

## REFERENCES

Agriculture Western Australia, Department of Conservation and Land Management, Department of Environmental Protection, and Water and Rivers Commission (1996). *Salinity: A Situation Statement for Western Australia*. Government of Western Australia, Perth, W.A.

Beard, J. S. (1990). *Plant Life of Western Australia*. Kangaroo Press, Kenthurst, NSW.

Botanic Gardens and Parks Authority (2000). *Bold Park Environmental Management Plan 2000-2005*. Botanic Gardens and Parks Authority, Perth, Western Australia.

Department of Conservation and Land Management (1999). *Environmental Weed Strategy for Western Australia*. Department of Conservation & Land Management, Como, W.A.

Department of Land Administration (2001). History of country town names, via <http://www.dola.wa.gov.au>

Friend, G., Morris, K. & Thomson, C. (1994). Bountiful Batalling. *Landscape* 9 (4): 16-22.

Hinstone, F. J. & Gailitis, V. (1976). The geographic variation of salt precipitated over Western Australia. *Aust. J. Soil Res.*, 14: 319-335.

Mattiske, E. M., Havel, J. J. & Department of Conservation and Land Management (1998). Regional Forest Agreement Vegetation Complexes: Collie, Western Australia Map 1:250 000.

Commonwealth of Australia and the State of Western Australia (1999). *Regional Forest Agreement for the South-West Forest Region of Western Australia*. Government of Western Australia, Perth, W.A.

State Salinity Council (2000). *The Salinity Strategy*. Government of Western Australia, Perth, W.A.

Water and Rivers Commission (2001). *Collie River Salinity Situation Statement-Draft*. Water and Rivers Commission.

# Boolading Nature Reserve and the proposed Batalling Nature Reserve

## Interim Management Guidelines 2002



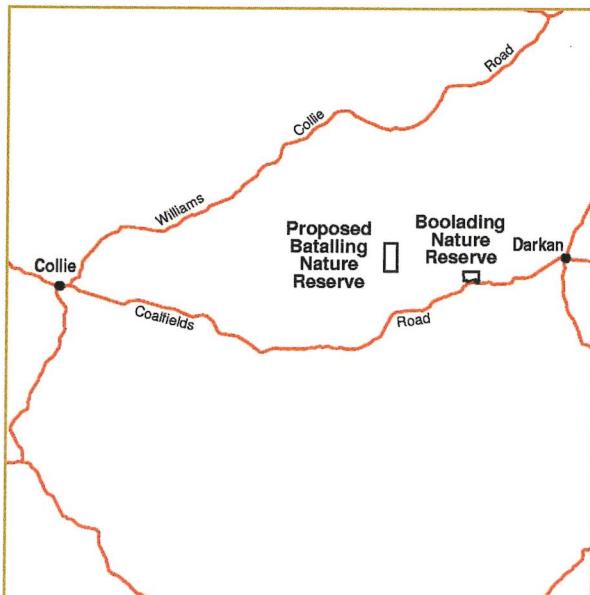
# INTRODUCTION

These Interim Management Guidelines (IMGs) provide direction for the management of Boolading Nature Reserve and the proposed Batalling Nature Reserve (the reserves), until a management plan is prepared or these guidelines are amended. In the absence of a formal management plan these guidelines provide the basis for management of necessary operations for the preservation or protection of persons, property, land, flora or fauna, or for the preparation of a management plan of the reserves.

## Planning Area

Boolading Nature Reserve is an 'A' Class reserve about 15 km east of Collie, encompassing approximately 163.15 hectares.

The proposed Batalling Nature Reserve, currently vested as State forest, covers approximately 402 hectares and is located about 20 km east of Collie (see map 1).



Map 1. Locality of the reserves in relation to Collie & Darkan

## MANAGEMENT DIRECTIONS AND PURPOSE

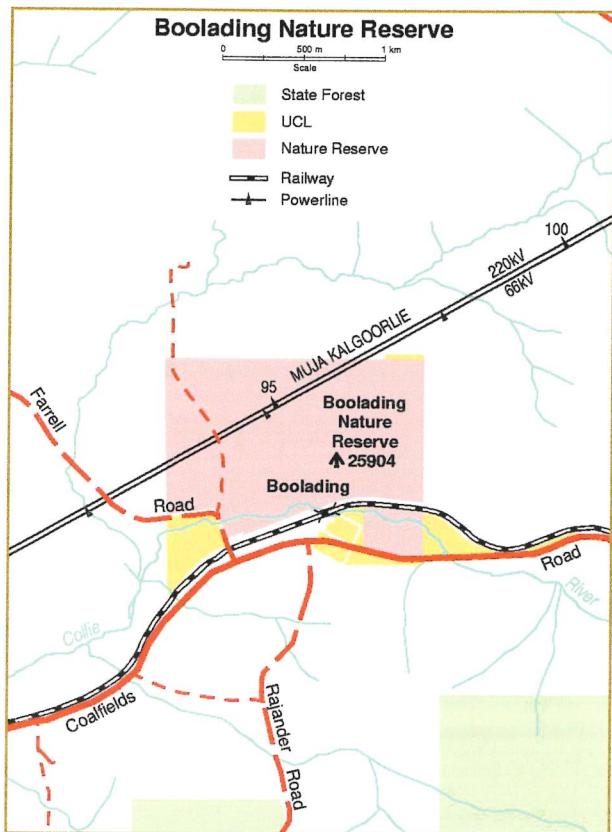
The Department of Conservation and Land Management (the Department) manages nature reserves according to the legislative specifications of the *Conservation and Land Management Act 1984*, the *Wildlife Conservation Act 1950* and the policies of the Department and the Conservation Commission of Western Australia (Conservation

Commission). The Department's decision making and subsequent management is further guided by the principles included in the Department's Corporate Plan (2000-2005).

The Conservation and Land Management Act specifies that nature reserves are established 'to maintain and restore the natural environment, and to protect, care for, and promote the study of, indigenous flora and fauna, and to preserve any feature of archaeological, historic or scientific interest' (s56).

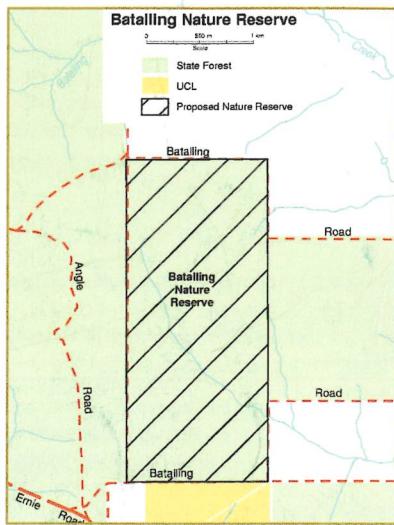
## Land Tenure

Boolading Nature Reserve (25904) is an 'A' class nature reserve vested in the Conservation Commission for the purpose of conservation of flora and fauna. It is proposed to cancel unmade roads, Crown lots and unallocated Crown land, which comprise Boolading Townsite, and add these areas to Boolading Nature Reserve. These areas exhibit high values for nature conservation and their inclusion in the nature reserve will rationalise the reserve's boundaries (see map 2).



Map 2. Boolading Nature Reserve

The proposed Batalling Nature Reserve, formerly Timber Reserve No. 10639, is currently part of State Forest No. 24 and vested in the Conservation Commission. Under the *Western Australian Regional Forest Agreement 1999* (RFA), it is proposed that the area be devested from State Forest No. 24 and a new nature reserve created (see map 3).



**Map 3. The proposed Batalling Nature Reserve**

### Measuring Performance

The Department's Corporate Plan 2000-2005 reflects its responsibilities and details strategies for fulfilling these responsibilities. The success of these IMGs will be determined by measuring progress against relevant aspects of the following strategies in the Corporate Plan:

- Expand and improve the marine and terrestrial conservation reserve system to achieve world's best standards;
- Protect biodiversity from threatening processes, agents and activities, including feral animals, weeds, dieback and other exotic diseases, salinity and inappropriate fire regimes;
- Plan, develop and manage all parks, recreation areas, facilities and services so as to maintain in perpetuity the values of natural areas managed by the Department;
- Assist in reducing the threat of wildfire to human life and property; and
- Improve community knowledge of biodiversity conservation issues and awareness, understanding and support for the Department's activities, services and policies.

In assessing the success of the IMGs, performance indicators will be used to gauge the extent to which the IMGs have contributed to fulfilling the Department's responsibilities, and, at a lower level, the extent to which the specific objectives of the IMGs have been achieved. Measuring success in this way enables managers to assess and modify their management approach as necessary.

## MANAGING THE NATURAL ENVIRONMENT

### Geology and Soils

The geological and landscape features of the reserves reflect their position in the Darling Plateau geomorphic unit. The plateau is an ancient erosion surface capped by an extensive lateritic duricrust, known as the Western Shield (Beard 1990).

The reserves are characterised by gentle undulation with lateritic gravels and granite outcrops higher in the landscape (associated with jarrah) and heavier loamy soils lower in the landscape (associated with wandoo).

These soils can be susceptible to erosion following disturbance. Soil erosion may be caused by natural disturbances such as fire as well as human activities such as track use. Impermeable surfaces such as roads, and some semi-permeable surfaces such as gravel roads, tracks and firebreaks concentrate run-off on a local scale and contribute to gully erosion.

The dominant soils are the lateritic gravels that usually overlay a deep pallid zone (Beard 1990). This pallid zone contains accumulated salt carried inland over thousands of years by prevailing winds and deposited on the land in rainfall and dust (Hingston and Gailitis 1976). Prior to widespread clearing of native vegetation, water use by native vegetation utilised the annual water supply and prevented it from entering the pallid zone. Replacement of perennial, deep-rooted native vegetation with shallow-rooted annual crops and pastures has increased infiltration to the pallid zone. This has allowed salty water tables to rise, and led to salinisation of areas lower in the landscape (State Salinity Council 2000).

### Catchment Protection

The eastern reaches of the Collie River and its tributaries, including Batalling Creek, seasonally flow through the reserves. The Collie River drains into the Wellington Reservoir, once the source for the Great Southern Town Water Supply scheme, but currently too saline. In order to return the salinity of water from the Wellington Reservoir to potable levels the Collie River Catchment was identified by Western Australia's State Salinity Strategy (1996) as a Recovery Catchment. To this end, the Collie River Salinity Situation Statement provides information for land managers in the catchment to reduce salinity of the water resources (Water and Rivers Commission 2001).

### Native Plants and Plant Communities

The reserves are located in the South West Botanical Province of WA, in the Darling Botanical District and the Dale Botanical Subdistrict (Beard 1990). This subdistrict occupies the northern portion of the Darling Plateau, east of the Darling Scarp.

The reserves display a mosaic of two vegetation complexes, identified by Mattiske *et al.* (1998) as Yalanbee 5 and Pindalup.

Yalanbee 5 vegetation complex is an open forest of jarrah (*Eucalyptus marginata* subsp. *thalassica*) and marri (*Corymbia calophylla*). Woodland of wandoo (*E. wandoo*) occurs on lateritic uplands.

Pindalup vegetation complex is an open forest of jarrah and marri on slopes. Wandoo woodland with some blackbutt (*E. petens*) occurs on the lower slopes.

The proposed Batalling Nature Reserve was identified as supporting two forest ecosystem types, jarrah north east and western wandoo forest, the reservation of which is important for the implementation of the nationally agreed criteria for a comprehensive adequate and representative reserve system for forests (RFA 1999).

## Native Animals and Habitats

As a result of clearing for agriculture, all remnants of native vegetation have some local significance to fauna (Botanic Gardens and Parks Authority 2000). These remnants provide refuge for fauna and important links and ecological corridors between adjoining areas of forest and other remnants in the area.

Woylies (*Bettongia penicillata ogilbyi*) were reintroduced to the area in 1983 and survived at low levels until the advent of regular fox baiting in 1991. Fox control enabled woylies to steadily increase in number and expand their distribution in the forest (Friend *et al.* 1994). In 1992 and 1993 numbats (*Myrmecobius fasciatus*) were also reintroduced to the area.

In addition to these reintroduced species, several other medium-sized mammals also persisted in the area in low numbers until the introduction of fox control that allowed a significant increase in numbers. Such species include chuditch (*Dasyurus geoffroii*), brushtail possum (*Trichosurus vulpecula*), western brush wallaby (*Macropus irma*) and southern brown bandicoot (*Isodon obesulus*) (Friend *et al.* 1994).

## Fire

Fire has played an important role in shaping the reserves, influencing the successional states displayed. Fire has been a major influence in determining structure and pattern in the forest, creating a mosaic of habitats. For a period of about 20 years until the late 1970s most areas of the forest were burnt every 5-6 years by low intensity spring and occasional autumn burns. Since this time fire has become less frequent (Friend *et al.* 1994).

Inappropriate fire regimes can alter ecosystem processes, a disturbance which environmental weeds take advantage of to proliferate (Department of Conservation and Land Management 1999).

In the event of a fire in the reserves, values at risk include neighbouring properties and flora and fauna within and surrounding the reserves. Any fire management program must protect life and property, while maintaining species diversity. Fire management strategies employed by the Department for areas in the south west of Western Australia include the use of prescribed burning, fire detection, direct fire suppression, public education and law enforcement (RFA 1999). Fire management of these reserves will be through the District Fire Plan.

## MANAGING OUR CULTURAL HERITAGE

### Indigenous Heritage

There is currently one registered native title claim that incorporates Boolading Nature Reserve (ie. WAG6274\_98 Gnaala Karla Booja).

Reservations under the *Land Administration Act 1997* will be in accordance with the *Native Title Act 1993* with regard to native title issues.

Under the *Aboriginal Heritage Act 1972* it is an offence to damage, alter or destroy any Aboriginal site unless written consent has been obtained from the Minister for Indigenous Affairs. This includes sites not yet registered with the Department of Indigenous Affairs.

### Non-indigenous Heritage

The first European to explore the area around Batalling and Darkan was Alfred Hillman, a government surveyor in the early years of the Swan River settlement. The first Europeans to settle in the Darkan area were the Gibbs in the late 1860's (DOLA 2001).

The town of Collie began to develop in the early 1880's with the discovery of coal. The coalfields were subsequently developed in the late 1890s and, along with timber cutting for railway sleepers, was an important industry for the growth of the region. The area developed further as agriculture expanded, with growth intensifying following the first and second world wars.

Within the rail reserve of Boolading Nature Reserve, the remnants of a railway siding and several mature pine trees associated with the siding, remain from when the railway line was used to service the area.

## MONITORING AND IMPLEMENTING THE PLAN

The Department and the Conservation Commission will conduct assessments of the effectiveness of this IMG using audits. These audits assess the Department's success in achieving the relevant strategies from the Department's Corporate Plan.

The strategies outlined in this IMG will be built into the annual works program of the Department's Mornington District, which is responsible for the daily management of the reserves. Progress against the performance indicators and management strategies will form the basis of an annual status report of the reserves by the Department's Mornington District to the Department's Corporate Executive and the Conservation Commission.

These IMGs are current for a period of 5 years from the date of approval by the Conservation Commission, or until amended or superseded by a management plan. The Conservation Commission will be required to approve amendments to this IMG.

**KEY POINTS****OBJECTIVE and STRATEGIES****PERFORMANCE INDICATORS****REGIONAL CONTEXT**

- Various land tenures surround the reserves, including State forest, Unallocated Crown Land and private property (see maps 2 and 3).
- The land adjoining the reserves is used primarily for agriculture and multiple-use State forest. Complementary management of these areas is essential for achieving the management objectives for the reserves.
- The reserves are located within the Jarrah Forest Interim Biogeographical Regionalisation for Australia, which is considered to be under-represented in Australia's system of protected areas.
- The reserves are important in the complex of remnant vegetation in the area, providing habitat and corridors for fauna and contributing to the total forested area of the Collie River catchment.

The objective is to ensure that management of the reserves is integrated with surrounding lands.

- Liaise with neighbouring land managers to encourage cooperative management, with regard to catchment and fire management, weed and problem animal control and other management issues relevant to the protection and conservation of the reserves.

**PERFORMANCE INDICATORS****TENURE**

- Boolading Nature Reserve is vested as an 'A' class nature reserve.
- The proposed Batalling Nature Reserve is currently gazetted as part of State Forest No. 24.
- A rail reserve bisects the southern part of Boolading Nature Reserve. This is managed in keeping with the remainder of the reserve.

The objective is to ensure that the proposed nature reserves are protected by the security of tenure and their gazetted purpose.

- Cancel unmade roads, Crown lots and unallocated Crown land, which comprise Boolading Townsite, and add these areas to Boolading Nature Reserve.
- Excise the part of State forest No. 24 that is proposed as Batalling Nature Reserve and create a new reserve.

**PERFORMANCE INDICATORS****GEOLOGY AND SOILS**

- The reserves are gently undulating with laterite soils and small granite outcrops.
- Soils can be susceptible to erosion following disturbance, hence care must be taken when constructing and maintaining firebreaks, fences, easements, tracks and roads.
- Soil disturbance may also increase the spread and cover of weeds.
- Increased infiltration from the replacement of deep-rooted perennials with shallow-rooted annuals has resulted in the emergence of the salt held in the pallid zone of the soils, especially lower in the landscape.

The objective is to protect and conserve the reserves' geological features and soils.

- Identify geological features and soil types vulnerable to environmental damage.
- Rehabilitate eroding areas, superfluous tracks and disturbed areas as necessary.

**PERFORMANCE INDICATORS****CATCHMENT PROTECTION**

- The Collie River and its tributaries seasonally flow through the reserves and drain into the Wellington Reservoir.
- The Wellington Reservoir is currently unpotable due to excessive salinity, but is considered a potential water resource for public water supply.
- The reserves are located within the Collie River Recovery Catchment, which is the focus of the Collie River Salinity Situation Statement.

The objective is to maintain or increase the water quality of the catchment.

- Implement suitable programs in accordance with Collie River Salinity Situation Statement where salinity threatens the reserves' values.
- Encourage surrounding landowners to fence remnant vegetation on their properties.

- Effect those Department responsibilities relevant to the Collie River Catchment and identified by The Salinity Strategy for implementation within the life of this IMG.

**NATIVE PLANTS AND PLANT COMMUNITIES**

- Situated in the Dale Botanical Subdistrict, the reserves are a mosaic of jarrah and wandoo forest.
- Two vegetation complexes are identified in the reserves- Yalanbee 5 and Pindalup.

The objective is to conserve and protect native plant species and communities, particularly threatened or other priority species.

- Identify and protect vegetation communities and flora that is rare, unique or in need of special consideration.
- Implement strategies in accordance with the Environmental Weeds Strategy for Western Australia.
- Liaise with neighbouring landowners regarding weed control, problem animal control, fire management and other management issues relevant to the protection and conservation of native plants and plant communities.

- Effect those Department responsibilities relevant to the Collie River Catchment and identified by The Salinity Strategy for implementation within the life of this IMG.

**NATIVE ANIMALS AND HABITATS**

- The reserves provide habitat for a diverse assemblage of mammal species and are important in the network of remnant vegetation in the area.
- Woylies were reintroduced to the Batalling area in 1983 and numbats in 1992/93.
- Fox control has been successful in increasing the populations of such species.

The objective is to conserve and protect native fauna and habitats in the reserves, specifically threatened or priority fauna.

- Identify fauna that is rare, unique or in need of special consideration.
- Support the implementation of Recovery Plans, such as that for the woylie.
- Implement strategies as per Environmental Weeds Strategy for Western Australia.
- Protect native fauna from introduced predators through appropriate control regimes.

- No reduction in the number of indicator native species (eg. woylie, chuditch and numbat) from 2002 levels at adjacent monitoring site in State Forest No. 24.

**ENVIRONMENTAL WEEDS AND DISEASE**

- Environmental weeds take advantage of disturbance, such as inappropriate fire regimes, earthworks and human activity, and displace indigenous plants by competing with them for light, nutrients and moisture. Disturbed areas and those closest to reserve boundaries are the most weed infested.
- Environmental weeds are spread across private property boundaries, along linear disturbance features such as roads, tracks and the transmission line easement, and along creeklines.
- Grasses such as blowfly grass (*Briza maxima*) and veldt grass (*Erharta species*) are common and replace natural ground cover and understorey in disturbed areas and along weed vectors.
- Weed control was undertaken in Boolading Nature Reserve for Cape tulip (*Moraea minata*) between 1993-95 using glyphosate (ie. herbicide spray).
- No plant disease has been recorded in the reserves.

The objectives are to ascertain whether the reserves are affected by disease and minimise the impacts of environmental weeds and disease on the reserves' values.

- Implement suitable weed control programs in accordance with the Environmental Weeds Strategy for Western Australia where weed invasions threatens the reserves' values.
- Monitor the success of any control programs in the reserves.
- Control access in and out of weed and disease affected areas and adopt hygiene measures during operations within reserves.
- Rehabilitate tracks surplus to management requirements.
- Liaise with adjoining property owners in regard to weed control, fencing requirements and hygiene measures.
- Monitor for the incidence of weeds, disease and loss of native vegetation and implement control programs as required.

- No increase in the number or cover of environmental weeds from 2002 levels.

**PROBLEM ANIMALS, DOMESTIC ANIMALS & STOCK**

- Introduced fauna species have been recorded in the area, most significantly foxes (*Vulpes vulpes*), rabbits (*Oryctolagus cuniculus*) and feral pigs (*Sus scrofa*).
- Regular fox control with 1080 poison bait began in 1991 in the area and is continued as an integral part of the Department's Western Shield program.
- Introduced fauna potentially threaten the ecological values of the reserves by disturbing wildlife and introducing disease and weeds.
- Introduced fauna can damage native plants and habitats through grazing, trampling and digging activities. Such activities can destroy native vegetation, encourage invasion by weed species and cause erosion.

The objective is to prevent and, where necessary, ameliorate the impact of problem animals, domestic animals and stock on the reserves.

- Monitor for the presence of introduced fauna on the reserves and, where impacts on ecological values are known or found to be negative, implement measures to eradicate introduced species from the reserves.
- Monitor the efficiency of control programs on target species, and make changes to procedures if required.
- Provide information concerning introduced fauna control, particularly baiting programs.
- Ensure boundary fences with adjoining private property are erected and maintained to prevent stock intrusion and adjoining property owners are informed of their responsibilities under the Dividing Fence Act 1961.
- Inform visitors as required re Department policy of not permitting domestic animals in nature reserves.

- No reduction in the number of indicator native species (eg. woylie, chuditch and numbat) from 2002 levels at adjacent monitoring site in State Forest No. 24.

**FIRE**

- Fire plays an important role in determining the forest structure, helping maintain floristic and structural diversity.
- Regular prescribed burning was introduced in the late 1950s after a series of wildfires. Over the ensuing 20 years most areas of the forest were burnt every 5-6 years with the frequency of burning declining in more recent times.
- Inappropriate fire regimes can contribute to a proliferation of weeds, especially along private property boundaries.
- Fire management will be according to the District Fire Plan.

The objectives are to protect life and property and to maintain and, whenever possible, enhance natural biodiversity.

- Provide information to reserve users of the impact that fire can have on the reserve values and visitor safety, and that the lighting of fires on nature reserves is prohibited.
- In the event of a fire in the reserves, undertake a direct suppression response where necessary.
- Prescribed burning may be done to maintain or enhance the conservation values of the reserves, or to protect life and property. It will be undertaken in accordance with the District Fire Plan.
- Maintain access for fire equipment deployment.
- Liaise with the adjoining private property owners, predominantly farmland, to minimise the risk of fire.

- No fire escapes from the reserves into adjoining private property.

**CULTURAL HERITAGE**

- There is currently one registered native title claim in the area of Boolading Nature Reserve (ie. WAGG274\_98 Gnala Karla Boja).
- All Aboriginal sites are protected under the Aboriginal Heritage Act 1972, including those sites not yet registered with the Department of Indigenous Affairs.
- Within the rail reserve, the remnants of a railway siding, and several mature pine trees associated with the siding, remain from when the railway was used to service the area.

The objective is to protect and conserve the reserves' cultural heritage.

- Develop, in collaboration with the local indigenous population, an understanding of the significance of the area to Aboriginal people.
- Notify relevant Native Title Claimants and authorities when undertaking public works according to section 24(7) of the Native Title Act.
- Ensure that visitor and management activities do not adversely impact upon significant cultural and historical sites.

**PERFORMANCE INDICATORS****VISITOR ACCESS AND RECREATIONAL USE**

- The proposed Batalling Nature Reserve is accessed via Batalling Road.
- Coalfields Road and Farrell Road allow easy access to Boolading Nature Reserve. An unsealed road provides access from Farrell Road to private property in the north.
- The reserves may be used for passive recreation such as bush walking, nature appreciation and bird watching.
- The disused rail reserve in Boolading Nature Reserve may be utilised in the future as a bridle trail.
- There are no facilities for visitors to the reserves.

The objective is to provide suitable access while ensuring the reserves' values are not adversely affected.

- Close and rehabilitate tracks that are deemed unnecessary.
- Provide information concerning the reserves' conservation values and their significance in terms of the Salinity Action Plan and the Collie River Salinity Situation Statement.
- Provide no facilities for recreation.

**PERFORMANCE INDICATORS****PUBLIC UTILITIES AND SERVICES**

- Two transmission lines pass through the north west corner of Boolading Nature Reserve, including the high voltage Muja-Kalgoorlie 132/220 kV line. The easement associated with these transmission lines covers approximately 11 ha of the reserve.
- The disused Collie to Darkan railway line dissects the south eastern corner of the reserve.
- The linear disturbances such as those created by the transmission lines and railway line can be a source of weed and feral animal introduction to the reserve.

The objective is to minimise the impact of utilities on the reserves' values.

- Allow access for maintenance of the easements in the reserves.
- Assess future proposals to determine their impact on the reserves' values and ensure they consider landscape, conservation and cultural values.
- Managers of the easements are responsible for their maintenance and for weed management, erosion control etc. where the issue impacts on the reserves' values.

- Increase in 'joint' Department/community activities over the life of this plan.

**WORKING WITH THE COMMUNITY**

- Community support is an integral component of the Department's operations and is essential for the successful implementation of this IMG.
- Specific reserve management issues that require community support include fire management, problem animal and weed control.

The objective is to facilitate effective community involvement in managing the reserves.

- Support activities that involve the community in the management and monitoring of the reserves.
- Liaise with adjoining property owners regarding management activities such as fire and weed control and ensure they are informed of their fencing responsibilities.
- Encourage community support for projects carried out under the Salinity Action Plan and Collie River Salinity Situation Statement.

**PERFORMANCE INDICATORS****SCIENTIFIC RESEARCH AND USE**

- Scientific research has been conducted in the area, particularly Batalling, which was the focus of threatened species relocations, fauna surveys, and studies which illustrated the effectiveness of fox baiting (Friend et al. 1994).
- Research resulting from the Salinity Action Plan is probable.

The objective is to further develop and maintain knowledge in regard to protecting and conserving the values of the reserves.

- Apply the findings of the research carried out in Batalling.
- Apply the findings of scientific research carried out under the Salinity Action Plan.
- Maintain the knowledge of research being conducted on the reserves.

**PERFORMANCE INDICATORS**