



Howard Springs Nature Park

Draft Plan of Management



2 OBJECTIVES OF MANAGEMENT

Howard Springs Nature Park will be managed in accordance with the following general objectives:

- the encouragement and regulation of the appropriate use, appreciation and enjoyment of the Park by the public;
- the preservation of the Park in its natural condition and the protection of special features;
- the protection, conservation and management of wildlife within the Park;
- the interpretation of the natural and cultural values of the Park.

In addition to these general objectives, the Nature Park will be managed for the following specific purposes:

- the protection of important vegetation communities and habitats, including springs, swamps and monsoon rainforest areas;
- the provision of a range of recreational opportunities centred around the spring-fed pool; and
- the protection of the water resources.

3 MANAGEMENT OF THE PARK'S NATURAL AND CULTURAL VALUES

3.1 Landforms, Soils and Hydrology

3.1.1 Value

The landforms soils and hydrology of the Nature Park strongly influence the distribution of vegetation communities and wildlife habitat in the Park.

3.1.2 Management Objectives

1. To minimise interference with natural waterways and drainage.
2. To minimise impact of erosion and sediment runoff in the Nature Park.

3.1.3 Background

The Nature Park is located on a low, gently undulating plateau which consists of horizontal beds of siltstone and sandstone overlying steeply bedded, older sedimentary rocks. The soils are generally well-drained, but shallow internally draining depressions which frequently contain

lagoons, occur within the plateau surface. The soils in these drainage areas, and those within the floodplain of the Howard River, are usually waterlogged during the wet season and not suitable for development.

The Nature Park is reserved from Occupation under the *Mining Act* (RO No. 1143, NTG No 38 35/09/85). However sand extraction occurs on the land adjoining the Park's western boundary. This activity has an obvious visual impact and is a potential cause of erosion. Exposed soils, particularly on slopes, are highly erodible.

In the Park soil erosion is evident around old sandscapes, along unprotected creek banks and at the waterhole entry points. Erosion can also occur in cleared areas along walk tracks and firebreaks. Poorly sited and designed developments, roads, access and walking tracks can also lead to erosion and sediment runoff.

The surface water catchment exerts a considerable influence on both the flow and quality of water reaching the waterhole, springs and in the creeks in the Nature Park. From a recreation and environmental perspective it is important to maintain water quality to a suitable standard consistent with the permitted uses of the Park's water bodies and to maintain the natural values of the Park.

Sediments and runoff enter the Park from the surface water catchment that extends to the south of the Park across the Gunn Point Road and into the former forest reserve (pine plantation). Increased development and clearing of land to the south of the Park is likely to result in further increases of sediment and pollutants in the runoff entering the spring and waterhole. Since 1992 there has been considerable development in and around the Park and the Litchfield Shire Land Use Objectives provide for further development.

In future it may be necessary to consider establishing a sediment basin to minimise the amount of sediment and other pollutants reaching the spring and waterhole in runoff from surrounding land and within the Park itself. Other methods for reducing the amount of sediment and pollutants reaching the spring and waterhole include silt traps and gross pollutant traps downstream of culverts. Further assessment will be required to better determine the amount and source of sediment and pollutants entering the waterhole and drainage in the Park and the appropriate methods to minimise the sediment and pollutants entering Park water bodies.

The bore and springs in the Nature Park are fed by the groundwater aquifer. The bore sometimes shows high levels of conductivity that indicates the presence of saline water. This is

likely to happen when the aquifer level is low. Water from the bore is used to irrigate the grassed picnic areas and to supply the Park residences and office. Water from the taps in the Park also comes from the bore. In order to maintain the standard required for drinking water it may become necessary to connect the Park residences, office and drinking water supplies to the water mains. Specific management strategies for the spring and waterhole are discussed in section 3.2 and 3.3 of this plan.

3.1.4 Management Actions

1. Identify areas susceptible to soil erosion to assist in assessing the capabilities of the Park for suitable visitor activities, developments and future uses.
2. Design, site and construct all future developments subject to land suitability and capability assessment and to minimize the risk of soil erosion, pollution and interference with natural drainage.
3. Carry out any works in accordance with relevant legislation (*Northern Territory Environmental Assessment Act, Water Act, Heritage Conservation Act and Soil Conservation Act*) and in accordance with relevant government policies.
4. Identify and rehabilitate areas of active soil erosion.
5. Investigate options for connecting the Park residences, office and drinking water taps to the town water mains.
6. Monitor culverts for sediments and pollutants and investigate the need to install sediment and pollutant traps and / or establish a retention basin to minimise the sediments and pollutants entering the waterhole and spring.
7. Regularly monitor effects of visitor and management activities on soils and close and rehabilitate areas where visitor use and management activities have damaging effects upon the soils or are causing pollution of streams, groundwater or the waterhole.
8. Close and rehabilitate vehicle tracks not used for recreation or management purposes.
9. Consult with relevant officers in the Department of Natural Resources Environment and the Arts regarding erosion control and rehabilitation of active erosion sites.

3.2 Howard Springs

3.2.1 Value

The groundwater spring in Howard Springs Nature Park supports highly water dependant vegetation communities (spring fed and riparian monsoon forest) and aquatic flora and fauna. The spring is also the main water source for the waterhole that is the focus of most recreational use (swimming and aquatic wildlife viewing).

3.2.2 Management Objectives

Maintain the water quality of the spring to support the water dependant vegetation communities and maintain water quality in the Park waterhole.

3.2.3 Background

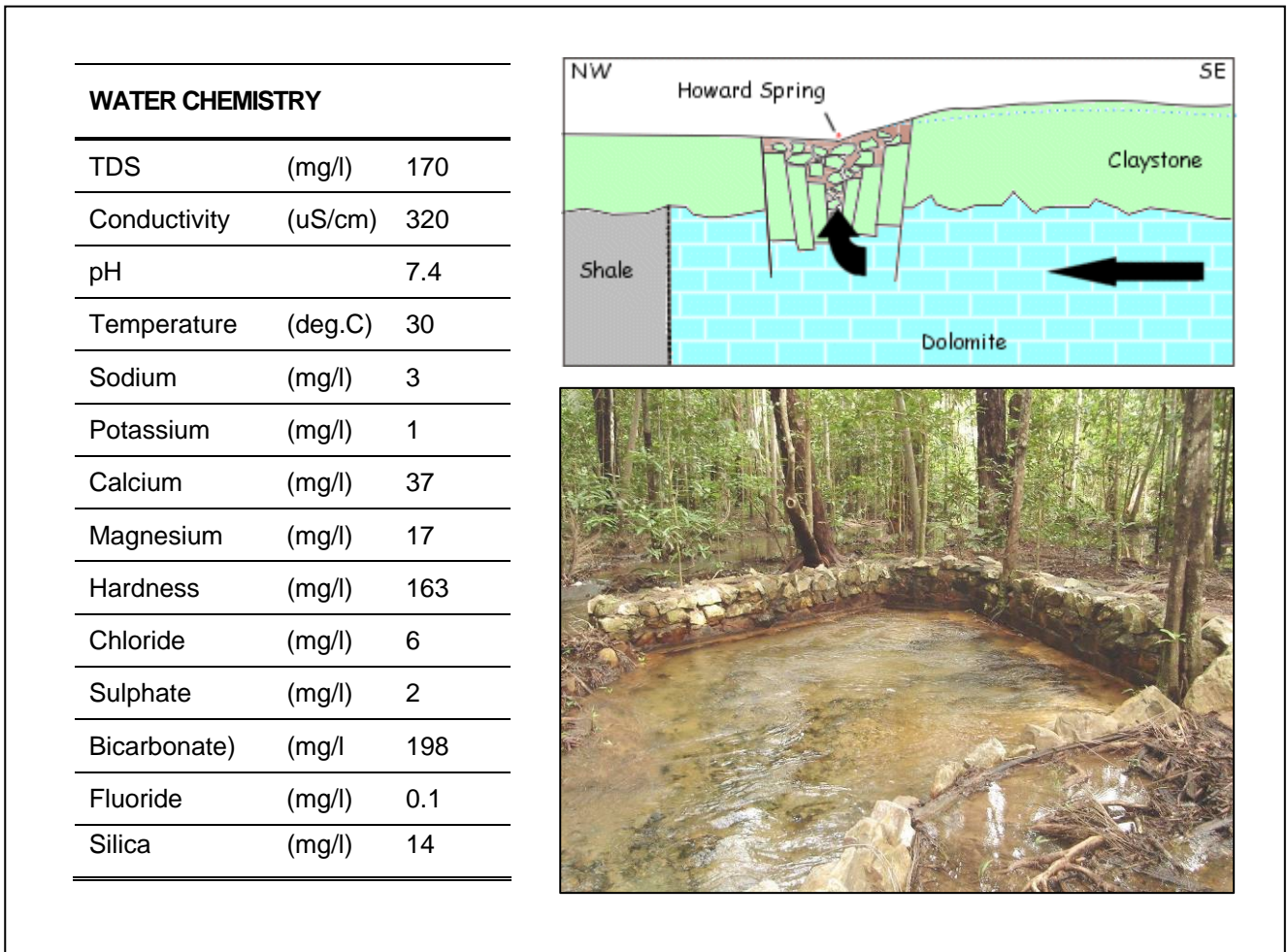
The Howard spring discharges from the Lower Proterozoic Koolpinyah Dolomite (2000 million years old). The dolomite is overlain by 65 metres of Cretaceous aged claystone and clayey sandstone. It is located near the margin of the dolomite aquifer and is in a sinkhole whose northern wall has been breached. The collapsed rock beneath the sinkhole provides a pathway for the deep groundwater to find its way through the overlying claystone. Faulting may have influenced the location of the sinkhole and thus of the spring. The dolomite forms a fractured and cavernous aquifer. The upper ten metres or so is often very porous due to very abundant fine solution cavities.

The spring flow decreases progressively from about 300 litres/second at the height of the Wet season in February to an average of about 20 litres/second at the end of the Dry season in November. After a series of years with below average rainfall the spring may stop flowing. The chemistry of the spring water remains constant throughout the year.

There has been much debate about the impact of domestic and other types of bores on the spring in Howard Springs Nature Park. Records from monitoring bores show that after a series of low rainfall years the level of groundwater in the aquifer drops and the springs cease flowing. In low rainfall years it is likely that the springs cease flowing earlier in the Dry season than under normal conditions because of the drawdown from surrounding bores. In normal rainfall years the spring remains unaffected by the drawdown from surrounding bores. Water allocation planning is currently being developed for the Darwin area and will take account of the long term requirements of Howard Springs Nature Park and other natural environments in order to maintain functioning ecosystems consistent with declared beneficial uses (page 3). Ongoing monitoring of the spring is planned to improve understanding of the spring and the affects of bores on the springs.

A rock wall has been constructed around the spring outlet to divert stream flows and runoff from other parts of the catchment around the spring minimising silting of the spring outlet.

Figure 2: Howard Springs' Geology and Water Chemistry



In order to maintain the water quality, visitors are not permitted to enter the water at the spring however access is generally unregulated with only a basic walk track and minimal direction signs provided. The area around the spring is waterlogged and means that the area is not suitable for development nor is it able to cope with high levels of unregulated visitor use. There appears to be a considerable amount of off track activity around the spring as visitors try to get close to the springs. With increasing development for recreation and tourism it is likely that more visitors will access this part of the Park and more regulated access may need to be provided.

3.2.4 Management Actions

1. Regulate visitor activities and access in accordance with the Park zoning scheme (section 4.1)
2. Maintain rock wall around spring to divert runoff and minimise the potential for the spring outlet to be blocked.

3. Develop a formal walking track from the waterhole to the spring and install directional and information signs and viewing deck to assist in regulating access.
4. Liaise closely with NT Government officers responsible for water allocation planning to ensure that the values of the Howard Springs Nature Park are considered in water allocation planning and to improve understanding of surface and ground water resources in the catchment.
5. Retain natural drainage patterns except where drainage diversion is required to protect the resources or facilities of the Nature Park and in accordance with the management actions in section 3.1.
6. Continue to work with Water Resources section of NRETA to monitor the spring and improve understanding of flows and the affects of bores.

3.3 Howard Springs Waterhole

3.3.1 Value

The waterhole in Howard Springs Nature Park is a focus of recreational use including swimming and aquatic wildlife viewing. The waterhole also provides habitat for a range of aquatic and semi aquatic wildlife.

3.3.2 Management Objective

1. Maintain water quality in the waterhole for primary contact, secondary contact and visual use in accordance with NT Government policy and national water quality guidelines.
2. Maintain water quality to a suitable standard to sustain healthy aquatic ecosystems in the waterhole.

3.3.3 Background

The main feature of the Park is the spring-fed waterhole surrounded by monsoon forest. The waterhole is the focus of recreational activity and is an important wildlife habitat that sustains a variety of aquatic species including fish, freshwater turtles, frogs, aquatic plants and, macro and micro invertebrates.

Water Quality

The waterhole is part of a functioning ecosystem that is influenced by existing biological, climatic and seasonal conditions and as such it is inevitable that the quality of the water will change as these conditions vary throughout the year. The main influence on the waterhole's water quality, particularly with regard to micro organisms (e.g. bacteria and protozoans), is the waterhole's own ecosystem.

At the end of the wet season water quality is high because the waterhole and its catchment have been flushed out by increased surface runoff and continuous spring flow. During the dry season water quality progressively deteriorates as the spring flow decreases (or ceases) and the concentration of organic material (organisms, sediment, dissolved solids, leaf litter etc.) increases. Towards the end of the dry season bacteria levels are high and increase even further when the first wet season rains flush organic material from the surrounding catchment into the waterhole and disturb the sediment on the bottom of the waterhole.

Bacteria (including harmful bacteria) and other micro-organisms accumulate in bottom sediments and are released into the water column when activities such as weed slashing, dredging, swimming and strong water currents stir up the bottom. From this perspective any management activity that is likely to disturb the bottom should be conducted outside peak use times to minimise the level of harmful bacteria that is released into the water column.

Role of the Spring

The flow of the spring also has an influence on the water quality in the waterhole. The water quality in the waterhole deteriorates quickly once the spring stops flowing. Since 1992 a large number of domestic and other types of bores have become active in the surrounding area. In normal rainfall years the spring flow is unaffected by the drawdown from these bores. In low rainfall years the spring may cease to flow because of the lower groundwater level in the groundwater aquifer. The springs are likely to cease flowing earlier than normal in low rainfall years because of the additional draw down from surrounding bores.

The impact of the spring flow on the water quality in the waterhole can be managed with continual monitoring and implementation of management activities as described in the Howard Springs Nature Park Water Quality Management and Monitoring Program (appendix 2).

Role of Aquatic Macrophytes

Aquatic macrophytes (water plants) occur naturally in the waterhole. These macrophytes are an essential part of a healthy functioning aquatic ecosystem; they provide habitat for organisms

that help to improve water quality, stabilise sediments, help to reduce the amount of suspended solids in water columns, and remove nutrients from sediment. However when they are present in large amounts they can have a damaging effect on water quality, recreational values and aquatic ecosystem health. Aquatic macrophytes may be a safety hazard for visitors by increasing the risk of entanglement and creating habitat for biting insects. Aquatic macrophytes can also be visually unappealing as floating mats.

The growth of aquatic macrophytes increases in the Dry season when water flow decreases or when there are increases in nutrients in the water and sediments. Providing an aquatic ecosystem management zone (Figure 3.) will enable the amount of aquatic macrophytes to be actively managed without interfering with recreational activities. Macrophytes can be removed from the swimming zone and retained in the aquatic ecosystem management zone to help maintain aquatic ecosystem health. Zoning of the waterhole will also help to minimise the safety hazard for visitors.

Water Quality Monitoring

Guidelines produced in 2000 by the Australia and New Zealand Conservation Council (ANZECC) and the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) specify the parameters for measuring the quality of waters for recreational use (primary contact, secondary contact and aesthetic uses) and outlines the management framework recommended for applying the water quality guidelines to the natural and semi-natural marine and fresh water resources in Australia and New Zealand. These guidelines replace those produced by ANZECC and the National Health and Medical Research Council (NHMRC) in 1992.

Table 1: Water Quality Characteristics Relevant to Recreational Use (ANZECC & ARMCANZ 2000)

| Characteristics | Primary contact (e.g. swimming) | Secondary contact (e.g. boating) | Visual use (no contact) |
|-----------------------------------|--|---|------------------------------------|
| Microbiological guidelines | X | X | |
| Nuisance organisms (e.g. algae) | X | X | X |
| Physical and chemical guidelines: | | | |
| Aesthetics | X | X | X |
| Clarity | X | X | X |
| Colour | X | X | X |
| pH | X | | |
| Temperature | X | | |
| Toxic chemicals | X | X | |
| Oil, debris | X | X | X |

Water quality guidelines (Appendix 2) have been applied to the waterhole and wading pool since 1999. Periodically bacteria levels exceed the levels recommended in the national water quality guidelines and those developed by Parks and Wildlife Service in conjunction with the Northern Territory Department of Health. The public rightfully expects that water quality in recreational water bodies should be maintained to acceptable standards consistent with the permitted uses. They also expect to be informed of the safety and health risks associated with using the water bodies in the Park.

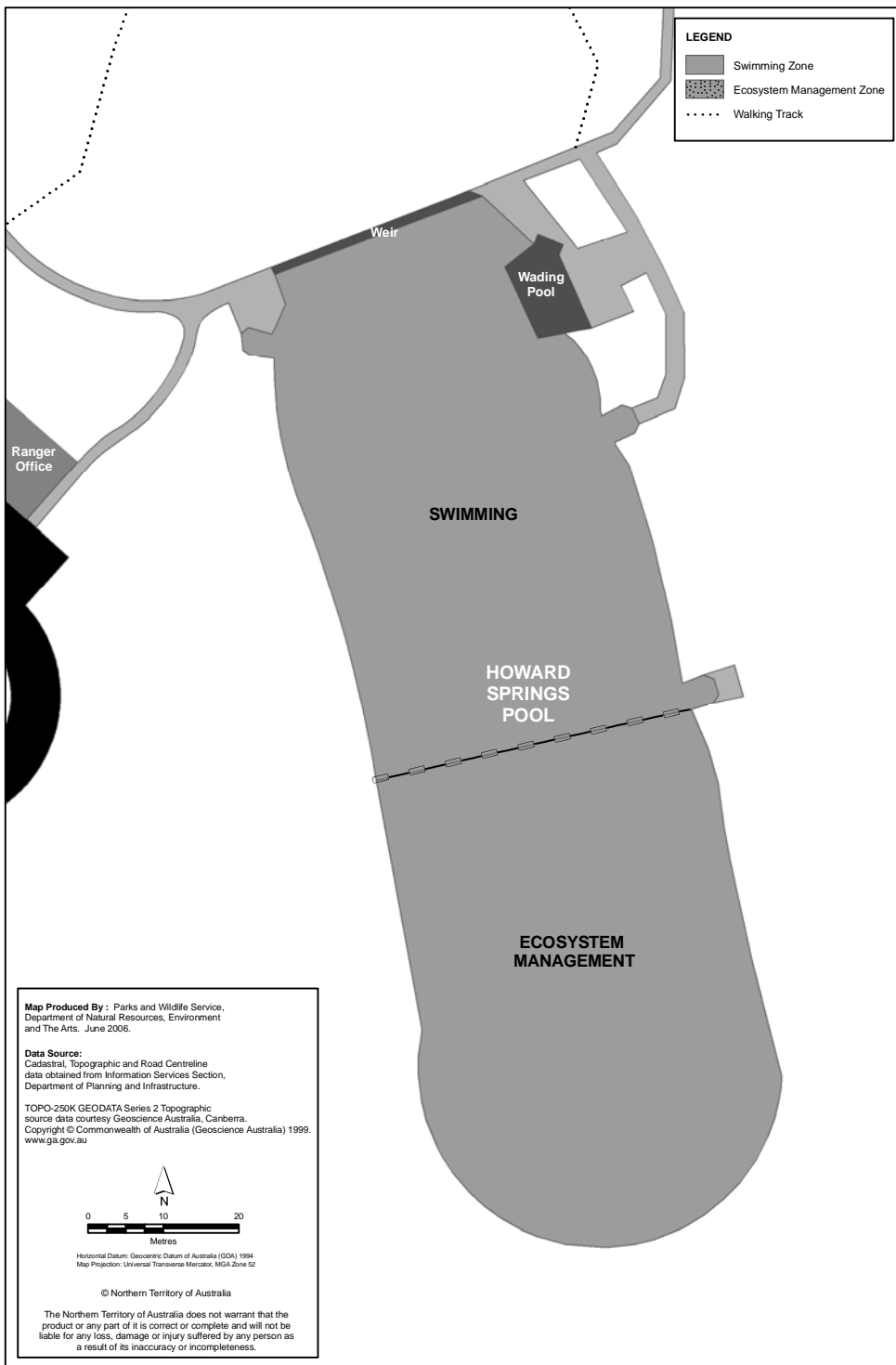
In the Nature Park an appropriate management response to maintain water quality to acceptable standards will involve a combination of catchment management, water quality monitoring, management of aquatic macrophytes, public education and, when required, regulation of use as outlined in the Howard Springs Nature Park Water Quality Management and Monitoring Program (appendix 2).

3.3.4 Management Actions

1. Implement the Howard Springs Nature Park Water Quality Management and Monitoring Program. (appendix 2)
2. Install water safety signs in accordance with the Howard Springs Nature Park Water Quality Management and Monitoring Program. (appendix 2)

3. Regulate swimming in accordance with the Howard Springs Nature Park Water Quality Management and Monitoring Program (appendix 2) and the Waterhole zoning in Figure 3.
4. Minimise the use of fertilisers in the Nature Park particularly on those areas adjacent to and upstream of the waterhole.
5. Provide interpretation and public education including signs to inform visitors that the waterhole is a natural water system and subject to varying water quality.
6. Investigate the use of retention basins, diversion channels and silt traps to minimise the amount of sediment and pollutants in runoff from the roads and catchment entering the waterhole.
7. Pump or dredge the waterhole to remove accumulated detritus and reduce the store of bacteria if necessary.
8. Retain natural drainage patterns except where drainage diversion is required to protect the resources or facilities of the Nature Park and in accordance with the management actions in section 3.1.

Figure 3: Howard Springs Nature Park Waterhole Management Zones



3.4 Flora

3.4.1 Value

The variety of vegetation communities present in the Park support a diverse range of fauna and are essential to maintaining biodiversity in the Park and the broader catchment. Of particular importance are the swamps, aquatic and monsoon forest communities.

3.4.2 Management Objectives

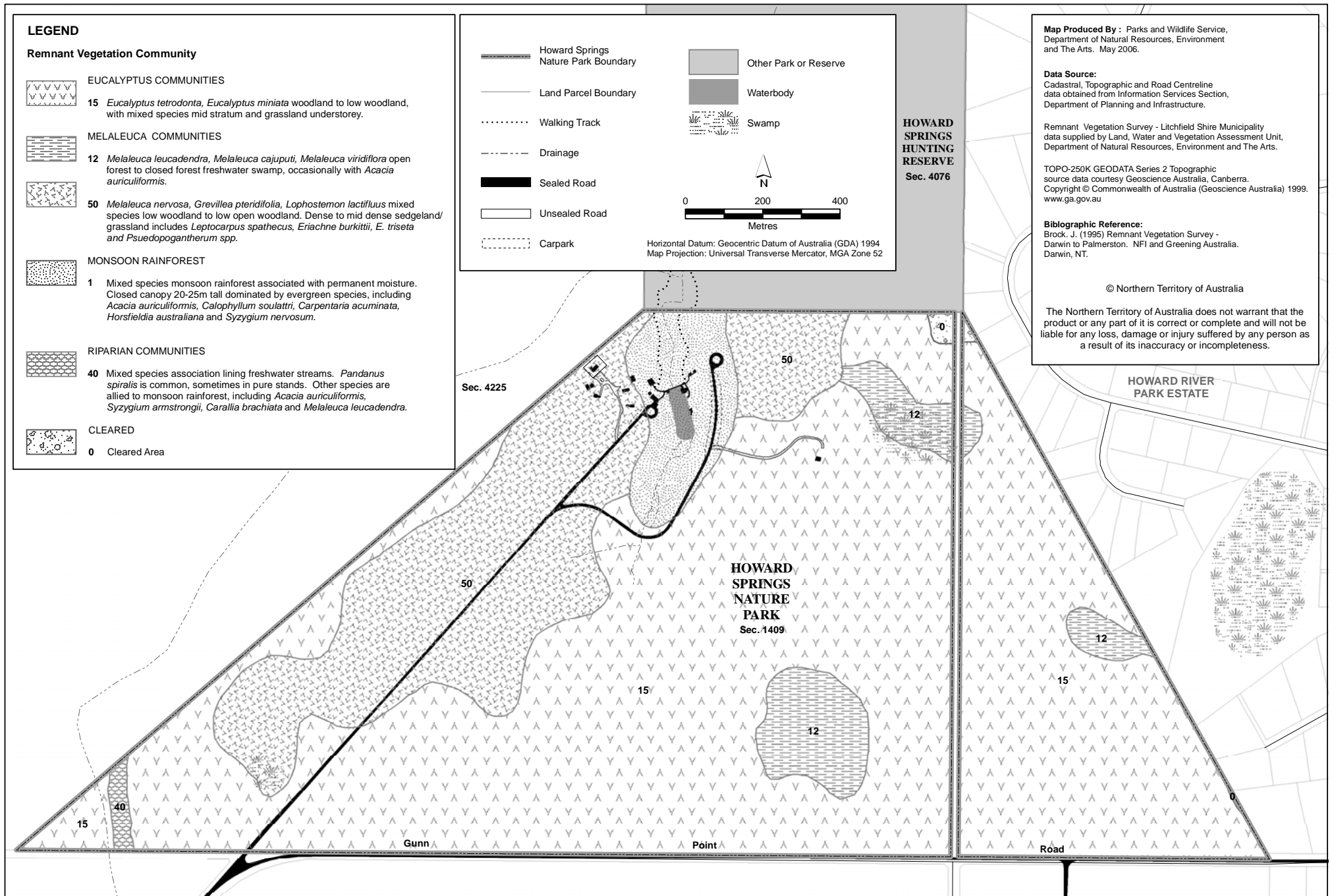
1. Maintain the variety of vegetation communities in the Nature Park.
2. Minimise the adverse impacts of uncontrolled fire, weeds and feral animals.
3. Improve knowledge of plant species in the Nature Park

3.4.3 Background

The distribution of vegetation communities within the Nature Park is strongly influenced by the soil types and drainage patterns. Much of the Park is well-drained and supports an open forest/woodland dominated by stringybark (*Eucalyptus tetradonta*), woollybutt (*E. miniata*) and ironwood (*Erythrophleum chlorostachys*). Of importance is the dense monsoon rainforest of *Acacia*, *Terminalia* and palms around the springs and the creek margins below the waterhole. Paperbark forests (*Melaleuca spp.*) dominate the damp depressions, mixed with ironwood (*Erythrophleum chlorostachys*) and swamp bloodwood (*Eucalyptus polycarpa*) on the slopes. (Figure 2 Howard Springs Nature Park Vegetation Communities).

Monsoon rainforest communities are highly water dependent and occur where there is year round access to water. There are two types of monsoon forest in the park they are riverine and spring fed.

Figure 4: Howard Springs Nature Park Vegetation Communities



A number of emerging, submerged and floating aquatic macrophytes (water plants) are present in the waterhole including *Ottelia alismoides*, *Ceratophyllum demersum*, *Nymphaea pubescens*, *Vallisneria nana*, *Cyperus platystylis*, *Lemna aequinoctialis* (Anh Tho Tien 2002). These water plants are an essential part of a healthy aquatic ecosystem but in large amounts they can have a damaging effect on water quality from an ecosystem health and recreational use perspective. Aquatic macrophytes are discussed in section 3.3. Little is known about the occurrence of water plants in other waterways in the Park.

3.4.4 Management Actions

1. Regulate visitor activities and access in accordance with the Park zoning scheme (section 4.1)
2. Implement the feral animal control and weed and fire management strategies for the Park in accordance with sections 6.1, 6.2 and 6.3 of this plan.
3. Minimise clearing of native vegetation for public safety, fire protection and the provision of recreation and management facilities.
4. Expansion of the rainforest around the springs will be encouraged by natural growth and exclusion of fire.
5. Planting of shade trees will continue in picnic areas and parking areas.
6. Remove exotic plant species from the Nature Park. Only native species endemic to the area will be planted in the Nature Park and except within the bounds of the existing staff residences or where use of exotic species is essential for rapid soil stabilisation.
7. Encourage study of the Nature Park's water plants and aquatic ecosystems to improve understanding and management of freshwater ecosystems in the Park.

3.5 Fauna

3.5.1 Value

The Park supports a diverse number of fauna species that are representative of the Darwin Coastal Bioregion and are a major part of the appeal of the Nature Park for visitors.

3.5.2 Management Objectives

1. Maintain the variety of vegetation communities in the Nature Park.
2. Minimise the adverse impacts of uncontrolled fire, weeds and feral animals.

3.5.3 Background

The Park contains a broad cross section of native species consistent with the types of vegetation and habitat present in the Nature Park and is typical of the region. 15 amphibians (frogs and toads), 34 reptiles, 15 mammals including two feral animals, 127 birds and 17 fish have been recorded for the Park. This includes 3 species that are listed as near threatened in the Territory and 10 species that are data deficient, that is, not enough is known about these species to properly assess their status. Appendix 1 lists the recorded fauna in the Park. The northern quoll has been recorded in the Park and is listed as vulnerable in the Territory. It is likely that with the increased presence of cane toads the quoll will disappear from the Park and may already have done so. More strategic threatened species management programs (e.g. Island Ark) are being implemented in the Territory to ensure the future of this species.

The waterhole contains a pig-nosed turtle that is a near threatened in the NT. The turtle was introduced into the waterhole outside its normal habitat along with barramundi. Both the pig-nosed turtle and barramundi are a significant attraction for visitors who feed them along with other native turtles and fish.

The swamps and marshes of the Park are important wildlife habitats, particularly for magpie geese (*Anseranas semipalmata*), wandering whistling ducks (*Dendrocygna arcuata*), radjah shelducks (*Tadorna radjah*) and pygmy geese (*Nettapus puichellus*). Rainbow pittas (*Pitta iris*) and the orange-footed scrubfowl (*Megapodius reinwardt*) nest within the monsoon forest and saltwater crocodiles (*Crocodylus porosus*) are occasionally found in the Howard River downstream of the Park.

Mosquitoes and midges can cause considerable discomfort to visitors and are a potential health hazard in the Nature Park. Estuarine crocodiles have not been detected in the Park waterhole however as they present a serious visitor safety risk the waterhole is regularly monitored for estuarine crocodiles, particularly in the Wet season when they may move into the Park from the Howard River.

3.5.4 Management Actions

1. Implement the Feral animal control and weed and fire management strategies for the Park in accordance with sections 6.1, 6.2 and 6.3 of this plan.
2. Regularly monitor the Park waterhole for crocodiles and remove all crocodiles.

3. Prohibit dogs and other domestic pets from the Park unless a permit is obtained from the Director of the Commission in accordance with the Commission's pets in parks policy.
4. Prohibit hunting, fishing, trapping and other methods of taking animals in the Nature Park other than those permitted under the *Territory Parks and Wildlife Conservation Act*.

3.6 Cultural Values

3.6.1 Value

The Park is regionally significant as a WWII heritage site. Use of the area by Aboriginal people brings an added dimension to the Park for visitors.

3.6.2 Management Objective

1. Provide protection of cultural heritage sites in accordance with relevant NT legislation

3.6.3 Background

The Nature Park lies within the area traditionally occupied by the Larrakia people. Little is known of early Aboriginal use of the Howard Springs area and there are no known sites of Aboriginal cultural significance within the Park. There are recorded sites of significance in the adjacent Hunting Reserve and Shoal Bay Coastal Reserve. The presence of numerous large middens in the Shoal Bay Coastal Reserve suggests that the area was exploited by Aboriginal people over long periods of time and that the area was a productive hunting and gathering area.

The creek below the springs was dammed during World War II to supply water to a nearby abattoir and as a means of supplementing Darwin's water supply. The waterhole area was also used as a rest camp by both American and Australian Service personnel. The names of the workmen who built the weir are inscribed in the concrete to the west of the weir.

Following the war, the emergency water supply was no longer required but it was not until September 1950 that some facilities were erected and the area became a picnic ground under the control of the Darwin Town Management Board. In 1952 the Park became a Recreation Reserve before coming under the control of the Northern Territory Reserves Board in 1957.

The sites associated with the WWII rest camps are not thought to be of outstanding historical value. They do, however, provide an insight into the human aspects of the war in the Top End,

and are of significance to the Territory community. Sites of WWII period occupation include:

- bottle and other rubbish dumps;
- concrete slabs which mark the sites of tent or huts; and
- the marking “Aust. Field Coy. RAE AIF 1944” on the top of the concrete wall on the western side of the waterhole.

3.6.4 Management Actions

1. Manage and protect sites of Aboriginal or other cultural significance found in accordance with the *Heritage Conservation Act* and the *Northern Territory Aboriginal Sacred Sites Act*.
2. Manage all cultural heritage sites in accordance with the principles and practices outlined in the Burra Charter.
3. Include information about the history and use of the area in the Park interpretative program.
4. Conduct assessment of Aboriginal heritage values in cooperation with relevant indigenous groups to provide a more comprehensive overview of the history and use of the area and identify Aboriginal heritage values.
5. Conduct a heritage assessment of the weir to determine appropriate conservation and maintenance processes, especially where developments are proposed.

4 MANAGEMENT FOR VISITOR USE

4.1 Zoning Scheme

A zoning scheme is one of the major tools used in applying the objectives of management to a park or reserve, and aims to provide a range of quality experiences and settings with appropriate facilities, while at the same time protecting the natural attributes of the area and minimising conflict between competing uses. Zones are derived by identifying the character and values of particular areas and their use capability and suitability. Areas suited to particular forms of use are categorised and mapped in a manner that is intended to aid continuity and consistency in management.

Four zones have been identified for the Nature Park. They have been generally determined by the capability of the soils and the need to protect important vegetation and habitat values. The zones reflect current and future management as outlined in this Plan.

You are invited to comment on the Howard Springs Nature Park Draft Plan of Management which can be viewed at: www.nt.gov.au/howardspringsplan

Submissions can be forwarded to:
Howard Springs Nature Park
PO Box 496
Palmerston NT 0831

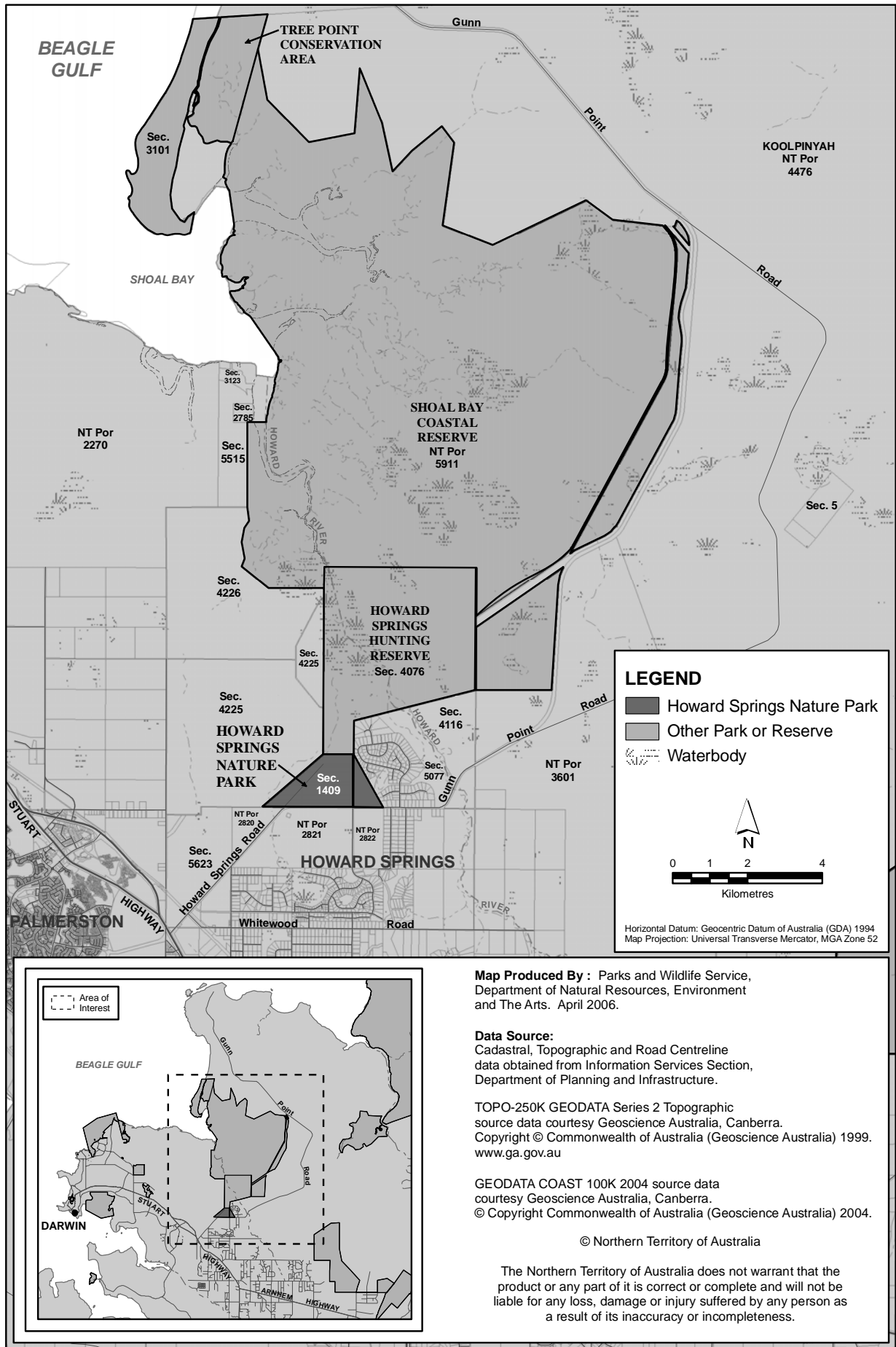
For further information phone: 08 8999 3473 or email: parkplanning.nreta@nt.gov.au

Comment commenced on Wednesday 6 December 2006 and closes on Friday 2 February 2007.

| CONTENTS | PAGE |
|---|-------------|
| 1 INTRODUCTION | |
| 1.1 Location and Reservation | 1 |
| 1.2 Regional Context | 1 |
| 1.3 Values of the Park | 3 |
| 1.4 Intent of the Plan | 4 |
| 2 OBJECTIVES OF MANAGEMENT | 5 |
| 3 MANAGEMENT OF THE PARK'S NATURAL AND CULTURAL VALUES | |
| 3.1 Landforms, Soils and Hydrology | 5 |
| 3.2 Howard Springs | 7 |
| 3.3 Howard Springs Waterhole | 10 |
| 3.4 Flora | 16 |
| 3.5 Fauna | 18 |
| 3.6 Cultural Values | 20 |
| 4 MANAGEMENT FOR VISITOR USE | |
| 4.1 Zoning Scheme | 21 |
| 4.2 Visitor Use and Park Developments | 24 |
| 5 COMMERCIAL OPERATIONS | 30 |
| 6 KEY NATURAL RESOURCE MANAGEMENT PROGRAMS | |
| 6.1 Fire Management | 31 |
| 6.2 Exotic Animal Species Management | 33 |
| 6.3 Weed Management | 34 |
| 7 PARK ADMINISTRATION | |
| 7.1 General Administration | 36 |
| 7.2 Stakeholder Engagement | 37 |
| 8 PROGRAMS | 39 |
| 9 SELECTED REFERENCES | 42 |

| | | |
|-------------------|---|-----|
| APPENDIX 1 | Fauna Species Lists | 43 |
| APPENDIX 2 | Howard Springs Nature Park Water Quality Monitoring and Management Program | 54 |
| FIGURE 1 | Howard Springs Nature Park Locality and Tenure | iii |
| FIGURE 2 | Howard Springs Geology and Water Chemistry | 9 |
| FIGURE 3 | Howard Springs Nature Park Waterhole Management Zones | 15 |
| FIGURE 4 | Howard Springs Nature Park Vegetation Communities | 17 |
| FIGURE 5 | Howard Springs Nature Park Zoning Scheme | 23 |
| FIGURE 6 | Monthly Visits for Howard Springs Nature Park 2003 – 2005 | 25 |
| FIGURE 7 | Howard Springs Nature Park Existing Visitor Facilities | 28 |
| FIGURE 8 | Howard Springs Nature Park Development Concepts | 29 |
| TABLE 1 | Water Quality Characteristics Relevant to Recreational Use | 13 |
| TABLE 2 | Weeds in Howard Springs Nature Park | 34 |

Figure 1: Howard Springs Nature Park Locality and Tenure



1 INTRODUCTION

1.1 Location and Reservation

Howard Springs Nature Park is located approximately 35 km by road east of Darwin and 10 km east of Palmerston. Adjoining the Park to the north and east is the Howard Springs Hunting Reserve, the Shoal Bay Coastal Reserve, Tree Point Conservation Area and Koolpinyah Station pastoral lease. Surrounding the Park to the south and east is the rural residential area of Howard Springs (Figure 1).

The Nature Park occupies an area of 283 hectares and was the first reserve placed under the care, control and management of the Northern Territory Reserves Board in 1957. The Nature Park was declared a Park under section 12 of the *Territory Parks and Wildlife Conservation Act* (TP&WC Act) in 1978 after the Reserves Board was dissolved and the Territory Parks and Wildlife Conservation Act commenced. A further declaration was made in 2002 under the s12 (1) (a) and s12 (1) (aa) of the TP&WC Act to recognise the possible existence of native title rights.

The Nature Park provides a range of recreational opportunities centred on the spring fed waterhole including picnicking, swimming, walking and aquatic and other wildlife viewing.

1.2 Regional Context

The Howard Springs Nature Park is located in the Darwin Coastal bioregion. Bioregions are large landscapes that have broadly similar landforms, geology and flora and fauna. The Darwin Coastal Bioregion extends from the Fitzmaurice River in the west to the East Alligator River in the east. The Nature Park represents less than 1% of the reserved area in the Darwin Coastal bioregion but the bioregion as a whole is well reserved with more than 29 % protected in Parks and Reserves (the bioregion includes parts of Kakadu and Litchfield National Park).

On its own the Nature Park contributes little to the protection of biodiversity however as part of a network of Reserves in the Howard River catchment including Howard Springs Hunting Reserve, Shoal Bay Coastal Reserve and Tree Point Conservation Area, the Nature Park has value for biodiversity conservation providing habitat and a natural corridor through which native fauna moves and native flora is spread. Combined these Reserves include 15 000 ha of land managed for conservation and recreation. The Nature Park also protects groundwater springs and a tributary of the Howard River that supports native aquatic flora and fauna. Generally, the

estuarine sections of the Howard River are protected in the Shoal Bay Coastal Reserve and the Hunting Reserve and freshwater habitat is protected in parts of the Hunting Reserve and in the Nature Park.

The Parks and Wildlife Service aims to manage the Nature Park, Hunting Reserve, Coastal Reserve and Conservation Area in an integrated way and eventually it is intended to have a single management plan to cover all these areas.

The Parks and Reserves of the Northern Territory form part of the National Reserve System and as such they are primarily managed for a conservation outcome. In the case of Howard Springs Nature Park this is coupled with management for nature based recreation. The National Reserve System aims to capture comprehensive, adequate and representative samples of Australia's bioregions as core areas for protecting Australia's biodiversity.

The Nature Park provides a regionally significant recreation and tourism experience. Its close proximity to Darwin and ease of access make it a popular reserve with locals and tourists. Whilst the rural area around Howard Springs has grown and the range of recreation opportunities available elsewhere has increased, the Nature Park remains an important recreation site for locals and is becoming increasingly important as a destination for domestic and international visitors. The waterhole in the Park is one of the only swimming areas available that can be regarded as safe from crocodiles.

Planned and existing surrounding land use includes rural living, mining (extractive mineral leases) and Crown land. Extractive mineral licences exist adjacent to the Park boundary and if not carefully managed could impact on the Park through increased erosion and sediment runoff. Future development of exclusive rural and rural living to the south of the Park has potential to impact on the Park's values through increased runoff (sediment, nutrients and pollutants). The growing water use in the area also has the potential to impact on the Park and its values if not carefully managed. Water allocation planning is currently being developed for the Darwin area and will take account of the requirements of Howard Springs Nature Park and other natural environments.

Opportunities exist to expand the boundaries of the Park to the west to include crown land identified in the Litchfield Shire Land Use Objectives as open space. A boundary rationalisation may also take place when the planned Gunn Point road corridor is developed through the Hunting Reserve. The Service also works cooperatively with the Litchfield Shire Council and other landholders to manage natural areas in the catchment. This helps in maintaining a

strategic catchment wide approach to the management of wild fire, weeds and feral animals.

Beneficial uses have been declared for the Darwin Harbour Area including Howard Springs under the *Water Act*. A beneficial uses declaration provides the framework for managing water resources in a catchment. The beneficial uses for the Darwin Harbour area include protection of aquatic ecosystems and recreational water quality and aesthetics and refer to the Australian Water Quality guidelines for Fresh and Marine Waters (1992). The management of water resources in the Park are consistent with the declared beneficial uses.

With the increasing expansion of Darwin, Palmerston and the Howard Springs area the Park will come under increasing pressure with respect to the provision of recreation facilities, water quality management and the protection of the remaining areas of natural bushland. Careful management of water resources and sympathetic management of surrounding land will be important for maintaining the values of the Nature Park.

1.3 Values of the Park

Howard Springs has been a recreational venue for the people of Darwin since World War II. The spring-fed pool in the Park was, and still is, the main attraction of the area, providing safe swimming in an attractive setting.

The **conservation values** of the Park come from the diversity of vegetation and wildlife habitats. Of special importance are springs, monsoon forest, swamps and riverine areas which provide valuable wildlife habitat and are connected to other natural areas in the Howard River catchment.

The **tourist and recreational values** of the Park come from the large spring-fed pool which provides safe year-round swimming close to Darwin, the landscaped picnic areas and walk tracks, and the aquatic and other wildlife viewing opportunities.

The **cultural heritage values** of the park are derived from the spring fed pool that was originally built during WWII and used to supply water for Darwin and that was later used as a rest and recreation area for servicemen based in Darwin during the war. The Park is the first park in the Territory to come under the Northern Territory Reserves Board and as such is considered to be the first park in the Territory in the modern era of park and reserve management. Aboriginal cultural values are not well known but are likely to exist given the presence of cultural material and sacred sites in the vicinity of the Park.

The Park also has considerable **value for education and interpretation** derived from the variety of ecosystems and wildlife and cultural values easily accessible to school groups as well as the general public. Woorabinda Youth Camp provides the opportunity for environmental study groups to camp within the Park.

1.4 Intent of the Plan

This is the third Plan of Management prepared for the Nature Park and states the intent of the Parks and Wildlife Service of the Northern Territory with respect to the management of the Howard Springs Nature Park. It sets management objectives, addresses current issues and proposes appropriate measures to guide management and development over the life of the Plan. The main strategies include

- Maintenance of the water quality in and near the waterhole and spring
- Continuing use of the waterhole for swimming subject to water quality
- Further development of the park for tourism and general nature based recreation
- Implementing natural resource management programs to control weeds, wild fire and feral animals
- Ongoing management, protection and interpretation of the natural and cultural values

This Plan has been prepared in accordance with Sections 18 and 19 of the *Territory Parks and Wildlife Conservation Act* (the Act), and will remain in force until revoked by a new plan prepared in accordance with the Act. The Plan will be reviewed every 5 years to ensure it remains current and to monitor its implementation. Specific management activities will be reviewed on more regular basis as set out in this plan of management or in individual strategies (e.g. the Park's fire management strategy).