systems by investigating water quality and quantity and establish actions to enhance the rivers. The Service will continue to support the establishment of river management plans with the aim of maintaining the natural systems of the Culgoa floodplain.

The *Total Catchment Management Act 1989* provides a legislative and policy framework for the management of catchments. To adequately conserve the ecosystem of the Culgoa River it is important for the Service to support those principles by acting through appropriate committees.

Policies

- * It is recognised that natural levels and timing of flooding and protection of water quality are vital for maintenance of the high habitat values of the national park and floodplain.
- * The Service will continue to liaise with the Department of Infrastructure Planning and Natural Resources (formerly the Department of Land and Water Conservation), landholders and other relevant authorities with regard to water management issues, with the aim of ensuring that flooding regimes and water

quality are satisfactory for maintenance of the natural systems of the park and floodplain.

- * The principles of Total Catchment Management are supported by the Service and will be promoted in conjunction with other government departments and authorities. By promoting total catchment management principles the Service aims to maintain current species diversity and enhance habitat quality.

Actions

- * Monitoring sites to determine short and long-term effects of flooding events on the natural systems of the floodplain will be encouraged through universities and other organisations.
- * The Service will continue to be involved in catchment management committees and provide input to river management plans.

4.1.5 Fire Management

Fire history and present practices

Fire is regarded as a natural feature of the Australian landscape and is essential in the survival of many plant and animal communities. However, inappropriate fire regimes (fire frequency, intensity and season) have the potential to cause significant damage to ecosystems.

The fire history of the Culgoa region prior to European settlement is not well known. Traditional fire practices of Aborigines in NSW have not been well researched and are poorly understood. It is likely that Aboriginal people had burning regimes which maximised availability of food resources and kept corridors open in lands they travelled through. Martin 1985 suggests that burning regimes implemented in the Culgoa region were used to promote seed grasses such as curly mitchell grass (*Astrelba lapacea*) and coolah grass (*Panicum prolutum*) and to attract game, while restricting regrowth of lignum and coolibah.

Since European settlement it is highly likely that the frequency and intensity of fires within the Culgoa area has changed. Today, active firing of the Culgoa floodplain is rarely practised and with the introduction of grazing in the 1850s, fuel loads have usually been at levels that permit low intensity fires only. Now that grazing pressures have been alleviated in the park it is possible that fuel loads will increase in some areas, promoting fire events of a different nature and intensity than previously. Fire potential will increase following above average summer rainfalls and extensive flood events, which promote an abundance of grass fuel on the floodplain.

Ecological requirements

Fire frequency, intensity and season are major factors influencing the distribution and composition of plant and animal communities. The response to fire by many species found in the Culgoa region is unknown, although research in other fire prone

ecosystems has established broad principles about the general fire regimes needed to conserve biodiversity. Such research indicates that groups of plant and animal species which constitute an ecosystem respond similarly to fire according to the characteristics of their life history. It is not necessary to specify fire regimes for the conservation of every species, instead fire regimes for communities of species need to be defined.

It is evident that a variety of regimes are required to maintain natural diversity. Accordingly the management of fire should aim to provide a pattern of burns of high, moderate and low intensity and of variable frequency and extent. Fire management in the park will aim to maintain and enhance floristic and habitat diversity by restricting the spatial extent of wildfires and implementing strategically planned ecological burns to create a mosaic of age classes over the landscape.

Until the ecological response to fire in Culgoa National Park is better understood, a cautious approach to firing the landscape will be followed. Initial management priorities will aim to minimise the effects of fire in areas containing species of conservation concern.

Research into the response of fire in the park is needed. The establishment of photo points, species inventories and fuel load sampling will be undertaken.

Investigation of how particular plant and animal communities respond to fire is essential to allow predictions to be made about the fire requirements of the floodplain ecosystem.

Strategies and cooperative arrangements

A variety of fire management strategies have been developed including fuel reduction, fire trails, detection and cooperative arrangements. These measures will be applied where appropriate to best protect life, property, natural and cultural assets and biodiversity within and adjacent to Culgoa National Park. Fuel reduction programs and fire trail maintenance systems will be designed and implemented in cooperation with neighbours. A fire management plan will be prepared detailing the fire management strategies and programs for the park. The plan will also identify boundary fire trails, ground tanks and internal tracks to be maintained for fire management purposes.

Under the *Rural Fires Act 1997*, the Service is a designated fire authority and is responsible for suppressing fires in the park and mitigating the potential damage to life and property on and off park. An important part of the Service's fire management is participation in local co-operative fire management arrangements, including the Brewarrina Bush Fire Management Committee, which aims to co-ordinate fire management across the shire.

Policies

- * Fires will be managed in accordance with the Rural Fires Act, NPWS Fire Management Policies, the park fire management plan and this plan of management to ensure:

- protection of human life and property within and adjacent to the national park;
 - conservation of rare, threatened and biogeographically significant plant and animal species and communities;
 - maintenance of ecosystems and promotion of biodiversity through appropriate fire regimes; and
 - protection of Aboriginal sites, historic places, visitor facilities and management structures.
- * As far as possible, the Service will attempt to restrict the spatial extent of all wildfire on park and exclude fire from sensitive cultural heritage sites.
 - * In co-operation with local fire brigades and neighbours, prescribed burning may be undertaken to protect significant natural and cultural features and enhance the diversity of the semi-arid floodplain.
 - * Use of heavy machinery for fire suppression will, where possible, avoid sensitive areas including threatened plants, Aboriginal sites and historic places.
 - * Liaison will be maintained with Brewarrina Bushfire Management Committee, local fire brigades, neighbours and government agencies, to ensure co-operative fire management strategies are developed for social and ecological benefits.

Actions

- * A park fire management plan will be prepared by 2005.
- * Programs will be developed for the maintenance of boundary fire trails.
- * Ground tanks and internal tracks identified for fire management purposes will be maintained.
- * Records of fuel characteristics, fire hazards, fire frequency, seasonality, intensity and effects will be maintained.
- * Research into the ecological effects of fire in the park will be conducted with particular emphasis on fire behaviour and the effects of fire in semi-arid floodplain communities.

4.2 CULTURAL HERITAGE

4.2.1 Aboriginal Heritage

Aboriginal History

Culgoa National Park lies within the traditional lands of the Morowari people. The tribal area of the Morowari nation encompasses a significant portion of north western New South Wales and extends into southern Queensland. Although no precise information regarding the number of people who traditionally lived within the national park area is recorded, the Aboriginal population of the Darling/Barwon rivers, which incorporates Culgoa National Park, is estimated to have been about 3000 people (Veale 1997).

Morowari country incorporates the Gandugari, Nandugari, Brinundu, Baragari and Gangugari groups, who all share the same language, although each group speaks differently allowing group identity to be distinguished. The Gandugari people belong to the area now within Culgoa National Park (Veale 1997).

Veale records that Morowari lands not only provided a rich and abundant source of food, water and shelter for the people, but encapsulated a landscape significant in spiritual and philosophical dimensions. The people were connected to their environment, as reflected in stories that convey knowledge of ancestral journeys and events. Amongst other beliefs, the Morowari people shared in 'Bida-Ngulu', a supreme being and creator of all things who endowed men and woman with their spiritual totems. Bida-Ngulu was never seen by Morowari, but was believed to have adopted a human form and was represented visually by a circle surrounded by radiating lines. This symbol depicted 'fire'; the essence of the creator. (Veale 1997)

As white settlement stretched along the inland rivers, Aboriginal people were increasingly displaced from traditional lands. By the 1850s the impacts of pastoralism noticeably altered patterns of Aboriginal land use and constrained practices. Graziers anxious to protect stock drove people from their home lands, resulting in retaliation and subsequent massacres of Aboriginal people. The introduction of European diseases caused Aboriginal communities to suffer heavy losses. In 1919 an epidemic of influenza caused many people to die and a number were buried at the Dennawan reserve which now borders Culgoa National Park.

Today, Morowari descendants reside in the area around the park, including the townships of Weilmoringle, Brewarrina, Goodooga, Bourke and Enngonia. These people retain a strong oral history of the region, expressed as traditional knowledge, beliefs, personal history and attachment to the landscape.

Although much of the management considerations in the following sections are based on a site specific and 'material' view of cultural heritage, it must also be recognised that the landscape itself and Aboriginal people are intrinsically linked. Despite archaeological sites being an important resource, such sites form only part of the significance of the area to Aboriginal people. This has important implications regarding the management of the park and the level of consultation required with local Aboriginal communities.

Archaeology of Culgoa National Park

An archaeological survey of Culgoa National Park was conducted in 1996 by the Service and members of the local Aboriginal community (English 1997). The survey recorded 141 scarred trees, 41 open campsites and 3 historic sites in selected areas of the park. To gain a greater contextual understanding of the archaeology of the park, areas outside the park were inspected, including the springs at Towry flat, an Aboriginal quarry site and the Dennawan pastoral camp and reserve on the boundary of the park.

The survey indicated that many open sites and stone tool scatters are located along the river and the margins of the floodplain and sandhills. There was strong evidence that sandy rises on the floodplain, especially near water sources, were extensively used for camping. This indicates that not only long term water sources such as the Culgoa River but ephemeral water sources such as gilgais and temporary creeks were often utilised by Aboriginal people. The 141 scarred trees recorded represent only a fraction of the 500-600 scarred trees estimated to occur in the park. The highest proportion of scars were found on coolabah (87%), with a much lower proportion on bimble box (10%), brigalow (1 tree, 0.7%), gidgee (1 tree, 0.7%) and river red gum (3 trees, 3%).

Combined with previous studies by Martin (1985), Witter (1992) and oral history (eg. Jimmy Barker, from Matthews 1988), English develops a picture of the traditional economy of the Morowari people in the area. The activities of the Morowari were probably centred on the use of riverine resources such as fish, mussels, crayfish, birds, aquatic plants, and plant foods that became available following flooding or firing events. The floodplains were resource rich areas with curly mitchell grass and coolah grass providing valuable sources of seed. Both the floodplains and sandhills would have been utilised when hunting for kangaroos, bilbies, echidnas and goannas, with the sandhills harbouring a number of seed and fruit trees (such as wattles and quandongs) in certain seasons. Following good rains, temporary water sources away from the river would have been valuable sources of aquatic plants, crayfish, birds and probably game.

The park is significant in capturing a large sample of the pre- and post-contact archaeology of a north western floodplain. While in archaeological terms there are no sites in the park that are rare or unique, overall the sites form a significant part of an archaeological system. The sites provide a direct insight into Aboriginal people's use and occupation of different environments represented within the park. The park may contain evidence of occupation of considerable antiquity, based on the discovery of artefacts with a desert varnish coating (English 1997). It is also possible the park contains undiscovered burials, especially in the sandhill areas.

Management of Aboriginal Heritage

The Service has legal responsibility for the protection of Aboriginal sites and acknowledges the right of Aboriginal people to make decisions about their own heritage. A collaborative approach will be taken in the management of Aboriginal heritage in Culgoa National Park, whereby the Service and the community will play

an active role in planning and priority setting for ground works and research. Through attendance at Morowari Tribal Aboriginal Corporation meetings, the Service will seek to establish and actively support formal and informal mechanisms of communication and joint planning.

Monitoring programs need to be implemented for open sites, especially to measure effects of erosion and increased visitation to the park. Scarred trees are also in need of monitoring. All of the recorded river red gums and 71% of scarred box trees are dead, while the single scarred gidgee tree displays signs of decay. The single recorded brigalow tree, although in good condition, may be of high conservation value because of its rarity. Further survey work is required to assess the true rarity of these scarred tree species and it may be appropriate to actively conserve the rare trees from decay and fire hazards.

Aboriginal heritage is more than just the protection of sites, it includes the desire of groups or individuals to access the park for cultural purposes. Opportunities for cultural use will be discussed and negotiated with the Morowari Tribal Aboriginal Corporation. Where possible, control and regulation of cultural uses will be vested in the Morowari Corporation with Service involvement.

Post-contact historic places in Culgoa National Park (see section 4.2.2) are also significant to Aboriginal people. The complexity of the park's post-contact heritage creates a need for cross-cultural planning involving the Aboriginal community and non-Aboriginal people.

Policies

- * The Morowari Tribal Aboriginal Corporation will be involved in joint management of Aboriginal sites and values in Culgoa National Park. The Service will actively support formal and informal mechanisms of communication with the Morowari Tribal Aboriginal Corporation.
- * Aboriginal people will be permitted to access the park for cultural purposes related to maintenance of traditional links with the land. Such activities will occur within the legislative framework of the National Parks and Wildlife Act and will, where possible, be regulated by the Morowari Tribal Aboriginal Corporation with appropriate Service involvement.
- * Aboriginal sites will be protected from disturbance or damage by human activities. All developments with the potential to impact on Aboriginal sites will be preceded by an archaeological assessment. This assessment will involve direct contact with the Morowari Tribal Aboriginal Corporation and relevant Land Councils.
- * The location of Aboriginal sites will not be publicised except where:
 - the agreement of the Morowari Tribal Aboriginal Corporation and Local Aboriginal Land Councils has been obtained;

- a conservation study has been prepared and any management works necessary to protect the site from damage have been implemented; and
 - the local Aboriginal community agrees and the site has been interpreted to promote appreciation of Aboriginal culture.
- * The following principles will be implemented as far as possible when planning new facilities on the park:
- no camping grounds or car parks will be established within 100 metres of large and/or highly visible open camp sites;
 - defined walking trails will not pass within 50 metres of any large and/or highly visible open camp sites; and
 - no camping or car parking areas will be established within 50 metres of a scarred tree.
- * The service recognises the importance of post-contact heritage to Aboriginal people and will actively involve the community in cross-cultural planning.
- * A map and register of known Aboriginal sites in the park will be maintained and updated as required. Copies of site cards and photographs will be sent to the Morowari Tribal Aboriginal Corporation and relevant land councils.

Actions

- * The Service will work with the Morowari Tribal Aboriginal Corporation to explore options for joint management arrangements.
- * Ongoing recording of Aboriginal sites and protection and monitoring programs for sites damaged or with the potential to be damaged will be developed in conjunction with the Aboriginal community.
- * Documentation of oral history relating to the park will be encouraged.
- * Regional staff will attend Morowari Tribal Aboriginal Corporation meetings to discuss the management of the park.

4.2.2 Historic Places

The post-contact history of the Culgoa area has been extensively researched and recorded by Veale (1997). The first official explorer to the area was the Surveyor-General Sir Thomas Mitchell who in 1845 set out in search of an overland route to a northern seaport and a navigable route from Sydney to the Gulf of Carpentaria.

From the discovery of 'rich grazing country' along the Culgoa floodplains, it was anticipated that European models and methodologies could be applied to managing

the land. Settlement of the area by Europeans followed soon after with Thomas Caddell settling at 'Tatala' (immediately south of the park) in 1848. Several large pastoral runs were established; initially for cattle grazing but sheep gradually became dominant towards the end of the nineteenth century. Thomas Hungerford, a figure of considerable political importance, took up thirteen runs along the Culgoa River in 1857. Today much of this country is included within the national park.

The Crown Lands Act of 1884 ended the domination of a few pastoralists over large tracts of land as large pastoral leases were split allowing an influx of people establishing smaller pastoral stations. Further settlement of the area was encouraged after World War II with the establishment of soldier settler blocks.

Many of these smaller stations proved unprofitable over the long term. With the exception of the 1950s wool boom (a time when many pastoral improvements were developed) the twentieth century has been characterised by gradual decline of individual holdings and resident landholders and consolidation of remaining stations to a pattern reminiscent of earlier times.

The national park is formed from the properties 'Byerawering', 'Cawwell' and 'Burban Grange'. Homesteads and associated infrastructure are located on each former property. A report by Stacey (1997) outlines the cultural significance of each homestead precinct and recommends conservation approaches.

The Byerawering complex was built in the 1930s, with substantial additions made in the 1950's. The site consists of a homestead, workers cottage, shearing shed and shearers quarters. The station is a typical example of a 20th century north western New South Wales property. Stacey (1997) reports that the homestead, other buildings, structures and use of the landscape demonstrate the evolution of the station in response to changing domestic requirements and technological advances in the pastoral industry.

The original Cawwell homestead, now in disrepair, was built some time in the early 1900s. A new homestead, woolshed, shearers quarters and ablution block were constructed in the 1950s. These additions correspond historically with the wool boom (Stacey 1997). The Cawwell complex also represents a typical 20th century pastoral property.

Stacey (1997) reports that the Burbán Grange complex is the most historically and architecturally significant of the three stations located in the park. The property was associated with one family for over 75 years and depicts changes in the family's requirements over the 20th century. The current Burbán Grange homestead was built in 1942 (replacing an earlier building which burnt down in 1937) and the shearers quarters and ablution block were built in the 1950s. Most of the improvements in the buildings date from the 1950s. The shearing shed and quarters have been removed but a number of sheds remain.

An old cottage or river shack was located alongside the Culgoa River on Burbán Grange. Investigation of this structure has revealed a section of the foundation posts remaining in a very fragile state. The site is adjacent to day use facilities and interpretive material will be provided to assist in its protection.

Several of the buildings around the properties are now in disrepair. Since the acquisition of Culgoa National Park renovations have been made to the Byerawering and Burban Grange homesteads to provide for staff accommodation. Alterations, namely upgrading of the bathroom, have been made to the Cawwell house which is utilised as visiting staff accommodation.

Apart from buildings, there are a number of other historic remains in the park. Bottle dumps and camping areas have been located on the sandhills at Cawwell. Further investigation of these is necessary to determine the origins and significance of the camps.

Cypress pine was milled from the sandhills earlier this century but apart from signs of logging no evidence of a sawmill remains (G. Campbell pers. comm.). Gidgee is a valued timber for construction and along with brigalow is utilised as a drought forage. It is probably for this latter purpose that areas of gidgee/brigalow woodland were felled in the north-western section of 'Burban Grange'.

Two former travelling stock routes ran through the Cawwell property. One followed the western bank of the Culgoa River through Cawwell and Burban Grange and the other ran from the Toulby Gate on the Queensland border in a south easterly direction to Diamunga Lagoon, eventually converging at the Cawwell/Tatala boundary.

The park contains two important sites connected to the history of a former settlement on the neighbouring property Dennawan. Veale (1997) describes Dennawan as a 'Social Nexus'. For Morowari people, Dennawan was a place where they could continue to collect bushfoods, share traditional knowledge and practice ceremonies, in spite of the increasing white invasion. For Europeans Dennawan represented an early 1880s settlement, the nucleus of which was a local pub and post office located where the two travelling stock routes converged. While some itinerant workers camped at Dennawan it was predominantly home to Aboriginal people who supplied labour to neighbouring properties and would return to Dennawan on weekends to see family and friends and attend church services. Eventually a mail route and receiving office, general store, police station and telephone exchange were established to service the Dennawan community.

The former hotel and post office sites are included in the Cawwell section of the park. The other remains are located on the neighbouring 'Dennawan' property. Conservation of these sites will enable the colourful history associated with the early pastoral days to be retained and provide valuable interpretive opportunities.

The former mail route still exists in Cawwell following the western bank of the Culgoa River. This track will be retained for historic purposes and the feasibility of using it as part of a self-guided tour for visitors will be investigated (section 4.3.2). An old telegraph line follows the mail route. It may be necessary to remove or shorten some of the wires as they hang low over the road.

Due to the complexity of land use history associated with the park, it is important to access further historical information from the public and establish an archive of

historical documents, plans, photographs and drawings relating to the park. The local community will be encouraged to access this information.

Policies

- * The provisions of the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter) and the Upper Darling Region Cultural Heritage Management Strategy will be used to guide management decisions for the historic places conserved in Culgoa National Park.
- * Cultural heritage places and landscapes will be conserved and managed in accordance with.
- * Buildings and structures which are deemed to be of high historic significance will be conserved and any works will be undertaken in accordance with conservation plans.
- * Where economically feasible and compatible with the protection of their cultural significance, buildings will be used to accommodate staff and visitors.
- * Portable objects of cultural significance will be conserved *in situ* wherever possible. Otherwise they will be recorded, collected and stored in accordance with professional advice.
- * Appropriate historic buildings, places, relics and their associated history may be interpreted. For cultural protection reasons, certain sites will not be publicised. For reasons of security and privacy, visitor opportunities will generally be located away from the homesteads.

Actions

- * Historic places in the park will be progressively recorded, conservation plans prepared where necessary, and a program to monitor the condition of significant sites will be developed.
- * The Byerawering, Cawwell and Burban Grange precincts will be recorded and maintenance programs will be prepared.
- * The historic value of the old tips at Byerawering, Cawwell and Burban Grange will be assessed and they will be appropriately rehabilitated.
- * The old telegraph line will be recorded prior to any removal or reattachment of the wires.
- * Interpretive signage will be erected at the old cottage remains along the Culgoa River at Burban Grange.
- * An archive of historic information relating to the park will be establishment and maintained. Community involvement will be encouraged.

4.3 USE OF THE AREA

Certain public uses may be appropriate in Service areas provided that they do not conflict with the primary purpose of conservation of natural and cultural heritage and are consistent with the objectives and strategy of the plan of management. The major categories of use that can be appropriate in Service areas are:

- education and promotion of the area, the Service and the conservation of natural and cultural features;
- certain types of recreation;
- research; and
- management operations by the Service and other authorities with statutory responsibilities in the area.

The extent to which these categories of use will be provided for in Culgoa National Park is indicated below.

4.3.1 Promotion and Interpretation

The diverse ecosystems of the Culgoa floodplain and richness of cultural heritage, present rare and valuable nature tourism opportunities. Appropriate marketing and interpretation will be important tools for managing visitors and conserving the integrity of the park.

Promotion of the park currently exists as information on the NPWS web page, visitor guide, a park information brochure and interpretive displays in the Bourke and Cobar offices and in the park. Ongoing promotion will directly target the people likely to visit the park, in order to provide valuable pre-trip information, establish realistic expectations about the park and convey expectations about visitor behaviour. The park has the potential to be a valuable educational and recreational resource for local schools, community groups and the general public. Future promotion will focus on the parks natural and cultural heritage, visitor facilities, recreational opportunities and special events. A variety of media will be used to convey this message. Of particular importance in this remote park is the provision of pre-trip safety information including advice about seasonal variations and road conditions.

It is widely acknowledged that people are more likely to support the protection of natural areas if they have a genuine appreciation. Interpretation provided at Culgoa National Park will aim to entertain and educate visitors, whilst improving their understanding of the natural environment. Additional information and interpretive facilities will be provided if visitor demand increases (see section 4.3.2). Formats will include brochures, posters, open days, information panels and signage. Due to the remoteness of the park and limited resources, most of the information will be developed for independent visitors.

The close proximity and similarity of Queensland's Culgoa Floodplain National Park presents an opportunity for joint promotion. Promotion and interpretation will also be undertaken in conjunction with the Morowari community and local tourism organisations.

Policies

- * The natural and cultural values of the park will be promoted through a variety of means such as open days, brochures, media releases and signs. The following themes will be emphasised in information and interpretive programs:
 - the role of the Service in nature conservation;
 - the significance of the park in reserving an important cross-section of riverine and plains habitats of north-western NSW, including populations and habitats for threatened species;
 - the central role of the Culgoa River and its flood regime in sustaining the park's habitats;
 - the cultural heritage of the Morowari people, including the significance of the land, flora and fauna;
 - the complexity of the area's landuse history (by integrating archaeological and historical information with contemporary community values);
 - minimal impact recreational use of the national park; and
 - the importance of management programs (including fire management and pest control) in the protection of heritage values.
- * Promotion, interpretation and cultural tourism will be designed and developed where appropriate in conjunction with the Morowari Tribal Aboriginal Corporation, the Queensland-managed Culgoa Floodplain National Park and local tourism groups.
- * Natural and cultural areas that are considered sensitive will not be promoted.
- * On-going consultation will be undertaken with the managers of Culgoa Floodplain National Park to ensure that development and management of the two parks for public use is compatible.

Actions

- * Information will be provided to local and interstate tourism organisations on the attractions, facilities and tourism opportunities of the park.

- * Additional information and interpretive material will be developed if visitor demand increases and as visitor facilities set out in section 4.3.2 are developed, and will include:
- a road side information bay at Byerawering;
 - signage for the day use area;
 - interpretive information for the river walk;
 - interpretive signage for old cottage site and day use area;
 - interpretive signage for Byerawering shearers quarters area;
 - interpretive signage for walk to grasslands and Burraverda Lagoon;
and
 - media for self-guided drive tours.

4.3.2 Tourism and Recreation Opportunities

Culgoa National Park presents an opportunity for a variety of nature-based tourism and recreational activities suitable for a wide range of people. To conform with the overall objectives of the park, activities must be ecologically sustainable, low-impact and rewarding for visitors.

In March 1998, 1700 survey forms were distributed throughout the Bourke, Goodooga and Weilmoringle communities to gain an insight into community needs prior to the establishment of facilities in the park. Generally the feedback was supportive of the provision of low-key facilities. Of the 152 responses, 17% requested picnic areas, 15% campgrounds, 8% walking trails, 8% toilets, 7% accommodation, 5% cultural tours, 5% ranger tours, 3% showers, 3% self-guided tours, 3% education centre, 1% canoeing, 1% cycling, 1% recreation areas, 1% fresh drinking water, 1% barbecues, 10% all of the above, and 3% said that they would prefer no facilities to be provided in the park.

Basic low key facilities and recreational opportunities away from sensitive sites are provided in the park in the form of a campground, walking tracks and day use area. Due to the remoteness of the park, harsh seasonal conditions (including the flooding of the Culgoa River) and types of activities available, low levels of visitation are expected to continue. Additional low key activities such as self guided tours may be provided if visitor demand increases.

Access to the park is by dry weather roads from Weilmoringle, Goodooga, Brewarrina or from Queensland via the Culgoa Floodplain National Park. During wet conditions, traffic on all roads within the area is hazardous and can cause major damage to the roads. Provision for visitation will require some upgrading of the internal visitor use tracks and appropriate warnings on road conditions. During wet conditions and extreme fire danger the park will be closed to the public.

To ensure a balance is struck between the integrity of the park and the impacts of people, monitoring of visitor usage areas and sensitive natural and cultural sites will occur. If necessary, preventative measures will be employed to reduce impacts to these areas. Rubbish bins will not be provided in the park and visitors will be required to take out what they bring in. Visitors camping in the park will be required to bring their own gas cooking stoves.

Day-use

The Culgoa River is a focal point in the park and a day use area has been provided near the river on the eastern part of Burban Grange. The vehicle track to the area passes through some of the major habitats in the park, including bumble box, sandhills, gidgee and coolibah woodlands, presenting numerous opportunities for interpretation.

The car park is located about 400m away from the river on a raised area adjacent to the campground. A brochure dispenser and visitor book is located at the car park and interpretive signage will be located here. From the car park area visitors are directed to the river where there is a picnic table and walking track.

The walking track follows the banks of the Culgoa River for a distance of about 1km. Interpretive information will be provided highlighting some of the natural and cultural features of the walk including the remains of the old Burban Grange cottage. Longer walks are provided traversing the sandhill and woodland habitats.

The grasslands in the Byerawering section of the park and nearby Burrawerda lagoon are interesting features that contrast with the woodlands of most of the park. A walking track will be developed to the lagoon to provide visitor opportunities on the eastern side of the river.

Camping/accommodation

A self registration campground is located about 400m from the Culgoa River on a raised area away from areas that frequently flood. Picnic tables and a composting toilet are provided here.

The feasibility of upgrading the Byerawering shearers quarters for visitor accommodation and the shearing shed for an environmental study centre will be investigated. It is envisaged the shearers quarters will provide bunk style accommodation with indoor cooking facilities and an outdoor area with picnic tables and a fireplace. Showers will be available. A booking system will enable the shearers quarters to be utilised by individuals and a range of groups such as schools, universities, researchers and the local community, including the Morowari Tribal Aboriginal Corporation. An overview of the park's pre- and post-contact heritage will be interpreted from the shearing shed. Groups will be encouraged to explore the nearby native grasslands and Burrawerda Lagoon.

The Morowari Tribal Aboriginal Corporation has expressed an interest in camping in the park for cultural purposes. A cultural camping area with basic facilities may be developed in collaboration with the Morowari Tribal Aboriginal Corporation.

Drive tours

Self-guided drive tracks will enable visitors to experience a large proportion of the park, even during periods of extreme heat. To minimise road maintenance requirements and disturbance to habitats, it is preferable to promote features that can be seen from the existing main roads that run through the park. There is potential to develop a drive tour in conjunction with Culgoa Floodplain National Park which would provide travellers with a unique opportunity to explore the range of habitats conserved across both states.

Depending on visitor demand, a loop drive will be developed through the saltbush habitat on Burban Grange. Provision of this drive will enhance the day use and camping facilities by providing visitors with an alternative activity in the area. The feasibility of a drive tour through the heritage sites associated with the Dennawan settlement in Cawwell will also be investigated.

Drive tours will be interpreted through a variety of media including brochures and signage.

Cycling

As the park is very flat it may be attractive for cycling tours. Cycling will be permitted on public vehicle tracks and most management tracks. It will not be permitted on tracks over sand dunes or where there is potential for weeds such as spiny burr grass to be spread by bicycles.

Policies

- * Opportunities for day use and camping/accommodation will be focussed on the eastern section of Burban Grange and northern section of Byerawering.
- * Public vehicle use will be permitted on public access roads shown on the Map (centre pages) and possibly on additional tracks following investigation into self-drive tours and use of the Byerawering shearers quarters for visitor accommodation.
- * Visitors must bring their own gas stoves. No fires will be permitted.
- * Walk-in camping will be permitted in locations more than 1 km from public access roads, picnic and camping areas. The impacts of walk-in camping will be monitored and it may be prohibited in certain locations such as close to Aboriginal sites.
- * Cycling will be permitted on public access roads and management tracks apart from those marked on the Map. It may be prohibited on other management tracks if found necessary for environmental protection reasons.

- * The park may be closed to public access during periods of high rainfall, flooding or fire danger.

Actions

- * The campground and day use area near the Culgoa River will be completed.
- * Investigations will be undertaken into the feasibility of utilising the Byerawering shearers quarters for accommodation and the shearing shed for a study centre.
- * A walking track will be developed to view the grassland habitat and Burrarwerda Lagoon using one of the existing management tracks.
- * Investigations into developing a self-guided car tour in conjunction with the Queensland-managed Culgoa Floodplain National Park will be undertaken.
- * Investigations will be undertaken into developing self-guided loop drive tours through the saltbush habitat in Burban Grange and the heritage sites in Cawwell using existing tracks.
- * Visitor information signage will be installed as needed.
- * Visitor use and visitor impact monitoring programs will be developed.
- * Following further discussion with the Morowari Tribal Aboriginal Corporation and investigation into possible locations, a cultural camping area with basic facilities may be developed (including a communal fireplace).

4.3.3 Research

The purpose of scientific study in Culgoa National Park is to improve understanding of its natural and cultural heritage. Research also establishes the requirements for management of particular species or communities. Data and findings from research studies and surveys provide a strong foundation on which park management decisions can be based.

Many factors within the floodplain environment are not clearly understood and it is important that on-going scientific research is undertaken, particularly relating to biodiversity, landscape, ecosystem and cultural heritage management.

Previous research conducted in the park by the Service includes a vegetation survey (Dick 1993), vertebrate fauna survey (Dick and Andrew 1993), Land Use History report (Veale 1997), Archaeological Survey (English 1997), Initial Conservation Assessment of the Byerawering, Cawwell and Burban Grange homesteads (Stacey 1997), biomass study (Taylor 1997) and pest species monitoring.

The involvement of schools, universities and other organisations will be encouraged in establishing and maintaining particular research projects. The Service assists research programs by providing information, access and in some cases financial and other support. A prospectus will be prepared to encourage the involvement of other organisations in priority research areas.

Policies

- * Research within Culgoa National Park will only occur where it has the potential to facilitate the better management of the park and does not conflict with the objectives of the park.
- * Research proposals relating to Aboriginal interests will be discussed with the Morowari Aboriginal Tribal Corporation. The corporation will be encouraged to redesign any research proposal which it feels is culturally inappropriate.
- * Universities and other organisations will be encouraged to design research programs that provide information to assist with the management of Culgoa National Park.
- * Collaborative research opportunities with the Queensland-managed Culgoa Floodplain National Park will be explored.

Actions

- * A prospectus will be prepared as a guide to preferred research projects in the national park. Topics will be those of direct relevance to management and will include:
 - investigations into the influence of flooding and firing regimes on semi-arid floodplain vegetation;
 - the effects of total grazing pressures;
 - distribution, abundance and life history of rare, threatened or regionally significant plants and animals;
 - the value of various flora and fauna to the Morowari People;
 - visitor usage and impacts on the park and surveys to determine visitor needs;
 - monitoring of pest plant and animal populations and control methods; and
 - joint monitoring programs with the local Aboriginal community to assess the condition of sites within the park.

4.3.4 Management Operations

Access

Two main roads pass through the national park on the eastern and western sides of the Culgoa River. The Weilmoringle-Brenda Road passes through Burban Grange and Cawwell. The road to Toulby Gate branches off this road through the southern portions of Cawwell. The Weilmoringle-Goodooga Road passes through the eastern portions of Byerawering (see Map, centre pages).

Internal roads reflect the past management needs of pastoral activities. The tracks provide access to paddocks, ground tanks or the Culgoa River. These tracks are usually passable only in dry weather and during floods it is not possible to access the river. Tracks to be retained for management purposes are shown on the Map. Others will be allowed to regenerate.

Some landholders use tracks through the park to access sections of their property. Tracks to the Toulby woolshed and the Dennawan properties are accessed from the main Weilmoringle-Goodooga Road. The main access to the 'Ralmardel' homestead passes through the eastern section of the national park near the Byerawering residence. It is not considered that these tracks compromise the integrity of the park and their use will be formalised with the relevant landholders if required.

Artificial Water Sources

Five bore drains currently cross park boundaries:

- An open drain from the 'Old Gnomery' bore passes through the 'Wombeira' property into the eastern section of the park, where it passes through Byerawering to supply a ground tank on the 'Ralmardel' property. The water for the Byerawering residence is supplied by a ground tank located near the shearers quarters.
- The 'Brenda' bore drain passes into the north eastern section of the park where it terminates at Burraverda Lagoon.
- 'Merrinong' bore supplies piped water to the Cawwell residence and feeds the lagoon adjacent to the homestead.
- Burban Grange is supplied by piped water pumped from the 'Kulkyne' bore.
- 'Byra' bore drain passes through the far north-western section of the park. The bore has been piped and redirected out of the park.

The Service recognises the importance of bore drains for supplying water to park residences and neighbouring landholders but will encourage the progressive piping of bores to promote the conservation of artesian water supplies. The park does not utilise the water from the Old Gnomery bore drain. The Service will therefore not assist with the maintenance of this drain. The Service will continue, however, to pay annual fees to the Old Gnomery Bore Trust and supports the capping and piping of

this drain. Formal arrangements will be sought regarding the utilisation and maintenance of the Kulkyne and Merrinong bores.

A CSIRO study on 'The Effects of Artificial Water Sources on Rangeland Biodiversity' (1997) concluded that between 15-38% of plant and animal species decreased in abundance at sites closest to artificial water and that only between 10%-33% increased. The report also indicated that the majority of species which decreased were natives and that these responses were most likely the result of direct and indirect effects of the grazing which radiates out from the source water. To prevent further damage to biodiversity stemming from the widespread provision of water, the report recommended a program to implement the strategic closure of artificial water sources in conservation reserves in pastoral rangelands.

There are currently nineteen ground tanks located in the park. These require inspection to determine tank conditions and holding capacities. Following this only tanks identified as useful for management purposes will be maintained.

Two shared watering points exist on the park: a ground tank on the eastern boundary of Byerawering, and Burrawerda Lagoon. The share tank is not required for management purposes. The use of this tank by the neighbours will be formalised in an agreement and if practicable the tank will be fenced completely off from the park.

As outlined above, the Merrinong and Brenda bore overflows supply a regular flow of water to a small lagoon at the Cawwell residence and to Burrawerrda Lagoon. Although these lagoons lie in natural depressions and would be inundated during periods of flood, the regular supply of water from the overflows has created artificial wetlands. The feasibility of eliminating the bore overflows and impacts on the park's natural systems will be investigated.

Fencing

Boundary fences will be maintained and fencing agreements with neighbouring landholders will be established for the upgrading and maintenance of fencing. Give and take fences will be formalised and maintained as appropriate. To allow for the natural movements of native animals, internal fencing will be removed apart from corner posts and strainers unless considered to be historically significant.

Internal stock grids that exist along the public roads in the park are no longer required. These will be assessed for their heritage value and removed if appropriate.

In accordance with Service policy, stock found on the park will be removed immediately at the owner's expense.

Easements

Powerlines in the park are managed by Country Energy. The powerlines will be formalised by issue of an easement under the National Parks and Wildlife Act. Country Energy will be required to comply with agreements between the Service and Pacific Power which set out guidelines to be followed for the maintenance of

powerlines in areas administered by the Service. Telstra will be subject to similar formalised agreements in relation to telephone and radio transmitter lines.

Buildings and amenities

The following management and/or uses have been identified for the buildings on each property:

Burban Grange: The homestead is the residence for the Culgoa Field Officer and the major workshop for the park is located nearby. A shed dating from the 1970s has been relocated from Cawwell to the workshop area, and a poisons storage shed has been constructed.

The airstrip at Burban Grange is not suitable for Service aircraft. It will not be maintained and will be allowed to regenerate. The Weilmoringle all-weather airstrip is in close proximity.

Byerawering: The homestead has undergone major renovations for occupancy. The homestead is currently unoccupied and will be mothballed for potential future use.

The cottage near the main homestead has been identified as a considerable expense to maintain and has a limited heritage value (it is a portable house dating from the 1970s). The site of the cottage, on a sandy rise, has rendered the foundations unstable. The cottage will not be maintained.

As discussed in section 4.3.2, investigations will be undertaken into the feasibility of maintaining the shearing shed and shearers quarters for visitor use.

The Byerawering airstrip will be closed and allowed to revegetate as it is unusable in wet conditions and the Goodooga airstrip is in close proximity.

Cawwell: the Cawwell house has been identified for use by visiting Service staff. It is being upgraded and a new bathroom has been installed. There are a number of older buildings dating from the turn of the century that are in very poor condition. The buildings are of no foreseeable use and the cost of rehabilitation would be prohibitive. The buildings will be fully documented in the conservation plan.

Heating for the residences and hot water at the shearers quarters is provided by wood combustion. Taking wood from the national park will only be permitted where vegetation is felled during approved management activities such as clearing along fence lines and along fire trails. In these circumstances, removal of fallen timber will reduce future fire hazards. Otherwise firewood will be obtained from off-park sources.

The residential sewage is managed by septic systems. These will be maintained, and if pumping of the systems is required, effluent will be disposed off in EPA approved sites only.

As discussed in section 4.2.2, the old tips at Burban Grange, Cawwell and Byerawering will be assessed for heritage value. Future domestic rubbish will be

disposed of at the Goodooga and Weilmoringle tips. It is not considered appropriate that another tip be established or that rubbish be incinerated on the park.

Policies

- * Domestic stock found on the park will be removed immediately at the owner's expense.
- * Accommodation for permanent Service staff will be at Burban Grange and Byerawering. Visiting staff will be accommodated in the Cawwell residence.
- * The primary workshop will be located at Burban Grange. A secondary workshop servicing the eastern side of the park will be located at Byerawering.
- * Sewage will be disposed of in EPA approved sites outside the park if effluent pumping is required.
- * Rubbish from the residence and visitor facilities will be disposed of at the Goodooga and Weilmoringle tips.
- * The Service will promote water conservation principles by encouraging the piping of the Gnomery and other bores and elimination of bore overflows.

Actions

- * Opportunities for the recycling of wastes will be investigated.
- * Boundary fencing agreements will be arranged in collaboration with park neighbours.
- * The value of internal stock grids will be assessed, and where appropriate the grids will be removed from the park.
- * The Byerawering and Burban Grange airstrips will be closed and allowed to revegetate.
- * A maintenance schedule for management tracks, buildings and other assets will be prepared and implemented.
- * Formal agreements will be established for the maintenance of telephone lines, power lines and radio transmitter lines.
- * Formal agreements will be established with landholders to provide for continued access to Ralmardel, Toulby woolshed and Dennawan.
- * Maintenance access to the Old Gnomery bore will be formalised with the bore trust.

- * Investigations will be undertaken into the feasibility of eliminating the Merrinong and Brenda bore overflows from the Cawwell residence lagoon and Burrarwerda Lagoon.
- * Formal arrangements will be sought regarding the utilisation and maintenance of the Kulkyne and Merrinong bores.
- * Ground tanks will be assessed and those not required for management purposes will be decommissioned.
- * Fencing and maintenance of share tanks will be negotiated with relevant neighbours.
- * Internal fences will be assessed and those not considered historically significant will be recorded and removed. Corner posts and strainers will be left in situ. Priority will be given to the removal of wire from fences running along the edge of roads and management tracks.

5. PLAN IMPLEMENTATION

This plan of management 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 recreation philosophies, and strategic planning at corporate, directorate and regional levels.

The implementation of this plan will be undertaken within the annual programs of the Service's Upper Darling Region. Priorities determined in the context of directorate 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.

The environmental impact of all development proposals will be assessed at all stages of the development. Any investigations considered necessary will be 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 operations shall be undertaken in relation to the park unless they are in accordance with the plan. If after adequate investigation operations not included in the plan are found to be justified this plan may be amended in accordance with section 73B of the Act.

As a guide to the implementation of this plan, relative priorities for identified activities are summarised below:

ACTIVITY	PLAN REFERENCE
High Priority	
* Control introduced plant and animal species	4.1.2 / 4.1.3
* Investigate total grazing pressures	4.1.3
* Prepare fire management plan	4.1.5
* Work with Morowari Tribal Aboriginal Corporation to explore options for joint management	4.2.1
* Attend Morowari Tribal Aboriginal Corporation meetings	4.2.1
* Implement signage to protect old cottage site by river at Burban Grange	4.2.2
* Develop interpretation for the park	4.3.1
* Complete day-use area, campground and walking tracks at Culgoa River	4.3.2

Medium Priority

*	Establish vegetation monitoring programs	4.1.2
*	Implement recovery strategies for threatened species or communities	4.1.2
*	Survey presence and abundance of native animals	4.1.3
*	Provide input to relevant water management committees and river management plans	4.1.4
*	Encourage monitoring to determine effects of flooding on the park's natural systems through universities and other organisations	4.1.4
*	Maintain fire trails and ground tanks for fire management purposes	4.1.5
*	Maintain records of fuel characteristics, fire hazards, fire frequency, seasonality and intensity	4.1.5
*	Conduct research into ecological effects of fire in the park	4.1.5
*	Develop recording, protection and monitoring programs for Aboriginal sites in the park	4.2.1
*	Support the documentation of oral history relating to the park	4.2.1
*	Progressively record, undertake conservation planning and monitor historic sites	4.2.2
*	Record and prepare maintenance programs for Byerawering, Cawwell and Burban Grange	4.2.2
*	Assess and rehabilitate the old tips at Byerawering, Cawwell and Burban Grange	4.2.2
*	Provide information to the local community and tourism bodies on the parks' attractions	4.3.1
*	Investigate feasibility of utilising Byerawering shearers quarters and shed for visitor facilities	4.3.2
*	Develop walking track to grassland and Burraverda Lagoon	4.3.2
*	Investigate the development of drive tours through park	4.3.2
*	Develop camping area for Aboriginal cultural purposes	4.3.2

*	Install visitor information signage	4.3.2
*	Prepare a prospectus for research programs	4.3.3
*	Investigate removal of stock grids	4.3.4
*	Develop maintenance schedule for management tracks, buildings and other assets	4.3.4
*	Establish maintenance agreements with North Power and Telstra	4.3.4
*	Formalise access agreements for Ralmardel, Toulby woolshed and Dennawan properties	4.3.4
*	Formalise maintenance access of Gnomery Bore drains	4.3.4
*	Seek formal arrangements for Kulkyne and Merrinong bores	4.3.4
*	Decommission ground tanks not required	4.3.4
*	Arrange for fencing of share tanks off park	4.3.4
*	Investigate removal of bore overflows from the park	4.3.4
*	Develop boundary and give and take fencing agreements with neighbours	4.3.4

Low Priority

*	Develop soil monitoring and rehabilitation programs for eroded areas	4.1.1
*	Assess introduced plants at homesteads and remove species that spread beyond residence boundaries	4.1.2
*	Explore reintroduction of locally extinct species	4.1.3
*	Record telegraph line and fix wires	4.2.2
*	Develop archive of historic information	4.2.2
*	Develop programs to monitor visitor impacts, demographics	4.3.2
*	Investigate opportunities for recycling wastes	4.3.3
*	Assess and remove internal fences	4.3.4
*	Close Byerawering and Burban Grange airstrips	4.3.4

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