

# Kennedy Range National Park and Proposed Additions

Draft Management Plan

2005–2015



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Conservation Commission  
of Western Australia



DEPARTMENT OF  
**Conservation**  
AND LAND MANAGEMENT  
*Conserving the nature of WA*



# KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

## Draft Management Plan 2005–2015

### PART A: INTRODUCTION

Kennedy Range National Park, comprising an area of 141 660 ha, is approximately 150 km east of Carnarvon and approximately 15 km north of Gascoyne Junction. The park is within the Shires of Carnarvon and Upper Gascoyne.

During 2000/2001 an additional 177 377 ha of land was purchased with the intention to add the area to the public conservation estate (nominally as national park). The purchases comprise the Mooka Pastoral Lease and parts of seven other adjoining leases (see Map 1 – *Locality and Tenure* page 61, and section *Proposed and Existing Tenure*). Unless otherwise stated, references to 'the planning area' encompass both the existing national park and the acquired land purchases as stated above.

#### KEY VALUES

Maintaining or enhancing the key values of the planning area will be the focus of this management plan. These values will also form the basis for future audits of the management plan by the Conservation Commission of Western Australia (the Conservation Commission) (see *Performance Assessment*).

##### Conservation values

- Representative of a remnant of an older surface, much of which has remained relatively intact due to the geology, relative isolation, difficulty of access and lack of permanent water over much of the area.
- Springs and soaks that provide important habitats for invertebrates that do not occur elsewhere in the region or do so only rarely.
- Mooka Spring and its associated creek represents a regionally significant aquatic system and an unusual ecological community.
- A diverse mix of predominantly arid flora of southern affinities and with outliers more common in the south-west.
- Unusual and diverse geology, including marine and plant fossils than can contribute to unravelling recent earth history and the evolution of plant and animal life.
- Vegetation of top of the Range that has been subjected to minimal livestock grazing.

##### Cultural values

- Although Aboriginal history of the Range is largely unknown, 187 Aboriginal sites have been recorded, to date, in and around the planning area.
- An important part in the mythological history of the region.
- Historic features such as the disused Binthalya Homestead and the relics of the old Merlinleigh Homestead provide evidence of the former rich pastoral history in the planning area.

##### Recreation values

- Diverse, scenic beauty of landscapes that exhibit fascinating geological forms and colours.
- An environment imparting a strong sense of remoteness.

##### Education values

- Opportunities for interpretation of natural and cultural values, and education of visitors.

##### Economic values

- Icon for the Gascoyne Murchison Region with links to the Gascoyne Murchison Outback Pathways.
- Potential for commercial tourism enterprises.

## PART B: MANAGEMENT DIRECTIONS AND PURPOSE

### VISION

The vision for the planning area is:

*By 2015, the natural values of the planning area will have improved through efforts focused on effective feral animal control, and the provision of carefully considered, sustainable recreational opportunities. The latter will play a major role in visitors' enjoyment of the area, and contribute economic opportunities to the region. Significant improvements to the management of cultural values, assisted by the traditional custodians, will also be in place.*

### MANAGEMENT ARRANGEMENTS WITH ABORIGINAL PEOPLE

As the Aboriginal history of the planning area is poorly documented, a key issue for management is the involvement of the traditional custodians. By working together with Aboriginal people to care for the land, there will be benefits for the preservation of heritage and conservation of the environment, as well as cross cultural awareness. The Government has indicated a commitment to explore joint management arrangements with traditional owners by developing a consultation paper outlining options for ownership, administration and joint management of conservation lands in Western Australia (Government of Western Australia 2003). The paper discusses how these joint management arrangements may work.

Under the *Native Title Act 1993* (Native Title Act), the Yamatji Marlpa Barna Babba Majja Aboriginal Corporation is the representative body for the planning area. The Department of Conservation and Land Management (CALM) will work with the Corporation and the native title claimants to progress their involvement in management.

## LEGISLATIVE FRAMEWORK

### Legislation and policy

National parks are created under the *Land Administration Act 1997*, vested in the Conservation Commission and managed by CALM in accordance with the *Conservation and Land Management Act 1984* (CALM Act), the *Wildlife Conservation Act 1950* (Wildlife Conservation Act), and the policies of CALM and the Conservation Commission.

The primary objective in management of national parks, as defined in s.56 of the CALM Act is to:

“Fulfil so much of the demand for recreation by members of the public as is consistent with the proper maintenance and restoration of the natural environment, the protection of indigenous flora and fauna and the preservation of any feature of archaeological, historic or scientific interest”.

The CALM Act does not negate any of the powers of the *Mining Act 1978* or the *Petroleum Act 1967*.

CALM policies of particular relevance to this plan include:

- proposed *Policy Statement 9 – Conserving Threatened Species and Ecological Communities* (subject to final consultation);
- re-drafted *Policy Statement 18 – Recreation, Tourism and Visitor Services* (subject to final consultation);
- *Policy Statement 34 – Visual Resource Management of Land and Waters Managed by CALM*;
- *Policy Statement 53 – Visitor Risk Management*;
- Proposed *Policy Statement – Good Neighbour* (subject to final consultation);
- proposed *Policy Statement – Environmental Weed Management* (subject to final consultation); and
- proposed *Policy Statement – Management of Pest Animals on CALM Managed Lands* (subject to final consultation).

## PROPOSED AND EXISTING TENURE

Kennedy Range National Park is a class 'A' reserve (No. 42474), gazetted on 8 January 1993. In 2000 and 2001 CALM purchased 177 377 ha of adjoining land with the intention of adding the area to the public conservation estate, nominally as national park. These purchases were made as part of the implementation of the Gascoyne-Murchison Strategy (see *Biogeography*) with funding provided by both the Commonwealth and State Governments.

The purchases comprise the Mooka Pastoral Lease and parts of seven other adjoining leases. Six of the eight purchases have been placed under the control of CALM under section 33(2) of the CALM Act whilst two (Mooka and part of Minnie Creek) remain as unallocated Crown land (UCL). All areas will be managed as if they were already national park whilst the process to add them to the public conservation estate proceeds.

## MANAGEMENT PLANNING PROCESS

National parks in Western Australia are vested in the Conservation Commission of Western Australia. In accordance with the CALM Act, the Department carries out the management of these reserves and prepares management plans on behalf of the Conservation Commission. The Conservation Commission issues draft plans for public comment and provides final plans for approval by the Minister for the Environment.

The CALM Act specifies that management plan must contain:

- a statement of the policies or guidelines proposed to be followed; and
- a summary of operations proposed to be undertaken.

This draft management plan is for Kennedy Range National Park and the proposed additions. Once public comment has been received on the plan, it will be revised and submitted to the Minister for the Environment for approval. In accordance with section 55 of the CALM Act, the term of the approved management plan will be 10 years, or until the plan is superseded by a new management plan.

## PERFORMANCE ASSESSMENT

The Conservation Commission will measure the success of this plan by using performance indicators (see *Management Summary Table* at the end of this document), and other mechanisms as appropriate. Given resource and technical impediments, it is not efficient to measure all aspects of management. Consequently, indicators will target 'key' components of the plan. Kanowski *et al.* (2001) defined 'key' performance indicators (KPIs), when considering the conservation of biodiversity as "...the minimum set, which if properly monitored, provide rigorous data describing the major trends in, and impacts on, Australian biodiversity". This includes evaluation of a measure and target, reporting requirements and a management response to any target shortfall. These components provide a basis for adaptive management, whereby management can be altered, if necessary, to meet a desired outcome.

CALM is responsible for providing information to the Conservation Commission to allow it to assess the success of CALM's management and meeting targets specified in the KPIs. The frequency of these reports will depend upon the requirements of each KPI. Where a report identifies a target shortfall, a response to the Conservation Commission is required. The response may identify factors that have led to the target shortfall, and propose alternative management actions where appropriate. The Conservation Commission will consider CALM's response on the target shortfall and evaluate the need for action in the context of its assessment and audit function under section 19(1)(g)(iii) of the CALM Act. The Conservation Commission will make the results of audits available to the public.



## NAMING OF SITES AND MAJOR FEATURES

For the purposes of this plan and to facilitate discussion, informal names have been attributed to many of the sites and features in the planning area. More appropriate names may exist and stakeholders are encouraged to forward suggestions for names of sites and topographical features.

## PART C: MANAGING THE NATURAL ENVIRONMENT

### BIOGEOGRAPHY

The National Reserve System Program (NRS) was adopted to preserve Australia's natural biodiversity on a regional scale, and initiate a protected reserve system that meets world's best standards in terms of comprehensiveness, adequacy and representativeness (Thackway and Cresswell 1995). As a framework for developing this system, the NRS initiated the Interim Biogeographic Regionalisation for Australia (IBRA), dividing Australia into 85 bioregions (which may be further divided into sub-regions). This system represents a landscape based approach to classifying the land surface using specialist ecological knowledge, combined with regional and continental scale data on climate, geomorphology, landform, lithology and characteristic flora and fauna.

The planning area is located within the Wooramel sub-region of the Carnarvon bioregion. Prior to 2000/2001 only 3.59% of this sub-region was formally reserved for conservation, still well under the recommended level of reservation for a CAR reserve system (generally acknowledged as 15%) (CALM 2003). The acquisition of 364 144 ha through the Gascoyne-Murchison Strategy saw this percentage increase to 9.61% with the 177 377 ha proposed to be added to the national park representing a significant 3% of this total.

Because of its geographical position, both the winter rainfall of the south-west and the summer rainfall of the north influence the region. It has a semi-arid climate, with a mean annual rainfall as low as 200 mm in places. Extensive, low gradient, alluvial plains, in which the erosional upland of the Kennedy Range forms a sharp contrast, dominate the region.

### GEOLOGY, GEOMORPHOLOGY AND LAND SYSTEMS

Some 270 million years ago, the Kennedy Range area of the Gascoyne region was a large marine shelf and fringing shoreline, part of the vast Southern Gascoyne Basin. Thick layers of sand and silt were deposited within this environment, which were slowly compressed over millions of years to form layers of sandstone and siltstone, known today as the Kennedy Group. Movements in the earth's crust uplifted these layers and erosion stripped away much of the overlying rock to create the plateau of the Range.

The Kennedy Range, a remnant of the eroded land surface, rises about 100 m above the surrounding plain and forms a large, western-sloping plateau extending over 80 km from north to south and up to 25 km wide. The upper third of the distinctive plateau margin is commonly sandstone cliff, below which is a steep rubble footslope and gently sloping pediment. Contrast between these three forms is sharp, with occasional tumble blocks, to 4 m across, present on the pediment. Freshwater springs outcrop along the western escarpment, providing permanent pools.

Fossilised burrows, or trace fossils, are abundant within parts of the sandstones of the planning area. These conspicuous fossils are worm-like structures created by the burrowing of marine organisms. The planning area also includes other rock sequences (both older and younger) that are fossiliferous. Fossilised *Banksia* cones found in the Range are about 50 million years old and represent the earliest known occurrence of the genus in Australia. Damage, disturbance or removal of fossils, without lawful authority, is prohibited under Regulation 31 of the *Conservation and Land Management Regulations 2002* (CALM Regulations). All palaeontological research undertaken in the park must be authorised (see *Research and Monitoring*).

The only precious or semi-precious stones found in the planning area are mookaite and petrified wood ('peanut wood'), found in the white hills and several drainage lines on the west side of the Range. Mookaite is mined intermittently (see *Mining and Collecting*).

Five land systems dominate the planning area. Christian and Stewart (1968) define a land system as 'an area or group of areas throughout which there is a recurring pattern of topography, soils and vegetation'. The Kennedy land system forms the elevated sandy plains on top of the plateau, with large linear to reticulate red sand dunes and wide swales supporting hard spinifex grasslands with numerous shrubs. The dunefield we see today (which overlies an older consolidated dune field) was formed by the reworking of this older field and formed during an arid phase about 25 000 to 16 000 years ago.

The Moogooloo land system completely surrounds the Kennedy system. It includes the spectacular eastern escarpment and intensely dissected parts of the Range, steep footslopes and dendritic drainage, all supporting tall shrublands of mulga (*Acacia aneura*) and other acacias. Marine trace fossils are exposed in some sandstone beds. After rain, waterfalls and pools occur in the eastern gorges and streams flow into the Lyons River valley.

The western slopes of the Range are lower, less steep and more extensively dissected than the east. Adjoining the Moogooloo land system on the western side are the Cahill and Billy land systems, now well represented within the south-western portion of the planning area by the pastoral lease purchases. The Cahill land system is sandy alluvial plains and channelled flow zones with tall shrublands of various acacias. The Billy land system comprises low plateaux, mesas and buttes with stony footslopes and narrow drainage floors, supporting scattered tall shrublands, mulga and other acacias.



Newly represented within the proposed additions to the national park (by the addition of the Mooka pastoral lease) is an extensive area of aeolian sandplain dominated by linear dunes and broad swales. Known as the Yalbalgo land system, the swales support tall acacia shrublands with an under-storey of shrubs or hard spinifex. This dune field is of similar age to those on the Kennedy land system.

Modern vegetation patterns, along with the dune systems and the sea level, stabilised by about 8000 years ago.

The proposed additions to the national park have increased its conservation value primarily by capturing the northern extent of the range, creating a wider buffer around the Range by the addition of the footslopes, and by increasing poorly represented land systems within the Western Australian reserve system. Of particular importance to management will be the protection of springs and soaks located along the western slopes of the Range. For example, feral goats cause extensive landscape degradation, particularly around waterholes and breakaway country (see *Introduced and Other Problem Animals*).

## CLIMATE, SOIL AND CATCHMENT PROTECTION

Because of its geographical position, both the winter rainfall of the south-west and the summer rainfall of the north influence the planning area. It has a semi-arid climate, with a mean annual rainfall as low as 200mm in places. This figure does not reflect fully the pattern and erratic nature of the rainfall and any month of the year may be totally dry.

### Rainfall effectiveness

Plant growth in the arid zone is limited primarily by a lack of soil moisture. Even in the wettest years, actual rainfall never approaches the area's evaporation potential. Due to the potential evaporation being much higher in summer, it is usually winter rain that recharges soil moisture sufficient to promote significant periods of plant growth. Cyclonic/irregular rains, however, are also important as they trigger shrub germination that cannot take place in winter.

### Climate change

Given our present understanding of global climate processes there now exists good reason to expect changes in global and regional climates under enhanced Greenhouse conditions.

Hughes (2003) summarised recent research on climate change in Australia. The following points are of particular relevance to the planning area:

- projections for climate change suggest that by 2030, annual average temperatures will be 0.4-2.0° C higher over most of Australia (CSIRO 2001);
- considerable uncertainty remains as to future changes in rainfall, El Nino Southern Oscillation events (CSIRO 2001) and tropical cyclone activities (Walsh and Pittock 1998);
- changes in fire regimes are highly likely in the future, increased fuel loads are expected under higher CO<sub>2</sub> level because of increased plant growth (Howden *et al.* 2003);

- the number of days of very high and extreme fire danger is expected to increase (Williams *et al.* 2001);
- the interactions between elevated CO<sub>2</sub> and water supply will be especially critical for grassland and rangelands where approximately 90% of the variance in primary production can be accounted for by annual precipitation (Campbell *et al.* 1997); and
- modelling is consistent in showing most species' distributions will contract and/or become increasingly fragmented.

The “loss of climatic habitat caused by anthropogenic emissions of greenhouse gases”<sup>1</sup> (commonly referred to as climate change) has been identified as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Environment Australia 2001). Potential impacts on biodiversity include changes in animal and plant physiology, changes in life-cycle timing, and changes in species distribution and abundance.

The result of these changes is likely to include an increase in species extinctions, a decrease in ecosystem diversity, and a contraction in the range of native species. Other non-climatic stresses, such as the spread of environmental weeds and predation, will exacerbate the impact of climate change on native species.

The implementation of strategies in this plan aimed at reserve creation, feral animal and weed control, fire management, and re-introduction programs, will assist in decreasing the impacts of current threatening processes. This should improve the viability of species and ecosystems within the planning area and hence decrease their vulnerability to climate change.

### **Hydrogeology**

The planning area lies predominantly within the Merlinleigh Sub-Basin of the Carnarvon Basin. The Carnarvon Basin is generally lacking in permanent surface water, but the utilisation of groundwater has allowed the successful development of a pastoral industry.

Groundwater in the area originates from rainfall. The Kennedy Group aquifer is a major source of groundwater in the planning area. It has a very deep water table that discharges via the springs on the western side of the Range. The surrounding Moogooloo Sandstone aquifer also provides large supplies of fresh to brackish water.

### **Erosion potential and protection**

Each of the five land systems within the planning area displays varying erosion potential.

The Kennedy system that forms the elevated sandy plains on top of the plateau is quite a stable system when vegetated, but is prone to erosion when the vegetation cover, mostly spinifex, is removed. The primary agent of disturbance in this land system is fire—grazing by feral goats

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<sup>1</sup> Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases consists of reductions in the bioclimatic range within which a given species or ecological community exists due to emissions induced by human activities of greenhouse gases.



is not of major consequence due to the generally unpalatable vegetation and lack of water. Erosion of the Kennedy system has the potential to impact on downstream aquatic systems such as Mooka Spring, but can be prevented by appropriate fire management (e.g. burn size and distribution).

The Moogooloo land system surrounding the Kennedy land system is a harder surface and includes the spectacular sandstone faces of the eastern escarpment. The harder surface and the steepness of some areas of this system provide some inherent protection from effects of feral grazers.

The Billy land system comprises the low plateaux and mesas and associated footslopes of much of the south-western section of the planning area. These surfaces are erosional, the potential of which is increased by feral goat activity. The breakaway features of this system are potential refugia for uncommon plant species or communities and effective feral goat control is required to protect the soils of this system.

The Cahill land system does not contain the breakaway features of the Billy system and is therefore less susceptible to erosion. However this system does contain channelled flow zones and requires protection from excessive feral grazing animals.

The Yalbalgo land system, which represents the extensive area of aeolian sandplain of the south-western section of the planning area, is not exposed to the same drainage impacts of the Kennedy system. Drainage is mostly absent within the Yalbalgo system. What drainage is present is confined within interdunal plains. This system is the least susceptible to soil-damaging erosional processes.

There are few major drainage systems within the planning area, but those that are present are significant as they provide a source of water for native animals and support species rich aquatic systems, particularly the Mooka Spring system. This system could be severely degraded through a combination of erosional forces caused by fire, grazing and high rainfall events. Control of feral grazing animals and a better understanding of the implications of fire are required to minimise damaging soil erosion events.

## NATIVE PLANTS AND PLANT COMMUNITIES

The Kennedy Range is located within the Carnarvon Botanical District (Beard 1980). Over 400 native plant species have been recorded in the planning area, of which at least 80 are annual wildflowers. The Range supports a predominately arid flora of southern affinities and the strong desert influence is demonstrated in the composition of the flora, with arid zone taxa dominating in five of the speciose families (Asteraceae [daisies], Goodeniaceae [fanflowers], Malvaceae [hibiscus], Amaranthaceae [mulla mullas] and Poaceae [grasses]). Other well represented families include Caesalpiniaceae (peas), Myrtaceae (gums), and Myoporaceae (poverty bushes).

Feral goat control is one of the most important management issues for the planning area as they have a major impact on conservation values. The protection of the springs and soaks on the western side of the Range will be a priority for feral goat control. Feral goats cause

severe damage to plants through overgrazing and trampling. Grazing pressure also affects recruitment of young plants, which has significant impacts on the viability of plant communities in the long-term. Activity of feral goats in and around springs can also affect the species-rich invertebrate communities of these areas (see *Introduced and Other Problem Animals*, and *Aquatic Systems*). Recreation opportunities around the springs also need careful consideration (see *Managing for Visitor Use*).

The vegetation of the Kennedy Range consists of four main types:

- dunefields on top of the Range;
- open shrubland in the gorges;
- fringing forest around the springs; and
- open shrubland on the alluvial plains surrounding the Range.

On the top of the Range is a dunefield, with long red dunes about 15-20 m high separated by broad swales. The swales are mostly dominated by spinifex (*Triodia basedowii*, *T. pungens*) with shrubs and mallees scattered amongst the spinifex, especially where the rocky sub-soil is exposed. One of the commonest shrubs is *Rulingia kempeana*, others include the kurrajong (*Brachychiton gregorii*) and black mulga (*Acacia citrinoviridis*). Of the several mallees, *Corymbia lenziana* is the most common. The deeper soil and leaf litter around the base of these mallees permit the growth of many smaller plants (saltbushes, mulla mulla and daisies), not found in the harsher conditions on the dunes.

The dune ridges are quite different floristically and the spinifex is replaced by shrubs, occasional grasses and bare sand. Here, many species represent groups more common in the wetter south-west of the State, including Ashby's banksia (*Banksia ashbyi*), dune featherflower (*Verticordia forrestii*), several starflowers (*Calytrix* spp.) and *Calothamnus borealis*. Grevilleas and wattles are also a feature of the ridges with the dune wattle (*Acacia ligulata*), a common sight. The dune ridges will require protection as they are easily damaged by activities (e.g. 4WD vehicles) which remove the plant cover and expose the soil to wind erosion. Frequent fires also destabilise these dunes.

The plant assemblages of these dunes have been recognised as an ecosystem at risk (CALM 2002) and placed on CALM's Priority 4 Ecological Communities List (see *Threatened Ecological Communities*).

The scree slopes of the Range have low open wattle shrublands (*Acacia sclerosperma*, *A. tetragonophylla*, *A. spp.*), poverty bushes (*Eremophila* spp.) and hop bushes (*Dodonaea* spp.), often with much bare rock exposed between the plants. Smaller shrubs include the slender horse mulla mulla (*Ptilotus schwartzii*), various *Sida* spp., and lemon-scented grass (*Cymbopogon ambiguus*), which forms large clumps. Sheltered, moister spots support herbs such as wild tobacco (*Nicotiana occidentalis*) and rock fern (*Chielanthes tenuifolia*).

In several places at the base of the western and southern ends of the Range, springs rise to form seeps, pools and some running creeks. Where there is permanent water, forest communities develop under a canopy of tall river gums (*Eucalyptus camuldulensis*) and cadjeputs (*Melaleuca leucadendron*). An example of this is Mooka Spring and its



associated creek. Mooka represents the southern limit of distribution of a few species, which include cadjeputs as an overstorey species, in combination with an intact understorey (often not seen because of grazing pressures). As the spring is wetter and more sheltered than other sites it represents an unusual ecological community. It is also a regionally significant wetland type and has been recognised as an ecosystem at risk (see *Aquatic Systems*). All the springs have a range of tropical emergent aquatic and dampland plants including droseras, sedges and bullrushes. The wetter soils of the creeklines support shrubs such as coolibah (*Eucalyptus victrix*) and *Acacia citrinoviridis*. Away from water the slopes and valleys are dominated by Acacia shrubland with mulga (*Acacia aneura*) and *A. tetragonophylla* being common.

The outwash alluvial plains carry an open shrubland of mulga and other Acacias over *Hakea*, *Eremophila* and *Senna*. *E. setacea*, although found outside of the existing national park, has its largest populations in the sandy soils at the base of Range. Two characteristic species, even in eroded areas, are bardi bardi (*Acacia victoriae*) and snakewood (*Acacia xiphophylla*). After rain a rich array of annual wildflowers cover the open flats including many small daisies, mulla mullas and saltbushes.

Recently discovered in the planning area is a disjunct population of *Eremophila phylloda* subsp. *obliqua* ms. found on the top of the range in rocky soil.

Threatened or priority flora may also exist within the planning area. Management direction for specially protected flora, fauna, and ecological communities is provided through CALM's proposed *Policy Statement 9 – Conserving Threatened Species and Ecological Communities* (subject to final consultation).

Rare (threatened) flora are gazetted under the Wildlife Conservation Act. To date, no declared rare flora have been recorded from the planning area. Three priority species have been recorded, namely *Gymnanthera cunninghamii* and *Acacia atopa*, (both P3)<sup>2</sup> and *Goodenia neogoodenia* (P4)<sup>3</sup>. *Gymnanthera cunninghamii* is a sterile collection of odd habit and its identification is questionable. Further survey work is required to confirm the validity of this record. Similarly, the presence of *Acacia atopa*, which has not been collected from the Range since 1965, needs confirmation. Although priority species are not gazetted under the Wildlife Conservation Act and do not have the same level of legislative protection as rare flora, the priority flora list is maintained as a mechanism to highlight flora of special conservation interest.

It is recognised that a more comprehensive knowledge of the planning area's native plants and communities, and the impacts of fire, goats

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<sup>2</sup> Priority 3 species (Poorly Known Taxa) are those which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey.

<sup>3</sup> Priority 4 species (Rare Taxa) are those considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently, threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

and weeds is required to improve flora management effectiveness (see *Research and Monitoring*).

## NATIVE ANIMALS AND HABITATS

A total of 33 reptile, 103 bird and 20 native mammal species (including 9 bats) are known from the planning area.

Fauna surveys conducted by CALM in the mid 1990s revealed 26 species of reptile, 36 birds and 6 native mammal species at two sites in the dunes and swales on top of the plateau. At two sites on scree slopes, a total of 10 reptiles, 48 birds and 6 native mammal species were recorded. At one site on the mulga-dominated outwash plains 6 reptiles, 42 birds and 3 native mammal species were recorded.

One skink (*Lerista kennedyensis*) is endemic to the planning area. The grey falcon (*Falco hypoleucos*) is listed under CALM's Priority Fauna List as a Priority 4 species<sup>4</sup>, and the splendid fairy-wren (*Malurus splendens*) is at its northern limit in the planning area. Several bird species are more common in the planning area than in almost all other parts of the Carnarvon Basin, including rufous-crowned emu-wren (*Stipiturus ruficeps*), slaty-backed thornbill (*Acanthiza robustirostris*) and painted finch (*Emblema pictum*). Old nests, presumed to be those of the extinct lesser stick nest rat (*Leporillus apicalis*), have been found in the Range in recent years. Old mounds of the western pebble-mound mouse (*Pseudomys chapmani*), a Priority 4 species, have also been recorded on the eastern edge of the planning area. The population of the rock rat (*Zyzomys argurus*) is near its southern limit of distribution. The mulgara (*Dasyercus cristicauda*) is vulnerable and declared specially protected under the Wildlife Conservation Act.

Management direction for specially protected fauna is provided through CALM's proposed *Policy No. 9 – Conserving Threatened Species and Ecological Communities* (subject to final consultation).

Pending effective feral animal control, the planning area has the potential for the reintroduction of several native mammals that are extant in other parts of the State and whose original distribution encompassed the Range. These include the western pebble-mound mouse, Shark Bay mouse (*Pseudomys fieldi*), western barred bandicoot (*Perameles bougainville bougainville*), greater stick-nest rat (*Leporillus conditor*), bilby (*Macrotis lagotis*), chuditch (*Dasyurus geoffroii*), black-flanked rock-wallaby (*Petrogale lateralis lateralis*) and the banded hare-wallaby (*Lagostrophus fasciatus fasciatus*). These species (except the western pebble-mound mouse) are declared specially protected as threatened species under the Wildlife Conservation Act<sup>5</sup>. These mammals have declined in range and abundance, with the decline attributed to a range of factors including predation and competition by foxes and cats (see *Introduced and Other Problem Animals*).

<sup>4</sup> Priority 4 (Taxa in need of monitoring) are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

<sup>5</sup> The Wildlife Conservation Act 1950 provides for species to be declared as 'likely to become extinct or rare, or otherwise in need of special protection', by Ministerial Notice in the Government Gazette."



As yet, CALM's Western Shield program, which aims to control foxes and cats, has not been extended to the planning area. The proposed additions to the existing national park will be advantageous for a successful baiting regime if critical weight range mammals are to be reintroduced. The rather narrow eastern plains area of the planning area (approximately 5 km in width) is not ideal for fox and cat control as the potential for reinvasion by foxes and cats from surrounding areas is significant for up to 15 km from a baiting boundary. However, with co-operative management with the surrounding pastoralists, combined with an increased baiting regime, the problem would not be insurmountable. In addition, the location of the area in relation to CALM's threatened species captive breeding facility at Shark Bay is advantageous to the reintroduction of certain species.

Other local factors contributing to native species decline may include impacts associated with habitat alteration, grazing, changes in burning patterns and the introduction of feral species, particularly feral goats. Feral goat control is one of the most important management issues for the planning area as they have a major impact on the planning area's biodiversity values (see *Introduced and Other Problem Animals*). In relation to potential reintroductions, some species may not survive in the presence of feral goats as the goats compete for similar food and habitat resources and can cause general habitat degradation. Species that may be particularly sensitive to this include rock wallabies and banded hare-wallabies.

Although dingoes (*Canis lupus dingo*) have been declared to be 'unprotected fauna' under the Wildlife Conservation Act, they are thought to have been present in Australia for approximately 4000 years (Fleming *et al.* 2001), and are the highest order predator in Australian ecosystems. Dingoes still maintain a functional part of predator-prey relationships in many cases (Fleming *et al.* 2001). Dingoes are not baited on the public conservation estate unless there is a significant risk to adjacent pastoral enterprises (usually sheep), even though they are a declared animal under the *Agriculture and Related Resources Protection Act 1976*. The draft *Western Australia Wild Dog Management Strategy* (2004) recognises that the approaches taken to dingo/wild dog control depends on the risk profile of the relevant industry. Sheep/goat enterprises are viewed as the highest risk (zero tolerance), cattle less so (varying risk, low to high numbers of dingoes/wild dogs), with unstocked country recognised as no risk. In the case of sheep/goat enterprises, 'buffer' baiting may be required within the protected area.

Dingoes are a significant predator of feral goats—feral goat populations are generally absent, or maintained at low densities if dingoes or wild dogs are present (Parkes *et al.* 1996). In 1992, twenty sterilised dingoes were introduced to Townsend Island, Queensland, to control a population of feral goats estimated at 2000-3000 animals. By 1997, only 4 goats remained and these were shot (Allan *et al.* 1998).

Dingoes/wild dogs may also have a role in limiting the distribution and abundance of foxes, although spatial relationships between wild dogs/dingoes and foxes are not well understood (Fleming *et al.* 2001). The study of most relevance to Kennedy Range is that of Thomson (1992), who examined the behavioural ecology of dingoes in the

Fortescue River catchment of Western Australia over a nine year period. Thomson observed that foxes were relatively common on the coastal plains where dingo control was undertaken to protect stock. In an adjacent rugged unstocked area, both dingoes and foxes existed in low numbers. However, when dingo numbers increased, foxes were only ever recorded in the unstocked areas at the edge of sheep paddocks. When dingo numbers again decreased in the unstocked area, foxes re-established themselves from adjacent areas. Dingoes/wild dogs have also been observed excluding foxes from carcasses during drought, hence limiting their access to resources (Corbett 1995).

Approval for dingo/wild dog control operations is required from CALM and clearance must be given by the Midwest Regional Manager prior to operations commencing. Parts of the boundary of the existing national park and parts of the boundaries of the proposed additions are currently baited, in conjunction with neighbours, as part of the program of wild dog control coordinated by the Carnarvon Zone Control Authority (Carnarvon ZCA). The Carnarvon ZCA functions under the Agriculture Protection Board with the purpose of controlling declared plants and animals. In accordance with CALM's proposed *Good Neighbour* policy, it is anticipated that this control program will continue on those boundaries, although the long-term potential for dingoes/wild dogs to play a role in controlling feral species in the expanded national park needs further consideration based on a risk assessment to surrounding pastoral enterprises.

Many old uncapped mining drill holes exist within the planning area. As these act as traps for native animals, they will be progressively capped.

### **Aquatic systems**

The western side of the Range contains several small springs and soaks, including the larger Mooka and Chaffcutters Springs. On the flats west of the Range, there are a number of seasonally inundated claypans, including the ephemeral 'Lake Julia', approximately 8 km east of the disused Binthalya homestead. These claypans support seasonal populations of waterfowl and other bird species while they are flooded.

Mooka Spring and its associated creek represent both a regionally significant aquatic system and an unusual ecological community (see *Native Plants and Plant Communities*). It represents the best example of this wetland type in the Carnarvon Basin, based on plant and aquatic invertebrate species. It contains a species-rich invertebrate community typical of larger streams and rivers in the Carnarvon Region. It is recognised as an ecosystem at risk (CALM 2002) and placed on CALM's Priority 4 Ecological Community List (see *Threatened Ecological Communities*).

The smaller springs and soaks contain a discrete invertebrate community that is different from those in larger streams and rivers, and in claypans, of the surrounding areas. They support at least 13 invertebrate species that do not occur elsewhere in the region or do so only rarely.

Furthermore, the springs provide an important permanent water source for native mammals and birds, but also feral animals, particularly feral goats. Feral goats are the biggest threat to the conservation values of

the planning area, and the impacts around water sources is palpable. These springs are further threatened where date palms (*Phoenix dactylifera*) have been introduced as the palms vast consumption of water can restrict spring flow and displace native flora.

'Lake Julia' has large shrubs growing through it and supports a much richer waterbird community than most claypans in the Region, which tend to be species poor.

Other water sources for fauna are available after rainfall events. Many gorge systems on the eastern side of the Range contain rockpools that hold water for many months after rainfall. After Cyclone Vance in 1999, a lake of approximately 15 ha in size formed on top of the Range. Water persisted in this lake for approximately 6 months.

## THREATENED ECOLOGICAL COMMUNITIES

There are currently no threatened ecological communities listed within the planning area. However, the *Biodiversity Audit of Western Australia's Biogeographical Subregions in 2002* (CALM 2002), describes three ecosystems at risk in the planning area, two of which have been placed on CALM's Priority 4<sup>6</sup> Ecological Community List. They are 'Invertebrate assemblages of Mooka Spring' (P4 -b)<sup>7</sup> (see *Aquatic Systems*); and 'Plant assemblages (spinifex dominated) of sand dune mesa topping the Kennedy Range National Park' (P4-a)<sup>8</sup> (see *Native Plants and Plant Communities*).

It is recognised that a more comprehensive knowledge of the planning area's animals and habitats, and the research into the relationship between fire, buffel grass and grazing is required to improve fauna management effectiveness (see *Research and Monitoring*).

## ENVIRONMENTAL WEEDS

The *Environmental Weed Strategy for Western Australia* (CALM 1999) (EWS) describes environmental weeds as "...plants that establish themselves in natural ecosystems and proceed to modify natural processes, usually adversely, resulting in the decline of communities they invade". The Strategy rates environmental weeds as high, moderate, mild or low based on their potential invasiveness, distribution and environmental impacts. This rating provides the basis for identifying control priorities, with the highest rated species and species that pose a specific threat to conservation values within the planning area being a focus for weed management.

Weeds occur in disturbed areas of the planning area, particularly around tracks and recreation sites. Two weeds of particular concern are buffel

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<sup>6</sup> Priority 4 ecological communities are those that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.

<sup>7</sup> Priority 4-b ecological communities are Near Threatened communities that are considered to have been adequately survey and do not qualify for Conservation Dependent (i.e. Priority 5), but that are close to qualifying for Vulnerable.

<sup>8</sup> Priority 4-a ecological communities are those which have been removed from the list of threatened communities during the past five years.



grass (*Cenchrus ciliaris*) and date palms (*Phoenix dactylifera*), both rated as high in the EWS.

Further guidance for management is provided by CALM's proposed *Policy Statement – Environmental Weed Management* (subject to final consultation). This is used in conjunction with the EWS and local knowledge to guide the approach and priority setting for the control of environmental weeds on the conservation estate.

### **Buffel grass**

Buffel grass (*Cenchrus ciliata*) is ubiquitous across the alluvial plains of the planning area. Buffel grass has some environmental benefits in that it is sometimes the only species stabilising severely degraded river systems. Control of buffel grass is complex due to its vigorous response to fire and reproductive capacity (vegetatively through rhizome or stolon production, or sexually by seed), and there is no single control method that may be employed for its successful management at a landscape scale such as within the planning area.

Given that recreation opportunities and access to and across the top of the range will be provided (see *Recreation Opportunities*), there is an inherent risk that buffel could be spread onto the plateau from these activities. As the spinifex of the plateau is free/relatively free of buffel, and is listed as a priority ecological community (see *Threatened Ecological Communities*) its introduction will need to be monitored and remedial action taken if it is detected. As with all prolific invaders, the key to the successful control of buffel is to prevent new infestations or to begin control while the infestation is small and manageable.

Fire and recreation management is complicated by the presence of buffel grass. Issues may include the further encroachment of buffel into the fire prone Yalbalgo Land System. Buffel is already present in some of the proposed day-use sites at the base of the western side of the Range (see *Fire*).

### **Date palms**

Date palms were planted around springs in the south-western area of the planning area and are now well established. Although date palms have not spread over extensive areas, spring flow is restricted due to their vast consumption of water, which threatens the ecological values of the aquatic systems (see *Aquatic Systems*). As part of the weed control program for the planning area, all female date palms will be removed. Some male palms may also be removed if it is considered that their presence will continue to significantly impact on aquatic biota. Selected palm removal will have the effect of reducing water consumption while maintaining aesthetic and historic values within the planning area.

## **INTRODUCED AND OTHER PROBLEM ANIMALS**

Feral goats (*Capra hircus*), feral cats (*Felis catus*), feral rabbits (*Oryctolagus cuniculus*), European red foxes (*Vulpes vulpes*) and camels (*Camelus dromedarius*) are present in the planning area. Cattle and sheep are also occasionally present, wandering in from adjoining stations.

Competition and land degradation by feral goats; competition and land degradation by feral rabbits; predation by feral cats; and predation by the European red fox have been identified as key threatening processes under the EPBC Act.

CALM's proposed *Policy Statement – Management of Pest Animals on CALM Managed Lands* (subject to final consultation) guides state-wide approaches and priority setting for the control of problem animals on CALM managed lands and waters.

### **Rabbits and camels**

Rabbits and camels are only in small numbers at a few localities in the planning area, and as such pose minimal threat. No control programs have been undertaken.

### **Foxes and cats**

The fox is a threat to medium-sized ground dwelling mammals and ground-nesting birds (Burbidge and McKenzie 1989). The feral cat is thought to have been responsible for the extinction of small to medium sized ground dwelling mammals in the arid areas of the State (Burbidge and McKenzie 1989).

Five year threat abatement plans have been prepared for both foxes and cats to provide national coordination, with the emphasis on local control programs to ensure recovery of endangered species. CALM implemented the Western Shield campaign in 1996 in order to control foxes and feral cats. The program involves aerial and ground baiting on land managed by CALM using 1080 poison (sodium fluoroacetate) baits to (a) enable native wildlife populations to recover and (b) allow the reintroduction of native animals to former habitats once foxes and cats have been controlled. Foxes and feral cats in arid zones are a component of the program and the subject of ongoing research. As yet, control programs have not been undertaken in the planning area.

Dingoes within the planning area may play a role in suppressing populations of foxes and feral cats (see *Native Animals and Habitats*).

### **Feral goats**

Feral goat control is one of the most important management issues for the planning area as they have a major impact on conservation values. Goats destroy vegetation and inhibit regeneration, leading to changes in flora composition and destruction of fauna habitats (see *Native Plants and Plant Communities*, and *Native Animals and Habitats*). The impacts of hooves and overgrazing destabilises soils and greatly increases the risk of erosion by rain and wind (see *Climate, Soil and Catchment Protection*). Areas adjacent to water holes and springs within the planning area appear to be the most severely degraded (see *Aquatic Systems*). Throughout the rangelands, there is anecdotal evidence to suggest that cyclone run-off damage is increasing in severity, due to defoliation and soil erosion caused primarily by goats.

Between July 1991 and June 1998, effective goat control programs (including aerial shooting) were conducted in and around the planning area. These programs were undertaken in conjunction with neighbouring pastoralists and in accordance with the Feral Goat Eradication Program co-ordinated by the Department of Agriculture.

This state-wide program ceased in 2002 with the last aerial shooting conducted in the existing national park in 2000.

Over the period 1998-2003, a *de facto* managed goat industry based on sale of unmanaged (feral) goats across Australia has increased by almost 900%. Western Australia has dominated the live export market since 1990, exporting approximately 42% of Australia's live goats (297 249 in 2003) and is a major player in the exportation of goat meat, exporting approximately 20% of Australia's total (226 649 carcasses in 2003) (Forsyth and Parkes 2004). In 2002, in recognition of this significant pastoral industry, goats were reclassified from 'prohibited' stock to 'authorised' stock under the *Land Administration Regulations 1998*.

The demise of an effective goat control program, coupled with a growing goat industry, has seen the number of goats within the planning area increase. According to a Department of Agriculture survey in June 2000, the existing national park had a density of 6 goats per 1000 ha, which equates to about 850 goats for that area of the park. Anecdotal evidence would suggest that goat numbers over the past four years are significantly higher than the last Department of Agriculture estimates.

As an indication of this, between January 2001 and January 2005, a total of 13 574 goats have been removed from the ex-Mooka lease, where modern goat traps have been installed. Many goats still remain across the planning area with the issue further complicated by areas of existing national park being inaccessible for normal mustering operations.

Some of the recent land acquisitions include springs and pools where goats congregate. These acquisitions greatly increase the potential to control goats, although effective control needs to be coordinated with the management of goats on adjacent properties. Currently, goats are managed on a cooperative basis with adjoining pastoralists whereby they have permission to muster from CALM managed lands adjoining their property during their own mustering operations.

Water sources within the planning area will provide a continual attraction to feral goats and other introduced herbivores. Effective fencing of the planning area is prohibitively expensive and would require substantial maintenance. Goats will continue to provide a major income component of neighbouring pastoralists into the foreseeable future and will therefore be an ongoing issue with frequent incursions into the planning area. The rugged terrain and isolated remote water sources within the existing national park make effective control by trapping almost impossible.

In recent years, strategies of occasional/seasonal trapping by neighbours and ex-lessees have proved ineffective in reducing overall goat pressure within the planning area. It is widely accepted that unless 70% or more of a feral goat population is removed from an area, there will be no sustained reduction in population levels. Innovative control strategies, such as targeted shooting in areas where goats can avoid trapping and mustering, must be introduced. 'Judas goat' programs, involving radio tracking of goats, may assist control efforts.

Some of the current goat harvesting efforts by neighbours are being conducted on land acquired for addition to the national park.



Renegotiation of these arrangements and the continued cooperation with pastoral neighbours is vital to ensure goat numbers within the planning area are maintained at levels which do not impact on biodiversity values.

## FIRE

### FIRE HISTORY

Fire, both lightning and human caused, is an environmental factor that has shaped many Australian arid zone ecosystems for thousands of years. Traditional use of fire by Aboriginal people was frequent and widespread, especially in flammable hummock grassland (spinifex) communities (*Triodia* spp.), resulting in a fine grain mosaic of different seral stages. There is growing evidence that the fire regime in much of the arid zone has changed with the relatively recent cessation of traditional Aboriginal burning. Today, a regime of large and intense wildfires has replaced a regime of regular patch-burning. This altered fire regime, together with introduced predators and herbivores, is implicated in the alarming declines of arid zone mammals and some plant communities.

The patterns of Aboriginal burning and subsequent ecological effects have not been studied in the planning area. About 30% of the planning area is spinifex grassland, and studies in other spinifex-dominated communities (Burrows *et al.* 1991, Burbidge 1985, Griffin *et al.* 1983) have shown frequent small fires result in a mosaic of spinifex at differing seral stages, which is important for providing a range of habitat types and for breaking up the run of large wildfires.

Pastoralism, and the introduction of buffel grass (*Cenchrus ciliaris*) as a dominant pasture species effected a change to the natural fire regimes. It is likely that under pastoralism, alluvial plains now within the western boundary of the planning area were burnt on a regular basis both to encourage the spread of buffel and to promote the growth of younger, more palatable native plants.

The advent of pastoralism, together with the departure of Aboriginal people from their homelands and the subsequent changes to fire regimes in arid areas, has probably impacted adversely upon biodiversity values in these areas.

### **Fire ecology and management**

CALM's fire planning in spinifex grasslands is guided by 16 management principles (Burrows 2004). Of particular relevance to the Kennedy Range are principles 5 and 16. The former states that "Fire management is required primarily to conserve biodiversity. In some circumstances, it may be necessary to manage fire to protect property, infrastructure and cultural values". Principle 16 acknowledges that the approach to fire management must account for disturbed landscapes: "Where spinifex grasslands have been invaded by flammable weed species such as buffel grass, which is capable of adversely altering the frequency and intensity of fire, prescribed fire should be used conservatively and strategically to break up the run of major wildfires" (see below).

Satellite mapping has recorded fire history within the planning area over the last 17 years. The spinifex dunefields of the plateau (the Kennedy Land System) is the most fire prone land system in the planning area with fires occurring as a result of lightning strikes. These fires remain on the plateau and pose little threat to surrounding pastoral activity. The low *Acacia* woodland of the Yalbalgo Land System is also prone to fire. The cliff and gorge habitats generally have a lower flammability due to the sparse and discontinuous fuel loads in these areas and as a consequence, species less tolerant to fire are more likely to be found here.

Spinifex will normally only carry a fire after a return period of about 5-7 years although this interval can be shorter under severe fire conditions, or following high growth periods (Burrows *et al.* 1991). Spinifex will burn under most weather conditions but fire behaviour is particularly sensitive to fuel moisture content and to wind speed. Ecologically appropriate fire management is needed to maintain species and structural diversity in spinifex-dominated communities, however, burning too frequently, or at the wrong time of the year leading to large intense fires, can be detrimental to some communities. For example, mulga and some *Banksia* species are fire-sensitive and should be protected from frequent fire.

Summer wildfires are a common occurrence in the spinifex of the Kennedy Land System of the plateau and as a result of these sometimes annual fire events, the plateau comprises vegetation of different ages. It is generally accepted that a fine-scale mosaic of age classes is beneficial to the promotion of biodiversity. Although the appropriate mosaic for the spinifex dunefields of the plateau is unknown, its relatively good vehicular access and natural barriers to fire spread provide an ideal site to conduct fire research. Zones on the plateau could be established to compare the natural regime of lightning strikes against zones established for prescribed burning. A network of old mining access and pastoral management tracks exists. These tracks could be utilised for the purposes of management only, to allow for prescribed burning to occur, if it was considered that a finer mosaic than is currently occurring may prove beneficial to biodiversity conservation. This exercise and an associated program of flora and fauna monitoring could provide an opportunity to improve understanding of what scale of fire mosaic best promotes biodiversity within spinifex communities.

Complicating fire management in the planning area is the presence of buffel grass, found across the extensive alluvial plains within the planning area (see *Environmental Weeds*). Buffel creates the ideal fuel source for wildfire—it burns readily, even when green, rapidly regenerates after fire (Tu 2002), and is capable of encouraging and carrying wildfires through communities that are not adapted to frequent fire. Issues for fire management may include the further encroachment of buffel into areas proposed for day-use at the base of the western side of the Range, and into the fire prone low *Acacia* woodland of the Yalbalgo Land System.

Active wildfire suppression is generally not feasible in most of the planning area due to inaccessibility. However, during the life of the plan, areas requiring protection from fire may be identified, and

suppression activities may need to be undertaken at times. The road onto the plateau crosses a narrow saddle of dune and this section of dune is stabilised by spinifex. Burning of the spinifex in this area could destabilise this critical access point. If this area were threatened by wildfire, suppression activities would be considered.

## PART D: MANAGING CULTURAL HERITAGE

In Western Australia, the *Aboriginal Heritage Act 1972* protects places and objects used by, or traditional to, the original inhabitants of Australia. All Aboriginal sites are protected, including those sites not yet registered with the Department of Indigenous Affairs (DIA). Currently, on the DIA Register of Aboriginal sites, 171 sites are recorded in the general vicinity of the planning area, and 16 recorded within the existing national park boundary.

The *Heritage of Western Australia Act 1990* provides for registering and protection of sites of historic interest as ‘heritage places’. The management of these sites is set out in CALM’s proposed *Policy Statement – Management of non-indigenous cultural heritage on CALM estate*. This policy statement is in accordance with the Burra Charter, which was adopted by Australia in 1979 for the ‘conservation and management of places of cultural significance’. The Charter applies to all types of places of cultural significance and has a series of guidelines for managing cultural heritage.

The Australian Heritage Council maintains the Register of the National Estate under the *Australian Heritage Council Act 2003* as a record of important natural, cultural and Indigenous heritage places. The ‘Kennedy Range area’ was registered in 1978.

### INDIGENOUS HERITAGE

The Aboriginal history of the Range is largely unknown, although it appears the Range separated the traditional lands of two Aboriginal tribes—the Maia tribe to the west and the Malgaru tribe to the east (Tindale 1974). The Maia people occupied an area of about 12 000 km<sup>2</sup> from just north of Carnarvon to the western slopes of the Kennedy Range. The freshwater springs on this side of the Range would have been a source of food and water for the Maia people. The Malgaru’s tribal lands covered a similarly large area, stretching from the eastern escarpment of the Range, across the Lyons River (known to Aborigines as ‘Mithering’) and east to the boundary with the Wadjari tribe. To the south of both these tribal areas was country occupied by the Inggarda.

More recent studies (Melerski 2004) indicate that the Yaggu (Gascoyne) River and permanent springs along the western side of the Range made the area a rich source of game and fish for Aboriginal people. The Inggarda name for the Range is Mandatharra. Artefact scatters found near some of the springs on the western side provide evidence of the long history Aboriginal people have with the area. Other sites include engravings in the vicinity of the Temple Gorge campsite. Orthographic studies have recorded a number of cultural sites in the Range such as a march fly *talū* or increase site—a site where special ceremonies are conducted to control the number of particular species. The Range, as



a very distinct landform, also plays an important part in the mythological history of the region.

Where culturally appropriate, traditional practices, oral history and culture of Aboriginal people should be recorded and where possible, reflected in interpretive information. Management arrangements with Aboriginal people are discussed in the section *Management Directions and Purpose*.

There are two registered native title claims under the *Native Title Act 1993* within the planning area, the WAG6161\_98 Gnulli claim which includes all of the planning area excluding the WAG6212\_98 Thudgari claim which takes in the most northern section of the Range. According to section 24jb(7) of the Native Title Act, native title claimants and their controlling body must be notified of proposed public works to be undertaken.

## NON-INDIGENOUS HERITAGE

Francis Thomas Gregory explored areas of the Gascoyne and Murchison and named the Kennedy Range in 1858 in honour of the then Governor of Western Australia, Arthur Edward Kennedy. Gregory did not make favourable comment on the pastoral potential of the area. Aside from a relatively small area identified near the mouth of the Gascoyne River, Gregory claimed there was no land worth occupying west of the Lyons River. However, Gregory did comment that “a very important circumstance in connection with this district is the total absence, so far as we were to observe, of any of the varieties of *Gastrolobium* or *Euphorbia*, which constitute the poisonous plants so fatal to cattle and sheep in other parts of the colony”.

Perhaps this final point led to pastoral leases being taken up both along the Gascoyne and Lyons Rivers within 20 years. Jimba Jimba was the first station established near the Range in 1878 and as people ventured inland, stations sprang up throughout the area along the Lyons River. Lyons River Station was first taken up in the 1880s and under the Hatch family developed into a prosperous and technologically advanced wool-producing station with the most up-to-date machinery and the first telephone line in the region, installed in 1919.

Over the next 50 years the Carnarvon Basin region continued to expand and grow and at its peak, in 1923/24, carried about 1.065 million sheep. As part of this expansion, sections of what is now part of the planning area were progressively taken up as pastoral lease. Lease boundaries were amended through acquisition of adjoining areas until almost all the existing national park was under pastoral lease.

From the 1930s drought onwards, various factors, such as overstocking, lack of effective vermin control and unpredictable seasons, reduced the viability of some leases. The amalgamation of some leases occurred, resulting in a reduced grazing pressure (particularly on the Range plateau), as stock was concentrated on the lease areas of the surrounding plains. With the dramatic fall in wool prices in 1970/1971, and predation on sheep by wild dogs, some pastoralists changed to the production of beef cattle. It was during this period, in 1974, that a ‘Kennedy Range National Park’, to be formed from portions of unviable pastoral leases, was first proposed. The first acquisition was part of the

Binthalya lease, surrendered in 1977. Parts of this lease were allocated to the adjoining Mardathuna and Mooka lease areas. The remaining section was retained as UCL for the creation of the national park. In 1979, a part of Moorgaree lease covering the northern part of the Kennedy Range plateau was also surrendered to form part of the proposed park. The high conservation value of this area was intact, due to the virtually waterless plateau being only lightly grazed. Historic features within the planning area now include the disused Binthalya Homestead and the relics of the old Merlinleigh Homestead. Old windmills and associated structures and old fencing also provide evidence of the former pastoral activities.

Current pastoral activities in the vicinity of the planning area focus on cattle and sheep production, commercial harvesting of feral goats and, in some circumstances, tourism.

## PART E: MANAGING FOR VISITOR USE

### REGIONAL TOURISM CONTEXT

In 2004, Tourism WA released destination development strategies for the each of the five tourism regions within the State. The Kennedy Range lies on the border between the Coral Coast and Golden Outback regions. The strategy for the former identified the Kennedy Range as a ‘focus area’—that is, an area perceived to be iconic, and despite being market-ready for niche segments of the tourism market, requiring product or infrastructure gaps to be addressed before it could be widely marketed. Tourism Western Australia believe that the Kennedy Range has the long-term potential to provide leverage to draw visitors into the region (Tourism WA 2004a). Mt Augustus, 300 km to the north-east of the Kennedy Range, is similarly viewed as a focus area (Tourism WA 2004b).

The destination development strategy for Tourism WA’s Golden Outback region (Tourism WA 2004b) recognises several key iconic holiday experiences, two of which are directly applicable to the Kennedy Range: (1) the appeal of the outback, specifically its “vast clear skies and theatrical landscapes, camping under the stars and four wheel driving...” and (2) wildflowers. The tourism potential associated with sealing the road from the North West Coastal Highway at Carnarvon to the Great Northern Highway at Meekatharra via Mt Augustus is identified as a key strategy. Only Stage One of this project, Carnarvon to Gascoyne Junction, has been funded to date. Stages 2 and 3—Gascoyne Junction to Mt Augustus, and Mt Augustus to Meekatharra respectively—are reliant on further government funding.

Furthermore, the self-drive outback adventure experience is being promoted in the region, particularly through the launch of the Gascoyne Murchison Outback Pathways, which provides three self-drive trails in the region. The Mid West and Gascoyne Development Commissions have managed the implementation of the project. The planning area is a key feature of two of these Pathways. Future staged work for these trails include further interpretive signage and a traveller’s guidebook, and it can be expected that these trails and associated interpretive material will lead to increased visitor numbers to the planning area.

The neighbouring stations and town of Gascoyne Junction play an important role in the provision of accommodation, visitor information, essential supplies and management assistance to visitors and CALM staff. Conversely, the national park and proposed extensions also provide commercial opportunities for regional businesses, and play an increasingly important role in the delivery of social and economic benefits to communities and assisting in reversing the rural exodus. Due to limited Departmental resources, CALM recognises that nature-based tourism products are best delivered through an integrated approach with key stakeholders, and recently commissioned a study to examine the potential tourism opportunities associated with the recent pastoral acquisitions throughout the Gascoyne – Murchison area. The study is expected to be completed before the end of 2005.

CALM's re-drafted *Policy Statement 18 – Recreation, Tourism and Visitor Services* (subject to final consultation) outlines CALM's principles, operational guidelines, procedures and administrative controls in relation to facilitating recreation and tourism on the public conservation estate.

## VISITOR NUMBERS AND TRENDS

Visitation to the existing national park over the past 10 years is estimated to have been between 8000 to 10 000 people annually with most recreation occurring in the cooler months between April and October. Major visitation increases are anticipated when the sealing of the road from Carnarvon to Gascoyne Junction (Mullewa Road) is completed in about 2008.

## RECREATION OPPORTUNITIES

The Range has been preserved for its high conservation values and represents a remnant of an older surface, much of which has remained relatively intact due to the geology, relative isolation, difficulty of access and lack of permanent water over much of the area. Management must continue to protect these values whilst enabling public enjoyment of the planning area. A range of recreation opportunities and management options were developed as part of the initial planning process (Hammond 2004), and have been considered to address immediate pressures and responsibilities, and the longer-term potential for recreation and tourism.

Planning for recreation in the planning area is founded on the premise that the remote, rugged, natural characteristics of the Range are its greatest recreation assets. To that end, recreation settings will tend towards the 'remote' end of the spectrum (i.e. settings which are least modified, have the lowest level of facilitation and require the greatest degree of self-reliance).

In the short-term recreation development will occur in areas where the concentration of visitors is already occurring, and works will focus on protecting natural values and increasing visitor safety.

Recreation opportunities in the planning area have been broadly divided into four areas:

- wilderness areas on top of the Range;
- accessible areas at the base of the eastern escarpment;
- the base of the south-western side of the Range; and



- the top of the Range (from Merlinleigh on the eastern footslopes of the Range to the western extent of the plateau).

### **Wilderness**

The Australian Heritage Council (previously Australian Heritage Commission) has compiled and maintains the National Wilderness Inventory (NWI), which is designed to identify wilderness quality across Australia. The NWI uses a quality index rating of 0-20, with 20 being the highest quality.

The following four criteria are used to estimate the quality of wilderness:

- remoteness from settlement;
- remoteness from access;
- apparent naturalness; and
- biophysical naturalness.

Wilderness areas are created under section 62(1)(a) of the CALM Act. To support the legislation, CALM has developed *Policy Statement 62 – Identification and Management of Wilderness and Surrounding Areas*, which incorporates the NWI criteria and specifies a NWI wilderness quality index of at least 12 and a minimum size of 20 000 ha in arid, semi-arid and tropical areas (CALM 2004).

The main points of relevance of the wilderness policy to the planning area are:

- use of mechanised transport is not permitted within wilderness areas, except for emergency or essential management operations, or reasons of cultural importance;
- commercial recreation and tourism is not permitted within wilderness areas, although education and/or recreation expeditions are;
- constructed walk trails, signs, track markers and toilets will not be provided in wilderness areas;
- prescribed burning within wilderness areas may be carried out for the protection and maintenance of biological values and processes as determined through the preparation of management plans; and
- research that contribute to the achievement of management objectives...will be encouraged...(*but*)...research methods must be compatible with the maintenance of the qualities of such areas.

The NWI assessment indicates that the planning area contains significant areas of potential wilderness both north and south of the track traversing the Range, and includes two major land systems which vary greatly in character—the elevated sandy plains of the Kennedy system, and the intensely dissected Moogooloo system with steep footslopes and dendritic drainage. These areas provide ample scope for the creation of one of the first formal wilderness areas in the State (see Map 2 page 62). It is important to note that none of the management proposals in this draft management plan are inconsistent with the above points, and consequently would not prevent the creation of a wilderness area within the planning area.

### **Recreation opportunities and access at the base of the eastern escarpment**

The existing Temple Gorge campground, walk trails and adjacent day-use sites at Drapers Gorge, Honeycomb Gorge and Sunrise View.

represent the only visitor facilities in the planning area (see Map 2 – *Recreation Opportunities*). The existing Temple Gorge campground caters for about 10 small families or groups, has a sealed-vault toilet and basic information. Visitors are encouraged to enjoy short walks into the gorges, and several trails have been delineated. Current arrangements provide for a local contractor to undertake general maintenance of these facilities.

In the short term this area will remain the focal point for visitors to the planning area. A new and improved campground (to replace the existing Temple Gorge campground), with walk trails and an entrance station will be developed further east of the escarpment. It is necessary to relocate the existing campground as the area has sustained substantial degradation during the time it has been used due to increasing numbers of visitors, poor layout of camp sites, removal of vegetation for campfires, and erosion due to damage of fragile surface soils. Continued use will exacerbate the already poor condition of the area. Once the new campground is established, the former site will be redeveloped for day-use purposes only.

In the longer term, there is great potential to develop visitor accommodation on adjacent lands such as Lyons River Station. Other opportunities for small day-use sites also exist both south and north of the current sites (see Map 2).

In relation to access to the planning area, the section of road from the Ullawarra Road to the existing Temple Gorge campground and adjacent day-use sites is the only road recommended for visitor use (see Map 1 – *Locality and Tenure*). The Shire of Upper Gascoyne maintains both this road and the Ullawarra Road to unsealed 2WD vehicle standard.

In the longer term a scenic loop drive could be developed from Temple Gorge back on to the existing park entry road or Ullawarra Road. Factors that need to be considered in developing a loop road include:

- visitor management is most effective when there is only one road access into an area, as visitor impacts tend to increase when there are multiple entrances to a park, particularly when combined with limited management presence
- drainage issues associated with ephemeral streams;
- visual impact of any new roads from the top of the escarpment;
- the possible requirement for access through either the Bidgemia and Lyons River pastoral leases; and
- the potential for new recreation opportunities.

The sealing of the road from Carnarvon to Gascoyne Junction (172 km) is due for completion in about 2008. It is proposed that the road-sealing program continue from Gascoyne Junction to Mt Augustus via Cobra – Dairy Creek Road (288 km), and then to Meekatharra (347 km). From a tourism and economic perspective, there may also be benefit in sealing the road from Gascoyne Junction to the eastern entrance to the planning area off Ullawarra Road (about 57 km), which would stimulate increased visitation and the need for more visitor accommodation and services. As the consequences of this warrant serious consideration, this scenario would prompt a review of this plan.

## Recreation opportunities at the base of the western side

The landscape of the south-western side of the Range is less dramatic than the cliffs and gorges of the eastern escarpment, and is characterised by more vegetation and permanent springs and streams. The presence of river gums and other tree species provides welcome shade for picnicking and as a base for exploring gorges and creeklines. Most sites are best suited to relatively small numbers of visitors as day-use areas.

Although there are currently no designated sites or facilities for either day-use or camping along the western side of the Range, both are occurring, especially around springs, and in particular the very attractive permanent waters of Chaffcutters Spring and Mooka Creek (see Map 2).

There are a number of other existing or potential recreation sites including Yenny Spring, Bullwalya Spring and Pharoah Well (see Map 2).

All of the existing recreation sites can only cater for small numbers of visitors because of site constraints. It is therefore recommended that existing sites be developed for day-use with facilities such as defined vehicle parking, picnic tables, barbeques, toilets, walk trailheads and information. In addition, one large dispersed camping area will be developed with a range of facilities from small, secluded camp sites to large group camping sites for tour groups.

A broad area of land at the base of the western side (Yabba Campground), has the potential to provide a very attractive setting for camping, bushwalking and nature study. Its proximity to the Range and Pharoah Well offers opportunities for short and medium length walks. Furthermore, it is ideally placed to accommodate visitors via the three existing access routes to the western side of the Range—via Mardathuna Station, the Gascoyne River, and over the top of the Range from the eastern side (see *Recreation opportunities and access on to the top of the Range from the east*).

Until such a time as this campground is developed, current informal and dispersed camping, including campfires, will be allowed to continue at existing sites unless conservation values are compromised by such use. CALM will ensure that adequate signage is in place to inform visitors of campfire safety requirements. The exception to current camping arrangements is Mooka Creek, which represents part of a regionally significant Mooka Spring aquatic system (see *Aquatic Systems*), an unusual ecological community (see *Native Plants and Plant communities*), and is recognised as a system at risk (see *Threatened Ecological Communities*). To protect these conservation values, camping at Mooka Creek will be prohibited and vehicle access across an old track crossing the creek will be closed. For management purposes, vehicle access across Mooka Creek will be downstream at the mookaite mining lease.

Once the Yabba Campground is established, all current informal and dispersed camping, and informal campfires, will be closed and visitors will be encouraged to make use of the facilities established at the new site. Concentrating camping at one site will minimise environmental impacts, particularly effluent disposal.

Some 10-20 km from the western edge of the Range, but now within the planning area, are the Mooka homestead and the disused Binthalya homestead (see Map 2). Mooka homestead is currently occupied by caretakers but could provide a base for CALM staff and visitor accommodation in the future. The Binthalya homestead has the potential to be developed to offer commercial accommodation and visitor services.

### **Recreation opportunities and access on to the top of the Range from the east**

Some visitors traverse the planning area on the rough 4WD track over the top of Range, but numbers appear to be very small. In the short to medium term, the track will not be promoted due to significant hazards, alignment, erosion, wildfire risks, and the lack of visitor infrastructure and management capability. Furthermore, access to this track from the Ullawarra Road is through Minnie Creek Station via a station track. Mt Sandiman homestead is well located on this track and could potentially assist in managing visitor access and provide visitor accommodation and services accessing the planning area via this route (see Maps 1 and 2). Dispersed, unregulated camping and exploration of gorges, dunes and other features occurs along this 4WD route. Visitor risks are high (see *Visitor Safety*).

This plan recommends that 4WD access be allowed to continue across the 'top' of the Range. In doing so, however, the Department and the Conservation Commission recognise that the development of appropriate visitor facilities and control of visitor numbers is required to prevent impacts and to retain the remote experience (see *Introduction of a permit system*). To date, there are no designated sites or facilities on top of the Range. Over the life of the plan, two camping areas and several day-use sites may be considered for development (refer to discussions below).

Merlinleigh is an abandoned homestead on the eastern footslopes of the Range. Remnants of the homestead are limited to a concrete verandah, a small shed, water tank and fencing but provide a poignant reminder of the pastoral history of the area. In the longer term, this site may be developed for camping, as it offers an ideal base for exploring the top of the eastern escarpment, and the varied landscapes around the homestead area. Facilities could include a bush camp with parking, separate camping bays, 'safari'-type tent camping, toilets, information/interpretation, shade shelters and walking tracks. The area has good potential for group camping and possibly commercial tour operations.

On the top of the eastern escarpment, the spectacular views allow an appreciation of the sheer size and scale of the landscape, and the geological formations, colours and rock complexes are truly inspiring. In the longer term, it is recommended that camping areas be established near the Great Gorge which will allow visitors to explore the largest gorge in the vicinity. Facilities here could be provided and managed as a commercial tour operation.

As the 4WD track runs along the top of the eastern escarpment for some 30 km, it is also suggested a number of small day-use sites could be established, allowing short walks to view the escarpment and gorges (e.g. White Stacks, The Neck – see Map 2).



From the vicinity of the Great Gorge the track meanders westward across a very different landscape of sandy dunes. Crossing this dune system offers opportunities for the development of small-scale day-use recreation sites as a base for nature appreciation and short walks. However, due to the highly erodable soils of the sandy dunes of the plateau, this area has a very limited capacity to sustain a significant increase in visitor numbers without major road upgrading and increased visitor infrastructure and management effort. As a consequence any development needs careful consideration. In the longer term, it is recommended that day-use sites be considered at The Dunes, Mesa Knob and The Basin (see Map 2). Other opportunities for day-use sites on the top of the Range may exist and may be investigated for development during the life of the plan.

#### *Introduction and administration of a permit system*

In preparing this plan, the Conservation Commission requested that CALM seek the views of major stakeholders on whether public vehicle access across the Range should continue and if so, what level of public use would be considered appropriate, and how use would be managed to maintain conservation values and a remote recreation experience.

Key considerations in determining the most appropriate level of public access and use include:

- environmental impacts of use;
- establishment costs (including costs to improve the track and provision of visitor facilities and services);
- limited resources for management and cost recovery options;
- the role of potential commercial tour operations to assist with management;
- visitor risk management; and
- restricting visitor numbers to retain the 'remote' values of the Range.

Stakeholders were advised that CALM recommended the retention of the existing track across the Range to 4WD standard. It is considered that the track has a generally stable sandy surface (given current use levels) and satisfactory alignment. A few minor realignments may be required to reduce erosion impacts, allow rehabilitation of some eroded sections and avoid particularly rough or dangerous sections closest to the eastern edge of the escarpment. Preliminary stakeholder feedback agreed that access should remain open, that the introduction of a permit system to access the top of the Range was considered acceptable, and that access across the top of the Range remain as 4WD only.

In addition to vehicle access on to the plateau, risks associated with extended walking tours of the plateau also need to be consideration.

The route taken to cross the top of the Range is not a public road. The route commences from the east at Mt Sandiman homestead on Minnie Creek Station, and terminates at the intersection with Mardathuna Road on the northern section of the ex-Mooka lease.

The CALM Regulations allow the Department to specify that in some CALM-managed areas, access is by 'lawful authority' only. This can be done by way of registration and/or permit, and visitors wishing to access such areas by vehicle need to inform CALM. A fee is attached to the issue for permits to aid cost recovery.

To assist CALM in understanding visitor use within this area, and to achieve long-term sustainable use of the area, certain conditions of entry need to be met. They include:

- all visitors on to the top of the Range must obtain a permit;
- until a review is conducted by the Department and the Conservation Commission (within two years of commencement of this plan), vehicle numbers will be restricted to a maximum of 20 vehicles at any one time. Similarly, vehicle permits will not be issued to groups of more than 10 vehicles to help preserve the remote quality of the area;
- permits will not be issued to single vehicles due to the remoteness of the area. Exceptions may be made for commercial tour operators operating OKA-size vehicles and carrying adequate safety equipment. A minimum group of two vehicles will be required for a permit to be issued; and
- no campfires will be allowed on top of the Range due to fire prone vegetation and lack of firewood. This will be reviewed when future recreation site development in the area is undertaken.

Some of the issues that need to be considered in order to implement the permit system include:

- where and how permits would be made available (e.g. Gascoyne Junction, Mt Augustus Tourist Resort, Cobra/Bangemall Inn, CALM Carnarvon, via phone/fax or on-line booking system<sup>9</sup>);
- what fee should be attached to the permit (with all monies directed back into the management of the planning area);
- whether the permit system should differentiate between day visitors and campers and the level of access for each;
- the possibility for seasonal (e.g. during hot summer months) or temporary closures (e.g. during flooding, goat mustering); and
- whether a combined access/camping fees could be charged.

Access through Minnie Creek Station pastoral lease currently relies on the continued agreement of the owners of the Station. To maintain access, this area could be considered for declaration as a Public Access Route (PAR), under the Land Administration Act. However, this can be an unwieldy process and a more practical option in the first instance may be to maintain a close management relationship with the owners of the Station.

#### *Day visits and camping on top of the Range*

Access on to the top of the Range is an opportunity that should be allowed for both day-use visitors and overnight campers. How to best cater for both experiences requires careful consideration. CALM and the Conservation Commission are considering two options to manage the mix of day visits and camping—a flat fee for all visitors to the top of the Range, irrespective as to whether they camp overnight or not, or a two-part permit system that caters specifically for day visitors or campers, viz:

1. an access permit for day visitors restricted to the eastern escarpment as far south as the Great Gorge and a day fee charged accordingly; and
2. a combined access/camping (see below) permit.

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<sup>9</sup> CALM is in the process of developing an on-line booking system for camping, and it may be possible to apply the same technology to permits for access.

In either case, a maximum number of 20 vehicles at a time and 10 vehicles per party will remain in place until reviewed by the Department and the Conservation Commission.

#### *Monitoring visitor impacts on the plateau*

Prior to implementing the permit system, an audit of the current track condition and level of visitor impact should be undertaken to obtain a benchmark of the current condition. Track attributes to be recorded should include number of side-track/deviations present, depth of erosion channels at specified locations and evidence of degradation (e.g. campfires, firewood collecting and other degradation).

The condition of the track will be reviewed by the Department and the Conservation Commission after two years of commencement of this plan to determine if any significant damage has occurred, with the number of permits issued adjusted accordingly.

#### **Other visitor access**

Gorges and footslopes in the south-west portion of the planning area are accessible by 4WD via the Mardathuna Road from the south (gazetted road 9485, Map 1), or via Mardathuna Homestead from the west. The Shire of Carnarvon maintains the section from the North West Coastal Highway to Binthayla Homestead, whereas the section from Binthayla Homestead to the Gascoyne Junction Road is not maintained at present. Access via the latter is often restricted due to flooding or high water. Informal day-use and camping may increase here as visitors wait for a safer crossing.

The Shire of Upper Gascoyne maintains roads in the eastern portion of the planning area.

#### **Management access**

There are a number of management tracks that are necessary for the ongoing management of the planning area (e.g. goat control). These tracks are often on erodable soils and in poor condition and as a consequence, public access on these tracks will be restricted. All public access tracks will be clearly signposted.

#### **Specific recreation activities**

##### *Abseiling and rock climbing*

In recent years there has been a marked increase in abseiling in Western Australia and both abseiling and rock climbing occur on land managed by CALM. Under Regulation 33 of the CALM Regulations, visitors require permission to abseil on CALM land. Proposed amendments to Regulation 33 will include rock climbing as an activity requiring lawful authority. To date, only one enquiry has been received as to whether these activities can be conducted in the existing national park. As part of the management planning process, interest and advice on how best to manage these activities will be sought and weighed against safety and environmental issues. If permitted, it is expected that lawful authority would be given on a case-by-case basis.

#### **Camping fees**

Although camping fees are currently not collected at the existing Temple Gorge camp site, it is intended that fees will be introduced during the

life of this plan. In the absence of a ranger or campground host, fees will be paid through self-registration at each campsite.

### **Visitor information**

An information shelter exists at Temple Gorge and others have been established on the south bank of the Gascoyne River crossing on Jimba Jimba, and at the intersection approximately 9 km east of the disused Binthalya homestead (see Map 2). The shelters will provide information to interpret the natural and cultural values of the planning area, promote visitor safety and also to orientate visitors to the area. Directional signs will be required on the top of the Range, and a brochure and other visitor information will be developed to promote the safety of visitors that travel over the top.

### **Commercial tourism operations**

A commercial concession is a right granted by way of lease or licence for occupation or access and use (respectively) of an area of land or water managed by CALM. Commercial concessions can increase the range of recreation opportunities and facilities within national parks and make a financial contribution towards meeting the costs of natural resource management, but must be consistent with the purpose of the reserve, the protection of its values, and with the objectives of this plan. CALM may enter into commercial arrangements to help meet the rising demand for high quality recreation and tourism services. All commercial concessions are subject to approval by the Minister for the Environment after consultation with the Conservation Commission. Leases, which allow a lessee to occupy a particular area of land, are granted under Section 100 of the CALM Act. A lease provides security to protect significant investments and may be for a term not exceeding 21 years and may involve an option to renew that lease for a further term. The length of a lease is usually related to the level of investment and the return on the investment. For example, infrastructure such as permanent accommodation is usually subject to a lease arrangement. At present, there are no leases issued in the national park, although it is possible that future accommodation facilities will be developed through a lease arrangement (e.g. Binthalya homestead).

Licences allow operators to access and use lands and waters managed by CALM. All private tour operators conducting commercial tourist activities on conservation reserves are required to obtain a licence in accordance with the CALM Act. CALM issues two types of commercial tour operator licences—'T' Class (open to many operators) and 'E' Class (limited number of licences issued due to environmental or management issues).

Although 104 operators currently hold T Class licenses to conduct tours in the existing park for the purpose of camping and bushwalking, only a few of these are known to have used the park and little is known about the frequency or types of tours conducted. As major visitation increases are anticipated, it is a priority for management to gather information on current and projected recreational use of the planning area. Commercial operators can be asked to assist in the collection of these data as part of their licence conditions.

To access the top of the Range (as discussed previously), commercial tour operators will be required to adhere to the proposed permit system.



Issues of specific relevance to commercial operations requiring input from stakeholders include:

- the ratio of private vehicle to commercial vehicles;
- specific licence conditions for commercial operations; and
- how to deliver equitable opportunities for all interested commercial operators (through an EO1 process with specific weighting to criteria including but not limited to local knowledge, regional preference, experience, ability etc).

In planning for future recreation, particularly the design of new campgrounds at Temple Gorge, Yabba and Great Gorge, consideration will be given to opportunities for commercial services and the potential for commercial involvement in the development and management of visitor facilities.

Two neighbouring pastoralists offer station-stay visitor accommodation, one of which also conducts tours in the existing park (see *Regional Tourism Context*).

In the past, the Mt Sandiman Homestead has provided station-stay accommodation, with operators conducting day visits onto the plateau. The area accessed on the plateau by these tours is not within the existing national park, and consequently operators did not require a Commercial Tour Operator licence. In future, all operators in the expanded conservation reserve will require a licence. Commercial tourism activities are not currently being conducted from the homestead but the potential exists for the tourism business to be developed in the future.

The development of commercial visitor services, such as a safari camp at Merlinleigh, could contribute to management of the planning area in various ways (e.g. through monitoring and directing public access, interpreting the values of the planning area and promoting visitor safety). Whether such an operation is managed by way of a lease or a licence is dependent on the level of infrastructure—commercial concessions for safari style accommodation elsewhere in the State are offered as five year licences due to their semi-permanent nature, rather than as long-term leases.

### **Visitor safety**

Visitor safety is a key management issue in the planning area. In addition to a genuine concern for visitor welfare, CALM has a moral and legal responsibility to consider personal safety. CALM manages the risks presented to visitors by their activities and by the natural, cultural, and developed environments through a visitor risk management program. This is guided by CALM's *Policy Statement 53 – Visitor Risk Management* (CALM 1986b).

In the event of an incident, the coordination of search, rescue or recovery operations is the responsibility of the Western Australian Police Service, with CALM providing support as requested. However, in an area as remote as the Kennedy Range, it could be anticipated that CALM, or the surrounding neighbours, may need to organise the initial response. To date, no search and rescue operations have been conducted in the planning area.

The risks to visitors include potential injury while walking due to unstable cliffs and uneven terrain. The cliffs pose a risk through the collapse of cliff faces, people falling off the edges and people being hit by falling rock. There is also potential for visitors to become lost or stranded on disused mining exploration tracks or due to vehicle failure. Sun exposure and dehydration are inherent risks for much of the year. Wildfires may also present a risk. As visitor safety is a key issue in the planning area, the provision of safety information and the preparation of a Visitor Risk Management Plan are priorities for this plan (refer *Management Summary Table*).

### **Landscape amenity**

The interesting geology and scenic landscapes are among the planning area's most attractive features. Visual appearance is the most direct way to experience an area for many visitors and, therefore, the management of the visual landscape is fundamental. CALM *Policy Statement 34 – Visual Resource Management of Lands and Waters Managed by CALM* provides guidance for landscape management. This policy will be applied prior to any developments within the planning area.

## **PART F: MANAGING SUSTAINABLE RESOURCE USE**

### **MINING AND COLLECTING**

Mineral and petroleum activities on CALM-managed land are subject to the *Mining Act 1978*, the *Petroleum Act 1967*, the *Environmental Protection Act 1986*, the *Wildlife Conservation Act* and various *State Agreement Acts*. According to the *Mining Act*, mining includes exploration, fossicking, prospecting and mining operations. It should be noted that the *Mining Act* and the *Petroleum Act* generally take precedence over the *CALM Act* and may prevail over the contents of management plans.

Government policy also has a bearing on decision making. Current State Government policy is to prohibit mineral and petroleum exploration and extraction in national parks and nature reserves. Applications lodged before 10 February 2001 for access to national parks or nature reserves for mineral or petroleum exploration or production are considered, but there is no presumption for approval and, if approved, they may be subject to the 'environmental offsets' principle<sup>10</sup>. The Environmental Protection Authority released a *Preliminary Position Statement 9 - Environmental Offsets* in 2004, which has yet to be finalised.

Exploration and mining of minerals in Western Australia is administered by the Department of Industry and Resources (DOIR) through the granting of tenements including prospecting licences, exploration licences and mining leases.

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<sup>10</sup> Environmental offsets aim to ensure that significant and unavoidable adverse environmental impacts are counterbalanced by a positive environmental gain, with a goal of achieving a 'net environmental benefit' (EPA 2004).

Stringent conditions would apply if mining was to be undertaken in a national park and the concurrence of the Minister for the Environment and the consent of both Houses of Parliament are required. The information booklet, *Guidelines for Mineral Exploration and Mining within Conservation Reserves and Other Environmentally Sensitive Areas* (DOIR 1998), outlines the basic procedures and conditions to be applied to applications for mining tenements.

The current status of exploration and production in the existing national park is as follows:

- one petroleum exploration permit (EP405) encompassing most of the park;
- two pending exploration licences (E09/1014, E09/1015);
- one granted prospecting licence (P09/388), and one pending (P09/396); and
- two granted mining leases (M09/86, M09/18) and one pending (M09/92).

The mining leases are for the colourful agate mookaite, operating within the ex-Mooka pastoral lease and adjacent to the Mooka Creek recreation site. Current mining practices involve removing significant quantities of mookaite from the river bed. CALM has annual input into the licence conditions through DOIR. Current conditions include protection of the natural rock levee at Mooka Spring and assistance with road maintenance.

It is an offence under Section 103 of the CALM Act to collect rocks and stone from national parks. It is known that commercial and amateur collectors have removed large quantities of semi-precious gemstones and fossils from the planning area.

## BEEKEEPING

There are no registered apiary sites within the planning area and to date no interest has been shown in having sites in the area. As the planning area contains a large suite of native insects, particularly bees and wasps that may be put at risk by competition for floral resources, beekeeping will not be permitted. This is consistent with CALM's draft *Policy Statement 41 – Beekeeping on Public Land*, which allows, through the management planning process, for areas of the conservation estate to be kept free of apiary sites if there is no existing industry in the area.

## PUBLIC UTILITIES AND SERVICES

An underground gas pipeline runs outside the east and south boundaries of the planning area, and tall towers are located at substations along the pipeline. One tower is prominent from most viewing points along the eastern escarpment on top of the Range. It detracts from the vast uninterrupted views to the east, and is a reminder of how utilities located outside the planning area can impact on visual quality and visitor experiences.

## PASTORAL INFRASTRUCTURE

Remnants of the pastoral history of the planning area persist through the presence of fences, windmills, stock troughs and station homesteads, all in various states of disrepair. Depending on the

condition and maintenance requirements of the fencing, some may be worth retaining for stock control purposes. Redundant fencing will eventually be removed.

The acquisition of Mooka pastoral lease includes the station homestead (where the previous lessees continue to reside as caretakers), as well as the disused Binthalya homestead. Relics of the old Merlinleigh homestead exist in the north east of the planning area.

Some windmills and associated infrastructure may be required to provide water for feral animal control and fire-fighting purposes.

The boundary of the planning area is not fenced in its entirety, and as a consequence it is possible for stock to wander from adjoining pastoral lands. In some situations, however, boundary fencing will not be required due to the unimproved condition of the adjoining land and hence the reduced likelihood of wandering stock. Conversely, boundary fencing may be required in areas where adjacent pastoralists are utilising country on the planning area boundary.

## **PART G: INVOLVING THE COMMUNITY**

### **INFORMATION, EDUCATION AND INTERPRETATION**

An effective information, education and interpretation program is vital to achieve the objectives for management of the planning area. Information, education and interpretation informs the public of the attractions and opportunities available, and assists the community in appreciating and understanding the natural and cultural environments. Such programs should engage the community and foster a sense of ownership, and encourage appropriate visitor behaviour that minimises adverse impacts on the environment while enhancing visitor experiences.

Education and interpretation programs will concentrate on raising awareness about the planning area's conservation values, potential human impacts, visitor risks, cultural heritage, and the positive actions visitors can take to support management.

### **WORKING WITH THE COMMUNITY**

A key function of the Conservation Commission and CALM is to promote and facilitate community involvement in both the planning and management of the public conservation estate.

In developing the draft management plan, initial comment from key stakeholders and the immediate community (through the Interim Management Guidelines previously prepared for the planning area), has provided perspective on several management issues, in particular management with a focus on access across the top of the Range.

It is recognised that ongoing community support is essential for the successful implementation of the management plan. The involvement of Aboriginal people, adjacent pastoralists, visitors, tour operators and interest groups is important to the conservation of the values of the



planning area. Key areas of community involvement identified in this plan include:

- the sharing of cultural heritage information (see *Managing Cultural Heritage*);
- the management and mustering of feral goats by neighbouring pastoralists (see *Introduced and Other Problem Animals*);
- the use of local contractors to undertake general maintenance of the Temple Gorge campground facilities (see *Recreational opportunities and access at the base of the eastern escarpment*);
- tours conducted by neighbouring pastoralists (see *Commercial Tour Operations*);
- provision of station-stay accommodation provided by neighbours (see *Commercial Tour Operations*);
- numerous future opportunities for accommodation facilities within the planning area (e.g. semi permanent safari camp at Merlinleigh—see *Recreation Opportunities*); and
- the involvement of the local community in search, rescue and recovery operations in the planning area (see *Visitor Safety*).

## PART H: IMPLEMENTING THE PLAN

### RESEARCH AND MONITORING

Research and monitoring are important components of management. CALM's research gives priority to:

- describing and documenting Western Australia's biological diversity;
- providing knowledge on how best to conserve the State's biodiversity; and
- increasing knowledge of visitor use patterns and profiles (e.g. demographics, level of use of recreation sites, visitor expectations and perceptions).

Many opportunities exist for research and monitoring within the planning area. Gaps in data needed for the identification of biodiversity values and management responses have been identified for the Wooramel IBRA subregion (see *Biogeography*), which encompasses the planning area (CALM 2002). The data gaps, all of which are of relevance to the planning area, are as follows:

- vegetation and regional ecosystem mapping;
- systematic fauna survey;
- floristic data; and
- ecological and life history data.

Research and monitoring projects identified throughout the plan include:

- monitoring and remedial action of environmental weeds, in particular buffel grass, is required, particularly in relation to fire prone systems and its encroachment into recreation sites (see *Environmental Weeds and Fire*);
- investigation of the fire ecology and management in the planning area, in particular prescribed burning of the dune fields of the Kennedy Land System (see *Fire*);

- monitoring of Priority 4 Ecological communities, namely the invertebrate assemblages of Mooka Spring; and the spinifex-dominated plant assemblages of the plateau (see *Threatened Ecological Communities*); and
- investigation into the most appropriate level of public access and use, including environmental impacts of use, the role of commercial tour operators, the introduction of a permit system to access top of the Range, and determination of optimum numbers and mix of day-use and overnight campers to maintain environmental and social conditions (see *Recreation Opportunities*).

Scientific research activity involving disturbance of flora and fauna (including palaeontological research) can only occur if it is in accordance with a licence issued under the Wildlife Conservation Act.

Ideally, it would be appropriate for research and monitoring programs to involve a wide range of people and groups. The involvement of volunteers, educational and other scientific institutions, and individual researchers can reduce the cost of such programs, assist in providing information to both management and the broader community, and assist in fostering a sense of ownership in the planning area.

## MONITORING AND IMPLEMENTING THE PLAN

The planning area is within CALM's Midwest Region and managed by the Carnarvon Work Centre, which is responsible for the day-to-day management of the area and primarily responsible for implementing this plan. The strategies outlined in the plan will be built into the works program for the planning area, which outlines the management actions to be undertaken.

The Conservation Commission will assess the effectiveness of this management plan by regular audits against Key Performance Indicators or other mechanisms as deemed necessary.

## REFERENCES

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## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

### KEY POINTS

#### PROPOSED AND EXISTING TENURE

- Kennedy Range National Park was created on the 8 January 1993 as a Class A reserve.
- One entire lease and parts of seven other adjoining leases have been purchased to add to the existing park (refer to Map 1 – *Locality and Land Tenure*).

#### OBJECTIVE

1. To protect the planning area with the maximum security of tenure and purpose.

#### THIS WILL BE ACHIEVED BY:

1. CALM initiating all actions for which it is responsible to reserve the proposed additions as class A reserve for the purpose of national park under the *Land Administration Act 1997*.

Changes in land tenure and purpose.

To formally change the proposed additions to national park (Class A) within two years of commencement of the plan.

After two years or once changes in land tenure and purpose occur (whichever is the sooner).

### KEY PERFORMANCE INDICATORS\*

PERFORMANCE  
MEASURE

TARGET

REPORTING  
REQUIREMENTS

#### INTRODUCTION

<b>MANAGING THE NATURAL ENVIRONMENT</b>						
<b>GEOLOGY, GEOMORPHOLOGY AND LAND SYSTEMS</b>						
<ul style="list-style-type: none"> <li>• Sedimentary rocks (sandstone, siltstone, limestone) of the Range contain many fossils of marine animals and flowering plants.</li> <li>• Recent acquisitions have seen greater representation of the Billy and Cahill Land Systems within the south-western portion of the planning area, and the Yalbalgo Land System newly represented.</li> <li>• Dune systems on top of the Range are easily destabilised by ground disturbance, such as vehicles.</li> <li>• Landscape degradation caused by goats is extensive, destabilising much of the breakaway areas within the planning area, and appearing to be the most severe around waterholes.</li> </ul>	<p><b>OBJECTIVES</b></p> <ol style="list-style-type: none"> <li>1. To maintain the geological and geomorphological diversity and processes in the planning area.</li> <li>2. To protect the soil and fossils of the planning area.</li> </ol>	<p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>1. providing visitor information to interpret the planning area's geology and landscape values;</li> <li>2. protecting geological/geomorphological features and fossils vulnerable to damage by implementing strategies for feral goat control (see <i>Introduced and Other Problem Animals</i>) and access (see <i>Recreation Opportunities</i>); and</li> <li>3. preparing and implementing recreation plans and rehabilitation plans for areas degraded by human use.</li> </ol>				



## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

KEY POINTS	OBJECTIVES AND STRATEGIES	PERFORMANCE MEASURE	TARGET	KEY PERFORMANCE INDICATORS*	REPORTING REQUIREMENTS
<b>MANAGING THE NATURAL ENVIRONMENT (CONTINUED)</b>					
<p><b>CLIMATE, SOIL AND CATCHMENT PROTECTION</b></p> <ul style="list-style-type: none"> <li>Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases has been identified as a key threatening process under the EPBC Act.</li> <li>Potential impacts on biodiversity due to climate change include changes in animal and plant physiology, changes in life-cycle timing, and changes in species distribution and abundance.</li> <li>Both the winter rainfall of the south-west and summer rainfall of the north influence the planning area, although it is usually winter rains that give the long lasting recharges of soil moisture.</li> </ul>	<p><b>OBJECTIVES</b></p> <ol style="list-style-type: none"> <li>To increase knowledge of the impacts of climate change on the planning area and implement adaptive management strategies.</li> <li>To minimise soil erosion and protect the water quality and quantity in the planning area.</li> </ol> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>investigating the potential vulnerability of the planning area's species and communities to climate change (in particular species and communities of special conservation significance);</li> </ol>				

<ul style="list-style-type: none"> <li>• The soils of the Kennedy Land System on the plateau are susceptible to erosion, primarily after fire.</li> <li>• The impacts of hooves and overgrazing by feral goats is destabilising much of the breakaway areas within the planning area. Springs and waterholes are also very susceptible to degradation and contamination by feral goats.</li> <li>• The regionally significant Mooka Spring system requires protection from goats and inappropriate visitor use.</li> </ul>	<ol style="list-style-type: none"> <li>2. incorporating the potential for climate change impact into species recovery plans;</li> <li>3. implementing strategies for feral goat control (see <i>Introduced and Other Problem Animals</i>);</li> <li>4. implementing strategies for fire management of the spinifex dunefields of the Kennedy Land System (see <i>Fire</i>); and</li> <li>5. prohibiting camping at Mooka Creek and controlling vehicle access across the creek.</li> </ol>		
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## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

### KEY POINTS

### OBJECTIVES AND STRATEGIES

### KEY PERFORMANCE INDICATORS\*

PERFORMANCE MEASURE      TARGET      REPORTING REQUIREMENTS

#### MANAGING THE NATURAL ENVIRONMENT (CONTINUED)

##### NATIVE PLANTS AND PLANT COMMUNITIES

- The planning area is situated in the Carnarvon Botanical District which coincides broadly with the geological Carnarvon Basin.
- There is a diverse mix of predominately arid flora of southern affinities with outliers more common to the south-west.
- A more comprehensive knowledge of the planning area's native plants and communities, and the impacts of fire and weeds is required to improve flora management effectiveness.
- Feral goats pose a major threat to the flora.
- The Mooka Spring system is an important and unusual ecological community, represented the best of its type in the Carnarvon Basin. It requires protection from goats and inappropriate visitor use.

##### OBJECTIVE

1. To conserve the diversity of native plants, plant communities and vegetation structures, particularly threatened or other priority species in the planning area.

##### THIS WILL BE ACHIEVED BY:

1. Identifying and protecting native plants and plant communities that may require special protection from inappropriate fire regimes (see *Fire*), environmental weeds (see *Environmental Weeds*), unsustainable feral animal grazing (see *Introduced and Other Problem Animals*) or recreation use. In particular, protect the springs, particularly for the birdlife, herbaceous flora and invertebrates they support, from disturbance by goats;

Population numbers and range of specially protected flora, fauna and significant ecological communities.

Remain stable or increase over the life of the plan subject to natural variations.

Every five years.

<ul style="list-style-type: none"> <li>• Three priority species (<i>Gymnanthera cunninghamii</i>, <i>Acacia atopa</i> and <i>Goodenia neogoodenia</i>) occur in the planning area.</li> </ul>	<ol style="list-style-type: none"> <li>2. liaising with neighbouring landholders to co-ordinate conservation efforts to protect native plants and plant communities;</li> <li>3. encouraging floristic research and monitoring efforts in the planning area, with a focus on significant species and communities, and</li> <li>4. prohibiting camping at Mooka Creek and controlling vehicle access across the creek.</li> </ol>		
<p><b>NATIVE ANIMALS AND HABITATS</b></p> <ul style="list-style-type: none"> <li>• A more comprehensive knowledge of the planning area's native animals and habitats, and the impacts of fire and weeds, is required to improve fauna management effectiveness.</li> <li>• The skink (<i>Lerista kennedyensis</i>) is endemic to the planning area.</li> <li>• The rufous-crowned emu wren (<i>Stipiturus ruficeps</i>), found in the spinifex dunes on the top of the Range, is the only recording in the Gascoyne region.</li> <li>• Springs and soaks on the western side of the Range provide important habitat for at least 13 invertebrates that do not occur elsewhere in the region or do so only rarely.</li> </ul>	<p><b>OBJECTIVE</b></p> <ol style="list-style-type: none"> <li>1. To conserve the diversity of native fauna and their habitats, particularly threatened or other priority species in the planning area.</li> </ol> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>1. implementing strategies for feral goat control (see <i>Introduced and Other Problem Animals</i>) and visitor use (see <i>Recreation Opportunities</i>), with a priority to protect aquatic and other habitats of high conservation value;</li> <li>2. continuing to liaise with park neighbours and the Carnarvon Zone Control Authority in relation to dingoes/wild dogs, with the long term objective of supporting a self-sustaining population if impacts on surrounding pastoral enterprises can be adequately addressed;</li> </ol>		



## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

KEY POINTS	OBJECTIVES AND STRATEGIES	PERFORMANCE MEASURE	TARGET	REPORTING REQUIREMENTS
<b>MANAGING THE NATURAL ENVIRONMENT (CONTINUED)</b>				
<p><b>NATIVE ANIMALS AND HABITATS (CONTINUED)</b></p> <ul style="list-style-type: none"> <li>• The invertebrate assemblages of the Mooka Spring system represent part of a regionally significant wetland type. The spring requires protection from feral goats and inappropriate visitor use.</li> <li>• Goats pose a major threat to fauna as they cause habitat degradation and compete for similar foods and habitat resources.</li> <li>• Combined with effective feral animal control, the planning area has the potential for the reintroduction of several mammals whose original distribution encompassed the Range.</li> <li>• Dingoes/wild dogs are the highest order predator in Australian ecosystems. Dingoes still maintain a functional part of predator-prey relationships in many cases, and may help to control feral goats and foxes.</li> </ul>	<p>3. encouraging systematic fauna research and monitoring in the planning area with a focus on significant species and habitats;</p> <p>4. locating and capping old drill holes that act as traps for fauna; and</p> <p>5. considering the translocation of species now extinct in the area in the context of the Western Shield program.</p>			

<p><b>ENVIRONMENTAL WEEDS</b></p> <ul style="list-style-type: none"> <li>• Environmental weeds take advantage of disturbance, particularly around tracks and recreation sites, and displace indigenous plants by competing with them for light, nutrients and water.</li> <li>• Buffel grass is ubiquitous across the alluvial plains of the planning area, and is a weed of specific concern.</li> <li>• Fire and recreation management is complicated by the presence of buffel. Its further encroachment into the fire prone Yalbalgo Land System; the relatively buffel-free and fire prone Kennedy Land System, and some proposed recreation sites may be of concern.</li> <li>• Date palms restrict spring flow due to their vast consumption of water, impacting on many of the conservation values of the springs.</li> </ul>	<p><b>OBJECTIVE</b></p> <ol style="list-style-type: none"> <li>1. To minimise the impacts of environmental weeds on the planning area's values.</li> </ol> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>1. implementing the Department's commitments to the <i>Environmental Weed Strategy for WA</i> and CALM's proposed <i>Environmental Weed Management Policy</i> (subject to final consultation) where weed invasion threatens the planning area's conservation values;</li> <li>2. removing female date palms (and, if necessary, male date palms);</li> <li>3. monitoring buffel grass on the plateau and taking remedial action if new populations are detected; and</li> <li>4. controlling any access which spreads weeds and adopt hygiene measures during operations within the planning area, in particular access which might increase the spread of buffel grass on the plateau spinifex dunefields.</li> </ol>	<p>Changes in the area covered by species rated as High in the <i>Environmental Weed Strategy for WA</i> or in the weed control plan.</p>	<p>No increase in the area covered by buffel in the spinifex dunefields of the plateau.</p> <p>All female, (and if necessary, male) date palms removed by 2008.</p>	<p>Every five years.</p> <p>In 2008 or once completed (whichever occurs first).</p>
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## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

### KEY POINTS

### OBJECTIVES AND STRATEGIES

### KEY PERFORMANCE INDICATORS\*

PERFORMANCE MEASURE      TARGET      REPORTING REQUIREMENTS

#### MANAGING THE NATURAL ENVIRONMENT (CONTINUED)

##### INTRODUCED AND OTHER PROBLEM ANIMALS

- Competition and land degradation by feral goats, predation by cats, and predation by the European red fox are all identified as key threatening processes under the Environment Protection and Biodiversity Conservation Act.
- Feral goat control is one of the most important management issues for the planning area;
- The proposed additions to the planning area, particularly of the Mooka pastoral lease which includes springs and pools where feral goats congregate, will greatly increase the potential to control feral goats.
- The industry of commercial harvesting of unmanaged (feral) goats by surrounding pastoralists has increased over the last decade.

##### OBJECTIVE

1. To minimise and where necessary, ameliorate the impact of problem animals on the planning area's values.

##### THIS WILL BE ACHIEVED BY:

1. preparing and implementing a feral goat control strategy for the planning area;
2. using the existing water points on ex-Mooka pastoral lease for feral goat trapping purposes;
3. liaising with neighbouring pastoralists to facilitate the removal of feral goats, sheep and cattle from the planning area, and encourage control of these animals on their properties; and
4. implementing strategies related to wild dogs/dingoes (see *Native Animals and Habitats*) to assist in the possible long-term control of feral goats.

Changes in the area and intensity of vegetation and land systems adversely impacted by feral goats.

Decrease over the life of the plan.

Every three years.



<ul style="list-style-type: none"> <li>The demise of an effective goat control program, coupled with a growing goat industry has seen the number of goats within the planning area increase.</li> <li>Dingoes/wild dogs can assist with effective goat control.</li> <li>Cooperation with pastoral neighbours is vital to ensure effective pest animal control within the planning area.</li> </ul>				
<p><b>FIRE</b></p> <ul style="list-style-type: none"> <li>Active wildfire suppression is not feasible in most of the planning area due to inaccessibility and remoteness from fire suppression resources.</li> <li>Fire management is complicated by the presence of buffel grass. Its further encroachment into the fire prone Kennedy and Yalbalgo Land Systems, and into some proposed recreation sites may be of concern.</li> <li>Any prescribed burning to be conducted in the planning area will aim, primarily, to conserve biodiversity.</li> </ul>	<p><b>OBJECTIVES</b></p> <ol style="list-style-type: none"> <li>Maintain fire diversity and hence biodiversity, and protect ecologically sensitive areas from inappropriate fire frequency or large and intense wildfires.</li> <li>Protect, where feasible, life, property, community values and assets of the planning area from wildfire.</li> </ol> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>documenting the fire history of the planning area and conducting a wildfire threat analysis to determine management priority actions;</li> <li>protecting, where possible, fire sensitive species found in the damper and relatively fire-free cliff and gorge areas from the impacts of wildfire;</li> </ol>	<p>Change in the diversity of vegetation age classes in the spinifex dunefields of the plateau.</p>	<p>Increase in diversity of vegetation age classes over the life of the plan.</p>	<p>Every five years.</p>

## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

KEY POINTS	OBJECTIVES AND STRATEGIES	PERFORMANCE MEASURE	TARGET	REPORTING REQUIREMENTS
<b>MANAGING THE NATURAL ENVIRONMENT (CONTINUED)</b>				
<p><b>FIRE (CONTINUED)</b></p> <ul style="list-style-type: none"> <li>The low Acacia woodland of the Yalbalgo Land System is sensitive to fire. The cliff and gorge habitats generally have a lower flammability due to the sparse and discontinuous fuel loads in these areas and, as a consequence, species less tolerant to fire are more likely to be found here.</li> </ul>	<ol style="list-style-type: none"> <li>implementing a fire research program on the plateau to determine an appropriate fire mosaic;</li> <li>encouraging research into the determination of fire and biodiversity interactions;</li> <li>liaising with Fire and Emergency Services Authority, the Upper Gascoyne and Carnarvon shires and neighbouring landowners to determine the requirements (if any) for a co-ordinated fire response;</li> <li>determining which of the existing water points on ex-Mooka pastoral lease should be retained for fire fighting purposes; and</li> <li>restricting spread of fire-responsive buffel grass on to the plateau by allowing vehicles only on those tracks identified on Map 2 – <i>Recreation Opportunities</i>.</li> </ol>			



<b>MANAGING CULTURAL HERITAGE</b>		
<p><b>INDIGENOUS AND NON-INDIGENOUS HERITAGE</b></p> <ul style="list-style-type: none"> <li>• The Range was named in 1858 after the then governor of WA, Arthur Edward Kennedy.</li> <li>• The involvement of Aboriginal people with a connection to the planning area is a key focus for management.</li> <li>• Two native title claims cover the planning area – WAG6161_98 and WAG6212_98.</li> <li>• Artefacts scatters near the springs on the western side provide evidence of a long Aboriginal history in the area.</li> <li>• Traditional pastoral activity focussed on sheep and wool production.</li> <li>• Factors including drought, land degradation, falling wool prices, saw pastoral activity move to cattle after the 1970s.</li> </ul>	<p><b>OBJECTIVE:</b></p> <ol style="list-style-type: none"> <li>1. To protect the cultural heritage values of the planning area.</li> </ol> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>1. ensuring that Aboriginal people with a connection to the planning area have a primary and active role in managing their heritage;</li> <li>2. continuing to work with the appropriate Aboriginal representative group in a manner consistent with Government policy;</li> <li>3. referring proposals to undertake public works to the relevant Native Title claimants and authorities;</li> <li>4. in accordance with the Burra Charter, developing a process to protect existing and potential heritage sites;</li> <li>5. providing visitor information to promote the appreciation of the area's cultural history and protection of heritage values; and</li> <li>6. ensuring visitor and management activities do not adversely impact upon significant cultural and historical sites.</li> </ol>	

## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

### KEY POINTS

### OBJECTIVES AND STRATEGIES

### KEY PERFORMANCE INDICATORS\*

PERFORMANCE  
MEASURE

TARGET

REPORTING  
REQUIREMENTS

#### MANAGING RECREATION AND TOURISM

##### RECREATION OPPORTUNITIES

- The remoteness of the planning area imparts a strong sense of wilderness, with much of the area meeting the threshold for wilderness under CALM's Policy Statement 62 – *Identification and Management of Wilderness and Surrounding Areas*.
- Major visitation increases are anticipated with the sealing of the road from Carnarvon to Gascoyne Junction, and the self drive outback experience is being actively promoted in the Gascoyne – Murchison Region.
- The Temple Gorge recreation area is currently the only area offering visitor facilities in the planning area.

##### OBJECTIVE:

1. Provide and enhance opportunities for recreation that are consistent with the values of the planning area, minimise conflict between visitors, and consider visitor safety.

##### THIS WILL BE ACHIEVED BY:

1. considering the formal protection of a wilderness area under section 62 of the CALM Act pending public input on the draft management plan;
2. introducing a permit system for access on to the top of the Range;
3. continuing to work with neighbours to provide for access through Minnie Creek pastoral lease. Consider the need for a Public Access Route under the Land Administration Act only if necessary;
4. providing information shelters at the southern end and western entrances to the planning area (see Map 2 – *Recreation Opportunities*) by 2005;

Condition of the track across the top of the Range.

The satisfaction that visitors express with their visit (including visitors crossing the Range).

No degradation over the life of the plan.

No reduction in visitor satisfaction.

Every two years.

Every five years.



<ul style="list-style-type: none"> <li>• Visitation to the western side and top of the Range needs to be controlled to protect the remote experience and promote visitor safety.</li> <li>• Access management across the 'top' of the Range, linked to the introduction of a permit system, is a focus for this plan.</li> <li>• Eastern access to the 'top' of the Range is through Minnie Creek pastoral lease.</li> <li>• The geology and aesthetic qualities of the planning area are attractive features for visitors, yet these features present significant risks to visitors and are susceptible to visitor impacts.</li> </ul>	<ol style="list-style-type: none"> <li>5. developing a new campground, entry station and walk trails to replace the existing, degraded Temple Gorge recreation area;</li> <li>6. developing a campground (Yabba) and day-use areas on the western side of the Range;</li> <li>7. developing facilities for overnight use at Great Gorge and Merlinleigh;</li> <li>8. in consultation with private enterprise, considering proposals for commercial accommodation (and other) opportunities for the Binthalya and Mooka homesteads, and Merlinleigh;</li> <li>9. prohibiting camping at Mooka Creek and controlling access across the creek;</li> <li>10. prohibiting informal campfires, except the western side of Range until formalised camping arrangement are in place. Until such time, ensure that all campers on the western side of the Range are informed of the minimum requirements for campfire safety;</li> <li>11. gathering information from tourism operators about their use of the planning area for consideration in the review of access management, potential commercial services and the design of visitor facilities;</li> <li>12. preparing a visitor risk management plan for the planning area; and</li> <li>13. applying CALM Policy Statement 34 – <i>Visual Resource Management on Lands and Waters managed by CALM</i> prior to any development or management activity that may impact on the aesthetic values of the planning area.</li> </ol>		
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## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

KEY POINTS	OBJECTIVES AND STRATEGIES	PERFORMANCE MEASURE	TARGET	REPORTING REQUIREMENTS
<b>MANAGING RESOURCE USE</b>				
<ul style="list-style-type: none"> <li>• The mineral potential of the planning area is low.</li> <li>• Current State Government policy is to prohibit mineral and petroleum exploration and extraction in national parks and nature reserves.</li> <li>• There are three mining leases for the colourful agate mookaite in the planning area.</li> <li>• It is an offence under Section 103 of the CALM Act to collect rocks and stones from national parks.</li> </ul>	<p><b>OBJECTIVE</b></p> <p>1. To protect the planning area from the impact of mining and mineral exploration activity whilst being consistent with Government policy.</p> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>1. continuing to oppose any additional mineral resource development activity in the planning area; and</li> <li>2. liaising with the Department of Industry and Resources to ensure that environmental conditions are met where approvals to mine are granted.</li> </ol>			

<b>INVOLVING THE COMMUNITY</b>					
<ul style="list-style-type: none"> <li>Community support is an integral component of CALM's operations and is essential for the implementation of the plan.</li> <li>Strong links need to be forged with the relevant Aboriginal groups, reserve neighbours, State and local Government, and other stakeholder groups.</li> </ul>	<p><b>OBJECTIVE</b></p> <ol style="list-style-type: none"> <li>To facilitate effective community involvement in the ongoing management of the planning area.</li> </ol>	<p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>supporting activities that involve the community in planning for and management of the planning area;</li> <li>liaising with the adjoining pastoralists to gain an appreciation of their knowledge of the planning area, and in management activities such as fire, weed and goat control; and</li> <li>progressing the involvement of Native Title claimants in management of the planning area (see under <i>Managing our Cultural Heritage</i>).</li> </ol>			



## KENNEDY RANGE NATIONAL PARK AND PROPOSED ADDITIONS

KEY POINTS	OBJECTIVES AND STRATEGIES	KEY PERFORMANCE INDICATORS*	PERFORMANCE MEASURE	TARGET	REPORTING REQUIREMENTS
<b>IMPLEMENTING THE PLAN</b>					
<ul style="list-style-type: none"> <li>• Scientific data gaps of relevance to the planning area include:                             <ul style="list-style-type: none"> <li>- vegetation and regional ecosystem mapping;</li> <li>- systematic fauna survey;</li> <li>- floristic data; and</li> <li>- ecological and life history data.</li> </ul> </li> <li>• The knowledge of visitor use patterns and profiles for the region is poor.</li> </ul>	<p><b>OBJECTIVE</b></p> <ol style="list-style-type: none"> <li>1. To increase knowledge and understanding of natural values and visitor use to provide for better management of the planning area.</li> <li>2. To enable to the impacts of management strategies to be assessed.</li> </ol> <p><b>THIS WILL BE ACHIEVED BY:</b></p> <ol style="list-style-type: none"> <li>1. identifying and initiating integrated research and monitoring programs that facilitate management of the planning area, as resources permit and according to priority.</li> </ol>	<p>The number of survey and data collection projects undertaken within the planning area.</p>	<p>Increased over the life of the plan.</p>	<p>Every five years.</p>	

\*Note: the response to target shortfall for each of the key performance indicators is for the Department to investigate the cause and report to the Conservation Commission for action.

### Map 1. Locality and Tenure

-  Kennedy Range National Park
-  Areas purchased for addition to the Park
-  Unvested road
-  Gazetted road 9485
-  Information

#### Purchased Areas

- 1 = part of Middalya 13582 ha
- 2 = part of Williambury 21061 ha
- 3 = part of Minnie Creek 6713 ha
- 4 = part of Lyons River 11013 ha
- 5 = part of Bidgemia 6623 ha
- 6 = part of Jimba Jimba 5636 ha
- 7 = Mooka 80931 ha
- 8 = part of Mardathuna 31818 ha





