

Howard Springs Nature Park Plan of Management October 2016



Intent of the Plan

This is the third Plan of Management prepared for the Park. This Plan has been prepared in accordance with section 18 of the *Territory Parks and Wildlife Conservation Act* and will come into operation after being laid before the Legislative Assembly pursuant to section 19.

The previous Plan which came into operation in 1992 was prepared for both Howard Springs Nature Park and Hunting Reserve. The 1992 Plan will be replaced by this Plan when it comes into operation. This Plan will remain in operation until it is replaced or revoked by another plan prepared under the Act. This Plan will be reviewed after five years to evaluate how management is achieving the Plan's objectives.

This Plan of Management complies with Northern Territory and Commonwealth legislation and Parks and Wildlife Commission policies. Detailed information on policies and systems used by the Parks and Wildlife Commission and relevant to all Territory Parks and Reserves can be viewed on the Commission website at www.dtc.nt.gov.au.

This Plan of Management focuses on the specific characteristics of Howard Springs Nature Park (the Park).



"I've been visiting Howard Springs Nature Park since the late 1960s. I loved the Park as a child, and I still love it now. It is part of my identity as a local - and a valuable asset for my children's enlightenment of the natural World."

Quote and photo from a member of the Local Management Committee, 2011.

This document is available at: www.dtc.nt.gov.au

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This Plan was made possible through the efforts and interests of many individuals and organisations. Principal among these has been the members of the Howard Springs Nature Park Local Management Committee.

Executive Summary

The Park and its Values

Howard Springs Nature Park is a park for the community. It is a place where visitors can walk, relax, explore and cool off close to Darwin. It will be maintained as a bushland oasis for families to 'get outdoors', enjoy picnics and barbeques and get close to local wildlife and aquatic wildlife, such as barramundi and turtles.

Numbers visiting the Park have increased significantly since the addition of a playground, shallow rock pools and more picnic facilities in 2012. The 286 ha Park is on the doorstep of Palmerston and a short drive from Darwin and is a small patch of preserved natural bushland in an area of high development.

While the Park is not considered to have high conservation value due to its small size, it protects a number of vegetation communities and a diversity of plant species. Of particular importance are the monsoon forest communities and aquatic plants. The monsoon forests are essential for conserving biodiversity across the wider landscape because these areas are important for seed dispersal and provide habitat for highly mobile species such as flying foxes, that use both woodland and monsoon forest habitats. The Park also contains a groundwater spring that supports highly water-dependant vegetation communities and aquatic plants and animals. The spring is also the main water source for the waterhole.

The Park lies within the area traditionally occupied by the Larrakia people. There is a recorded sacred site within the Park and it is likely that the spring would have had some importance to the local Aboriginal people.

Howard Springs Nature Park has historical significance as it has been used as a place for swimming and picnicking since WWII when the weir wall was constructed to supplement Darwin's water supply. In 1952 the Park became the first reserve for recreation in the Northern Territory.



*The Royal Australian Engineers building the weir wall in 1944.
(Images supplied by the Australian War Memorial ID number 081130 and 081810)*

The Park also contains the Woorabinda Youth Camp area which was officially opened by the World Chief Guide, Olave Lady Baden-Powell in 1967. Woorabinda has been a popular location for Scout and Girl Guide groups since this time.

Key Management Priorities

This is the third Plan of Management prepared for 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 Plan gives direction for the management of the Park.

Howard Springs Nature Park will continue to be managed and developed as a park where the local community and visitors can relax, cool down, picnic and enjoy a natural bush setting in close proximity to Darwin and Palmerston. The Park is a community asset and will be promoted as a place for locals, visitors and community groups.

While protection of the key natural values including monsoon rainforest communities, the spring, waterhole and woodlands is important, the key management focus will be on providing quality visitor facilities and activities in a healthy natural environment. The key management priorities are:

- Implement the Landscape Masterplan including development of a new Rangers office and re-design of existing car parks;
- Realise the potential for new recreation activities and commercial opportunities, ranging from the operation of a kiosk to management of the Park or specific facilities;
- Maintain the long-term management agreement with Scouts NT for the Woorabinda Youth Camp Area;
- Work with the community and volunteers to promote more public involvement in the Park; and
- Protect the monsoon forest communities through implementing targeted fire and weed management programs.



*The Park is a place where the community and visitors can relax and enjoy the outdoors
(Top right photo: © Michael Barritt 2012)*

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Introduction

The Park and its Purpose

Howard Springs Nature Park will be managed and developed to provide the local community and visitors with the opportunity to relax, picnic and enjoy natural landscapes in close proximity to Darwin and Palmerston. The Park is a community asset and will be promoted as a place for locals and visitors. Visitor facilities, recreational opportunities and interpretation will be provided through careful planning and implementation of the Howard Springs Nature Park Masterplan and through interpretation programs.

Park management will protect the Park's natural and aesthetic values through effective weed, fire and feral animal management and park maintenance programs. While protection of key natural values including monsoon rainforest pockets, the Spring and the woodlands is important the focus will be to provide quality visitor experiences and recreational opportunities in a healthy natural environment.

Park management will work closely with the local community and stakeholders, to meet community needs and maintain good community relations. Park management will work with Scouts NT to maintain a long-term management agreement for the Woorabinda Youth Camp Area.



"Howard Springs Nature Park is an icon of Darwin's history and identity. From its beginnings as a rich resource for the Larrakia people – over many millennia, it has serviced the needs and desires of our many diverse peoples over time."

*Quote from a member of the Local Management Committee
2011.*

*Howard Springs was a popular recreation site in the late
1950s (Steve Lorman Collection, Northern Territory Library)*

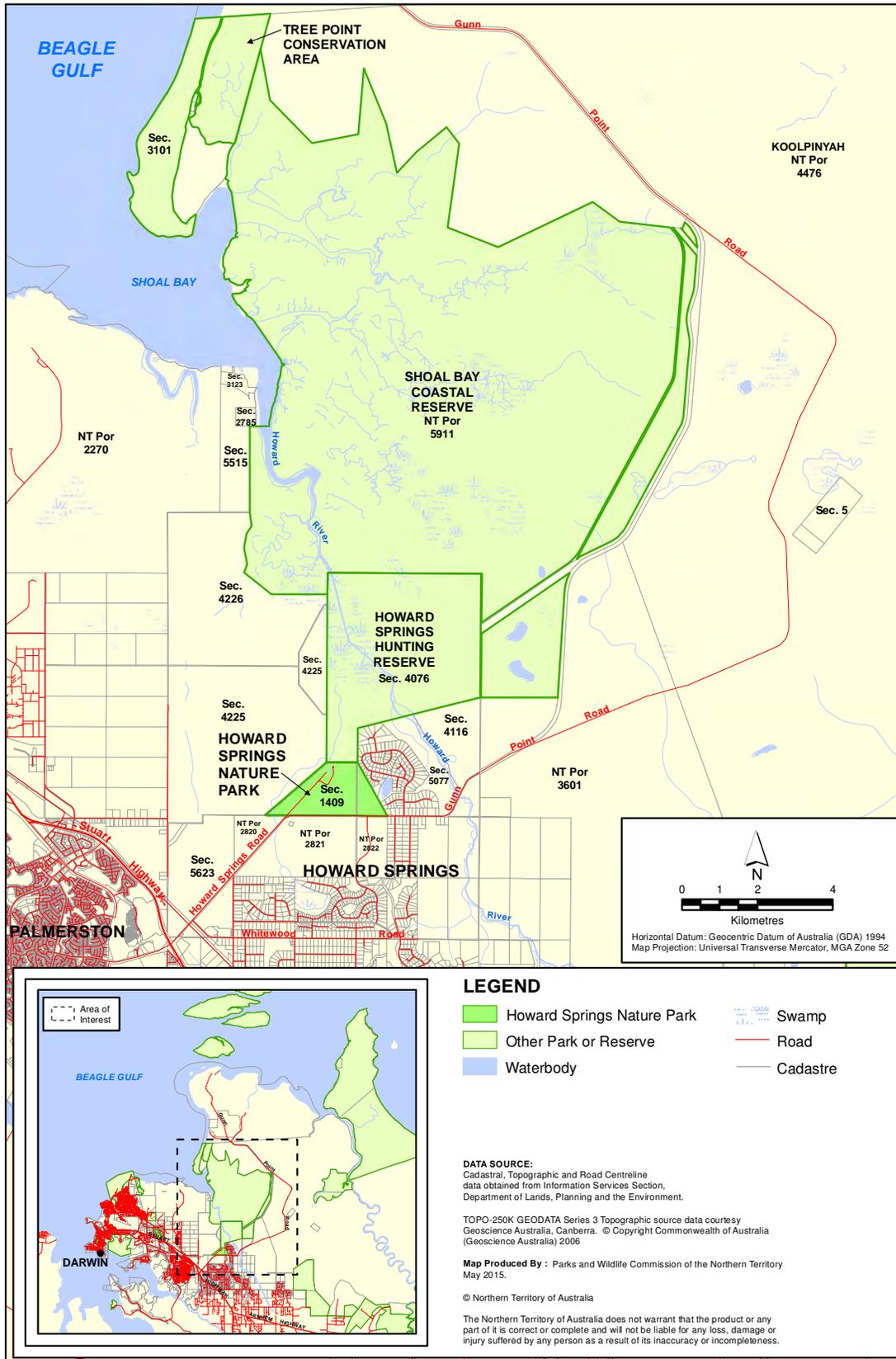
Location and Reservation

The Park (NT Portion 1409 and Section 4080) is located in the rural area approximately 35 km by road east of Darwin and 15 km east of Palmerston (Map 1). It has historical importance to the local Indigenous and non-Indigenous community. 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 was also used as a rest camp by both American and Australian service personnel.

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, NT Portion 1409 became a Recreation Reserve under the care, control and management of the Northern Territory Reserves Board.

In 1978 and again in 2002, the Recreation Reserve (NT Portion 1409) was re-declared a Nature Park under section 12 of the *Territory Parks and Wildlife Conservation Act*. Section 4080 was originally a road however it was closed, set aside and declared a park in 1985. The Park is about 286 hectares.

Map 1: Locality Map



Managing for Visitors

A Vision for Visitor Experiences

Howard Springs Nature Park is a park for the community where visitors and locals will feel ownership of the Park and can be active or relax in a bushland setting protected from urban expansion. The Park is an iconic tourism and family destination offering high-quality nature based experiences.

Visitor Use

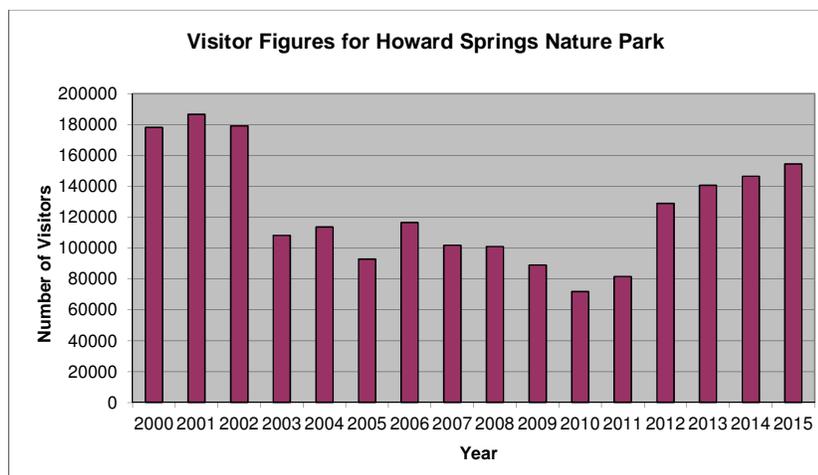
Outcomes

- A community place providing for the enjoyment of visitors and locals, through recreational activities that promote activity and enjoyment of a natural setting.
- Improved standard of facilities in the Park for recreation activities.

The Park offers visitors the experience of viewing wildlife, picnicking, walking, bird watching and cooling down in a relatively natural environment that is easily accessible to residents of the greater Darwin area (see Map 2). The Park received over 150 000 visitors in 2015 most of whom use the rock pools, playground, walk, picnic and view the aquatic wildlife in the waterhole. The Park is popular with local, interstate and international visitors. In the peak visitor period of June, July and August the highest proportion of visitors are from interstate. In the Wet season the highest proportion of visitors are locals and the main activities are viewing wildlife, cooling down, picnicking and relaxing.

The Park is set within a spectrum of other parks and reserves in the greater Darwin area, protecting natural and cultural values and providing for community and visitor recreation. The Park is located approximately 15 km from the Palmerston town centre and is accessible via an all-weather sealed road off Gunn Point Road. With the increasing expansion of Palmerston and Howard Springs, in particular the development of the new hospital, the prison, and the proposed intensification of some larger rural blocks, use of the Park is likely to increase. It will be important that the Park provide recreation facilities, activities and protect an area of natural bushland. Careful development and management of the Park will be important in maintaining values while offering a nature escape in the middle of a fast growing urban area.

Graph 1: Visitor figures for Howard Springs Nature Park (Parks and Wildlife Commission 2016)



Graph 1 shows that visitor numbers to the Park declined significantly from 2003 due to the frequent closure of the waterhole to swimming as a result of poor water quality. In 2009 the Territory Government committed \$3 million to redevelop the Park as a major tourism and family destination. The redevelopment comprised 3 stages including Stage 1 – Howards Springs Trial Water Quality Improvement Works; Stage 2 – Construction of the shallow rock pools and viewing platforms; Stage 3 – Construction of a playground and picnic facilities (see also Visitor Facilities section).



The walking track through the monsoon rainforest is very popular with visitors.

To help inform the redevelopment of the Park, the Minister established a Local Management Committee (LMC) in 2009. The LMC comprised 4 community representatives, 1 representative from the Larrakia Nation Aboriginal Corporation and 1 representative who is an employee of the Parks and Wildlife Commission. The LMC provided advice on:

- the review and implementation of the Plan of Management;
- the planning and design of works and facilities;
- the granting of concessions and licences for commercial operations in the Park;
- the programs for the protection and management of native plants and animals; and
- use of the Park by visitors.

The maximum term of office for the LMC was 2 years however the Committee continued on until the development works and draft Plan of Management were complete.

Howard Springs Waterhole

The waterhole is spring-fed and surrounded by monsoon forest. It was dammed by the construction of the weir in 1944 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. The waterhole is part of a functioning ecosystem that is influenced by existing biological, climatic, draw down on the water table and seasonal conditions and the quality of the water will change as these conditions vary throughout the year.

Waterhole History and Management

Swimming occurred in the waterhole since the weir was constructed in 1944. Through archive records it is apparent that water quality has been an issue from as early as 1963 (PWCNT website – ‘History of Events’). These records show that in 1963 the Army was required to dredge the waterhole to remove the excess weed and silt. In 1977 a Parks and Wildlife report said that visitor numbers had declined and that

the waterhole needed urgent treatment to remove the excess weed growth and the build-up of silt and organic matter.

In 1979 attempts to improve the water quality met with only partial success. In 1982 a visitor survey indicated that visitors wanted the weed and silt removed from the waterhole. In 1986 the waterhole was closed and drained and dredged and a total of 7 000 m³ of silt was removed. As part of these works a children's wading pool was built into the side of the main waterhole. Bacteriological analysis of the water before and after the works indicated no real net benefit.

"My most outstanding memory of Howard Springs was swimming with my best friend before the spring was closed to swimming. We were both afraid of the barramundi biting our toes! However every time after swimming in the waterhole I would always get tropical ear."

Quote from a member of the Local Management Committee, 2011.

Water quality guidelines were applied to the waterhole in 1999. In 2005 the waterhole was again closed to swimming due to poor water quality and reopened in 2006 only to close again in May 2007. The waterhole has been closed to swimming since this time. The Territory Government has a duty of care to ensure that water quality in recreational water bodies is maintained to acceptable standards consistent with the permitted uses.

In August 2009 the consultants Sinclair Knight Merz (SKM) were commissioned to undertake consulting studies for the Howard Springs Trial Water Improvement Works. The works included the removal of the aquatic wildlife, emptying, dredging and cleaning the build up of detritus and silt. Clean sand was placed on the bottom of the waterhole and the waterhole filled naturally over the Wet season.



Works undertaken to clean out the waterhole in late 2009.

SKM undertook a sanitary survey, risk assessment and a recreational water quality monitoring program of the waterhole over a 12 month period. The SKM Report (SKM, 2010) concluded that works undertaken to restore water quality to enable swimming were unsuccessful. The water quality of Howard Springs waterhole is highly unpredictable and when monitoring was occurring, the water quality continued to fall outside the safe range for swimming. The Parks and Wildlife Commission has a duty of care to ensure visitors are safe when visiting parks and reserves and are not exposed to health risks. For these reasons the waterhole will not open to swimming. The rock pools have been constructed to provide an alternative way for visitors to cool down when visiting the Park.

The LMC agreed that other uses of the waterhole should be promoted and that the waterhole should be restocked with barramundi to re-establish the fish viewing attraction.

The Parks and Wildlife Commission with assistance from the Department of Environment and Natural Resources will develop a Waterhole Management Plan to look at the future management requirements to maintain a healthy waterhole and aquatic ecosystem.

Management Actions

- The Howard Springs waterhole will remain closed to swimming. (Ongoing)
- With assistance from the Department of Environment and Natural Resources, develop and implement a Waterhole Management Plan to maintain a healthy waterhole and aquatic ecosystem. (Medium)

"The springs have endured many changes over time and is presently undergoing a considerable investment in infrastructure to ensure that the community remain engaged in utilising the Park's resources for recreation, education and relaxation alike."

Quote from a member of the Local Management Committee, 2011.

Visitor Facilities

Current Park infrastructure on the western side of the waterhole includes car parks, picnic and barbeque facilities, a ranger station, workshop, ablution block, toddlers pool, a walking track and small viewing platform over the waterhole (see Map 2). Facilities located on the eastern side of the waterhole include the shallow rock pools, playground, picnic and barbeque facilities, an ablution block, group shelter and a large viewing platform over the waterhole. Other facilities include the Woorabinda Youth Camp area (see section on Woorabinda and the Scouts).

The ranger station at the end of the main car park provides a poor sense of arrival to the Park with limited information and a small office adjacent to the old kiosk. The covered veranda area is well used by visitors, interest groups and staff. A replacement office and visitor display area enhancing visitors' sense of arrival could improve the Park.

The existing toddler pool is located beside the office, is round, has a depth of 0.6m and is covered by a shade structure. Long-term there will be a need to review its function as maintenance requirements increase as the pool ages.

In 2009 the Territory Government committed \$3 million to redevelop Howard Springs Nature Park as an iconic tourist and family destination. These works were completed in October 2012 and since opening, visitor numbers to the Park increased significantly. Visitor figures for July 2015 were almost 19 000 compared with only 9 228 in July 2011.

Works to improve the Park included the installation of shade structures over the rock pools and the construction of a group shelter over the eastern side of the waterhole to promote more community use of the Park.

The Park is popular with visitors, since the development of the shallow rock pools. (Photo: © Michael Barritt 2012)



In December 2010 the LMC reintroduced barramundi into the main waterhole. Previously feeding the barramundi and turtles was a very popular activity for visitors and in the height of the visitor season the high number of visitors feeding the aquatic wildlife could lead to food left floating on the surface of the water. The feeding of aquatic wildlife will be monitored and if necessary restrictions or regulations may be imposed.



The Local Management Committee releasing barramundi into the waterhole

"The Howard Springs Local Management Committee was appointed to assist with the rejuvenation of the Park and to oversee that developments had a strong community and conservation focus. A community survey undertaken by the committee in 2010 strongly supported the view that the Park should remain a natural resource for future generations with a strong focus on environmental education. As such the committee has strived to ensure these outcomes and will work towards providing a Park that is valued, utilised, protected and enhanced by the local Darwin community and visitors alike."

Quote from a member of the Local Management Committee, 2011.

Management Actions

- Construct a replacement office including visitor reception and display area with the view to providing visitors with a clear sense of arrival and visitor information, when funds become available. (High)
- Review the future of the toddler pool. (Low)
- Install interpretation throughout the playground to explain the links between the different playground equipment and the natural values of the Park. (Medium)
- Monitor fish feeding activities in consultation with Park users and aquatic specialists to maintain the health of the fish and implement actions as required. (Medium)

Proposed Future Developments

Proposed future developments include the formalisation of the track to the spring. Currently visitors make their own way in to view the springs. The formation of a track would improve visitor safety and prevent erosion and damage to the vegetation along this informal track.

Another activity that is being investigated in the Park is a high-ropes adventure course. This activity would be run by a private operator.

The existing walking track below the weir leaves the Park and enters the buffer area within Howard Springs Hunting Reserve before re-entering the Park (refer Map 2). The portion of the Howard Springs Hunting Reserve that contains the walking track will be revoked and re-declared as part of the Howard Springs Nature Park.

The Parks and Wildlife Commission will investigate new recreation activities including more walking tracks and potentially cycle tracks and commercial opportunities. New recreation activities will only be permitted if they don't conflict with other uses or impact on the Park's natural values. Commercial opportunities that enhance the visitor experience will be sought. These opportunities range from the operation of a kiosk to management of the Park or specific facilities.

"This park has always been an important recreational area for families particularly with young children where it is safe to get wet etc in the build-up and early wet season. I hope that it remains as an asset for the people of Darwin and surrounding area."

Quote from a member of the public through the Community Survey.

Landscape Masterplan

A Landscape Masterplan was prepared in 2012 which seeks to resolve issues with stormwater, services, circulation, expansion and facilities. Key proposals in the Masterplan include:

- A new Rangers office including visitor reception and display area;
- Re-design and expansion of existing car parks to provide more car parking and better traffic flow;
- Upgrading the road intersection to improve visitor safety;
- An elevated walkway through the monsoon forest to the spring;
- The addition of a kiosk to enhance the visitor experience; and
- Improved park furniture to improve the experience and accessibility.



Families enjoy spending time in the Park.

Management Actions

- Formalise the walking track from the waterhole to the spring and install direction and information signs, and a viewing deck to assist in regulating access. (High)
- Walking and cycling in the Park will be permitted on designated tracks and service roads only. (Ongoing)

- Revoke the portion of the Howard Springs Hunting Reserve that contains the walking track and re-declare it as part of Howard Springs Nature Park. (Medium)
- Develop additional walking and cycle tracks within the Park, subject to demand. (High)
- Support commercial enterprise that promotes visitor engagement in the Park. (Medium / High)
- Implement the Howard Springs Nature Park Landscape Masterplan, subject to resources.

Visitor Safety, Information, Interpretation and Monitoring

Outcomes

- Public risk effectively managed resulting in very low incidence of injury to visitors.
- Clear interpretation and directional information enhancing visitor enjoyment and understanding of park values.
- A clear understanding of visitor numbers, demographics, activities, preferences and satisfaction levels to assist park management and planning.

With the opening of the new shallow rock pools and the nature themed playground, the Park has again become a place for families to relax and enjoy the outdoors. To ensure safety of visitors the toddlers pool and the eastern side of the waterhole including the rock pools and playground are 'glass free' areas. Glass containers are permitted within the picnic areas on the western side of the waterhole. Signage has been erected to advise visitors of these 'glass free' areas.

Interpretation in the Park can enhance visitor enjoyment and provide an avenue for visitors to learn and appreciate the natural and cultural values of the Park. It is essential to provide up to date and interesting information. The Park currently provides two forms of interpretation through interpretive signage located throughout the Park and through ranger guided activities. Information is also provided by the tourism industry and tour groups.

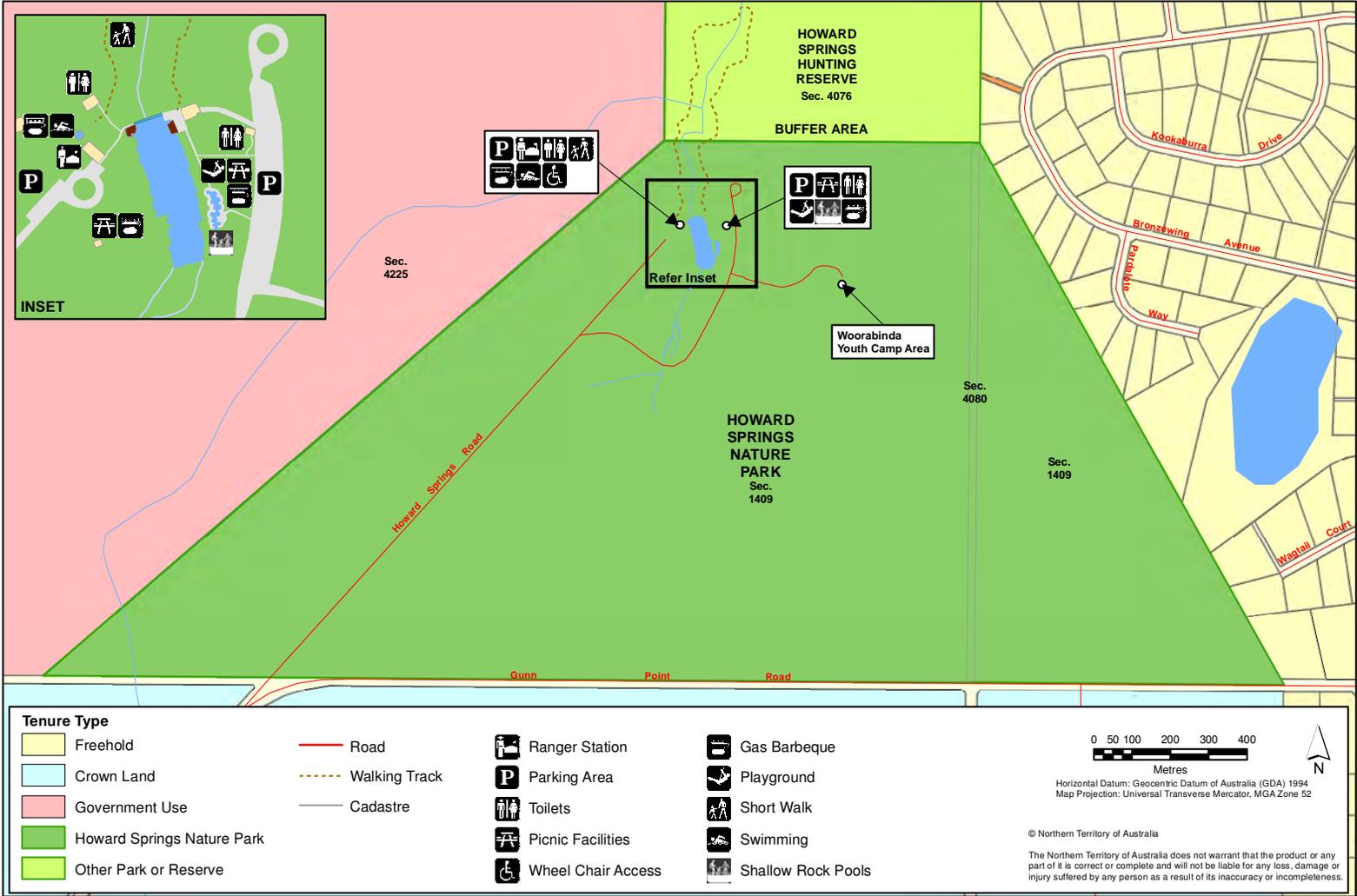
Visitor monitoring is essential in improving knowledge and understanding of visitor behaviour, helps improve park management and a requisite for conserving values of the Park. Rangers collect information on vehicle numbers through traffic counters.

The Parks and Wildlife Commission will continue to maintain accurate visits data from traffic counters in the Park. Park staff will carry out visitor surveys to ascertain visitor satisfaction, profile and use of the Park about every three years.

Management Actions

- Ensure interpretive material provided is accurate and informative. (High)
- Visits data from traffic counters and periodic visitor surveys will be conducted in accordance with the Parks and Wildlife Commission Visitor Monitoring Program. (High)

Map 2: Tenure and Park Facilities Map



Community Involvement

Outcomes

- A highly engaged community supporting the Park and its management.
- Effective collaboration with stakeholders and the community producing conservation outcomes for the Park.

Ultimate responsibility for management of the Park rests with the Parks and Wildlife Commission however there are a number of stakeholders with interests in the management of the Park. The largest of these are the users of the Park which is the community. Community involvement in the Park can include passive and / or active involvement.

The involvement of the local community in management of the Park provides benefits for both the community and the Parks and Wildlife Commission. Benefits include increased community support, additional resources, and opportunities for individuals and groups to serve the community and increase knowledge and skills. Many Park users do not want to be involved in management programs however they do want to remain informed about management of the Park. There is a need to engage all stakeholders including businesses and visitors in order to maintain support for the Park.

Another way to involve the community is through volunteers. Volunteering can be a very rewarding experience for all those involved and it can help achieve management objectives. The use of volunteers in the Park will be encouraged.

"The Park has a long history of connection to community; from its enduring association with the Larrakia, to its WWII development and use, to its utilisation by the Scouting movement through the Woorabinda camp, and to the numerous Darwin community groups and families that have regularly held picnics at the site."

Quote from a member of the Local Management Committee, 2011.



*Community engagement in action in the Park – Rangers working with Taminmin College students to decorate Park furniture.
(Photos: © Michael Barritt 2012)*

The LMC provided invaluable input into the redevelopment of the Park and the preparation of the draft Plan. The term for the LMC has now expired however the Parks and Wildlife Commission will continue to engage and consult the community in any new developments and management of the Park.



Members of the Howard Springs Nature Park Local Management Committee, at work on the Park redevelopment in 2011.

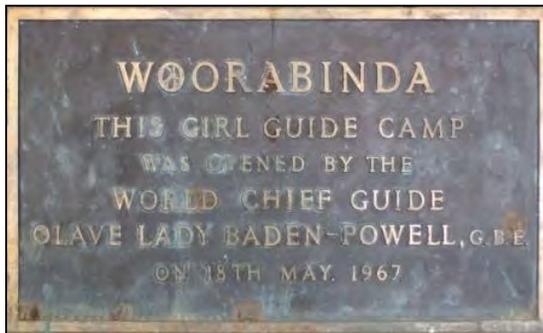
Aboriginal Involvement

The Larrakia people are the custodians of sacred sites and sites of significance and have knowledge of the natural values of the area. Shell middens found outside the Park suggest that the area was an important resource for Aboriginal people. From this perspective it is important to involve and consult with the Larrakia people especially in regards to the management of Aboriginal heritage sites.

Woorabinda and the Scouts

Located within the Park is the Woorabinda Youth Camp area. This campground was officially opened by the World Chief Guide, Olave Lady Baden-Powell in 1967 (see also *Managing Cultural Values* section). Since its opening, Woorabinda has been a popular location for Scout and Girl Guide groups. In 2008 the Youth Camp was closed due to the poor condition and standard of facilities.

Results from a Community Survey carried out by the LMC in June 2010 indicated over 83% of respondents wanted to see the development of an Educational Campground for school and community groups within the Park. Due to this high response, the Parks and Wildlife Commission with the assistance of the LMC, approached Scouts NT to discuss a long-term access and management agreement over the Woorabinda area and surrounding land. A long-term agreement was established giving the Scouts NT management and responsibility for the area.



The plaque at Woorabinda

Scouts, Girl Guides, school and education groups will be permitted to camp within the Woorabinda Youth Camp area through the approval and management of Scouts NT.

Management Actions

- Encourage volunteer participation in the management of fire, feral animals and weeds. (Ongoing)
- Continue to engage and consult with the community on any new developments in the Park. (Ongoing)
- Maintain the long-term management agreement with Scouts NT for the Woorabinda Youth Camp area. (High)
- Camping within the Woorabinda Youth Camp area will be managed through Scouts NT. (Ongoing)
- Camping is not allowed outside the Woorabinda Youth Camp area.

Managing Natural Values

The Regional Setting

Howard Springs Nature Park is located in the Darwin Coastal bioregion which extends from the Fitzmaurice River in the west to the East Alligator River in the east. The Park represents less than 1% of the reserved area in the Darwin Coastal bioregion but the bioregion is well reserved by parts of Kakadu and Litchfield National Parks.

The Park 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 freshwater habitat is protected in parts of the Park and in the Howard Springs Hunting Reserve.

The Park is located within the Howard Sand Plain and Shoal Bay Sites of Conservation Significance. Sites of Conservation Significance are areas that have been identified as the most important sites for biodiversity conservation as they contain special biodiversity values that need additional protection. Due to the small size of the Park it does not contribute significantly to the protection of these Sites of Conservation Significance.

Management Effectiveness Framework

The Management Effectiveness Framework, designed by the Parks and Wildlife Commission, informs priority setting and resource allocation across the system of the NT Parks and Reserves. Part of the framework establishes the relative importance of each park in the context of the park system, by assessment of each park's contribution to biodiversity conservation, and recreation and tourism. It does not rate the significance of cultural sites across the park system. The framework also groups parks of similar importance and prescribes general management standards to each group.

Howard Springs Nature Park is a Class 2 Tourism and Recreation park and a Class 3 Biodiversity park. As a visitor Class 2 park of tourism and recreational value it is required for the Park to be promoted, managed, developed and presented as a regional/ national standard experience or significant urban park. Class 3 parks for biodiversity value require management of the Park to protect identified, usually limited and site-specific conservation values.

Landforms, Soils and Hydrology

Outcomes

- A reduction in erosion, sediment and nutrient influx into the Park.
- No or minimal impact of sediment runoff in the Park.

The 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 occur within the plateau surface and frequently contain lagoons. The soils in these drainage areas and those within the floodplain of the Howard River are usually waterlogged during the Wet season.

Sand extraction occurs on the land adjoining the Park's western boundary. These activities have the potential to cause erosion and may have a visual impact. Consultation with neighbours is necessary to minimise these potential impacts.

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 Park. The flow of water is important to 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 or dredge the waterhole. 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.

Management Actions

- Monitor culverts for sediments and pollutants and if necessary either dredge the waterhole or install sediment and pollutant traps and / or a retention basin to minimise the sediments and pollutants entering the waterhole and spring. (Ongoing)
- Liaise with relevant neighbours to minimise the potential for erosion or a visual impact from sand extraction. (Ongoing)

Howard Spring

Outcome

- The waterhole's water quality maintained so that water dependant vegetation communities and aquatic ecosystems are healthy.

The groundwater spring in the 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.



The rock wall constructed around the spring

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 the Park. Records from monitoring bores in the area show that after a series of low rainfall years the level of groundwater in the aquifer drops and the spring ceases flowing. In low rainfall years it is likely that the spring ceases flowing earlier in the Dry season than under normal conditions because of the drawdown from surrounding bores. In normal rainfall years the spring remains largely unaffected by the drawdown from surrounding bores. Water allocation

planning is being developed by the Department of Environment and Natural Resources for the Howard East Aquifer area and will take into account the long term requirements of Howard Springs Nature Park and other natural environments in order to maintain functioning ecosystems consistent with declared beneficial uses. Ongoing monitoring of the spring is planned to improve understanding of the spring and the effects 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 to minimise silting of the spring outlet.

The Beneficial Uses as declared under section 73(1) of the *Water Act* for the Darwin Harbour Region and apply to all natural waterways (including Howard Springs and Howard River) are agriculture, environment, cultural and rural and domestic stock. The Act also declares the water quality objectives that apply to the Darwin Harbour. The management of water resources in the Park are consistent with the declared beneficial uses.

Management Actions

- Maintain the rock wall around spring to divert runoff and minimise the potential for the spring to be blocked. (Ongoing)
- Liaise closely with Department of Environment and Natural Resources staff responsible for water allocation planning to ensure that the values of the Park are considered in water allocation planning and to improve understanding of surface and ground water resources in the catchment. (Ongoing)
- Retain natural drainage patterns except where drainage diversion is required to protect the resources or facilities of the Park.

Aquatic Plants

A number of emerging, submerged and floating aquatic plants (macrophytes) are present in the waterhole including *Ottelia alismoides*, *Ceratophyllum demersum*, *Nymphaea pubescens*, *Vallisneria nana*, *Cyperus platystylis*, *Lemna aequinoctialis* (Anh Tho Tien 2002). Little is known about the distribution or significance of water plants in other waterways in the Park.

Aquatic plants occur naturally in the waterhole. These plants are an essential part of a healthy functioning aquatic ecosystem; they provide habitat for organisms that help to improve water quality, stabilise sediments, reduce the amount of suspended solids in water columns, and remove nutrients from sediment. When they are present in large amounts they can have a damaging effect on water quality and aquatic ecosystem health. Aquatic plants can also be visually unappealing as floating mats.

The growth of aquatic plants increases in the Dry season when water flow decreases or when there are increases in nutrients in the water and sediments. Aquatic plants may be removed from the waterhole if they are having a negative impact on the aesthetics or recreation experiences of the waterhole.

Management Actions

- Minimise the use of fertilisers on lawns and gardens in the Park particularly on those areas adjacent to and upstream of the waterhole. (Ongoing)
- Remove the aquatic plants in the waterhole according to the Waterhole Management Plan, prepared with assistance from the Department of Environment and Natural Resources. (Ongoing)

Flora and Fauna

Outcomes

- The monsoon forest communities are protected and healthy, assisting conservation of biodiversity across the wider landscape.

The Park supports a diverse range of vegetation communities and flora species which are essential to maintaining biodiversity in the Park and the broader catchment. Of particular importance are the swamps, aquatic plant and monsoon forest communities.

The distribution of vegetation communities within the Park is strongly influenced by the soil types, springs and drainage patterns. Much of the Park is well-drained and supports an open forest/woodland. 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 damp depressions and are mixed with ironwood (*Erythrophleum chlorostachys*) and swamp bloodwood (*Eucalyptus polycarpa*) on the slopes.



"With its natural springs sustaining a myriad of life, including a very special and beautiful patch of monsoon forest and environs, it has enabled us to enjoy the wonders of nature at our doorstep."

Quote from a member of the Local Management Committee, 2011.

The monsoon forest in the Park.

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; riverine and spring fed. Price et al (1998) suggests that retaining all monsoon forests is essential for conserving biodiversity in the wider landscape because these areas are important for seed dispersal and habitat for highly mobile fauna species that use both woodland and monsoon forest habitats.

Fifteen amphibians (frogs and toads), 34 reptiles, 13 mammals, 127 birds and 17 fish have been recorded for the Park. This list includes *Varanus panoptes* (Floodplain monitor) and *Utricularia dunstaniae* which are listed as vulnerable in the Territory and 6 other species which are listed as data deficient. The critically endangered *Dasyurus hallucatus* (Northern Quoll) has been previously recorded in the Park however it is not known whether any remain since the arrival of Cane Toads to the area.



The Northern Quoll and Northern Snapping Turtle have been recorded in the Park



Six species of native mollusc have been recorded in the waterhole over the years. Of particular interest is the Beautiful Snail (*Sermyla venustula*) which is considered to be rare. It is unknown what impact the dredging of the waterhole in late 2009 had on these species however the Beautiful Snail was recorded in the waterhole after it was dredged in 1986.

Research and monitoring is carried out by the Department of Environment and Natural Resources, other government agencies and individuals. Associated activities including interfering with wildlife and taking, interfering or keeping protected wildlife requires a permit issued under the *Territory Parks and Wildlife Conservation Act* or the By-laws.

Management Actions

- Protect the Park's monsoon forest communities through targeted fire and weed management programs integrated into annual operational plans. (High)
- Remove exotic plant species from the Park. Only native species will be planted in the Park.
- Survey for the presence of the Beautiful Snail and Northern Quoll. (High)
- Establish research partnerships with education/ research institutions to support research programs across the Darwin Region Parks. (High)

Managing Threatening Processes

Fire

The Howard Springs area has been subject to regular burning since pre-European settlement times. Fire management in the Park focuses on protecting lives and assets in the event of wildfires. Management programs aim to reduce the frequency, intensity and extent of fires and prevent wildfires from entering the Park and/or escaping from the Park to surrounding properties.

Mandatory firebreaks are established around the Park boundaries to protect both the Park and the neighbouring properties. There are also a number of internal firebreaks to protect visitors and Park infrastructure. Maintenance of the firebreaks is the key element in the Park's Fire Action Plan. This Plan is developed with input from key stakeholders, NT Fire and Emergency Services and Bushfires NT.

The presence of the weed Gamba Grass in the Park has led to an increased risk of fires. The management of this weed is dealt with below.

Weeds

There are currently 19 weed species listed for the Park including *Andropogon gayanus*, *Hyptis suaveolens*, *Stachytarpheta spp*, *Sida acuta* and *Sida cordifolia*. The weeds of most significant threat to the biodiversity values of the Park are Gamba grass (*Andropogon gayanus*) and Mission grass (*Pennisetum polystachion*).

Weeds are generally located around visitor sites and along walking tracks, fire breaks and service roads. Exotic trees were planted to provide shade near the waterhole and in the picnic areas in the Park. With increasing development next to the Park there is a corresponding increase in the risk of exotic plants and weeds entering the Park. Weeds may also be spread by native and feral animals as they move through the Park.

The Park has an annual Weed Action Plan that identifies weeds that impact on the aesthetics and fire risk of the Park and these weeds are targeted for control. The Plan also specifically targets the removal and control of Gamba grass and Mission grass which is known to increase fire risk. In accordance with the

Weed Management Act, the Weed Action Plan also aims to minimise the spread of weeds throughout the Park.

Exotic Pests

Feral animals recorded within the Park can include cats, dogs, buffaloes, pigs and cane toads. Buffaloes and pigs have been largely excluded from the Park by the boundary fence but occasionally animals enter the Park from the neighbouring Hunting Reserve when fences are damaged. The main aim of the Feral Animal Action Plan in the Park is to remove dogs and pigs from the Park and prevent them from re-entering where possible. Dogs entering the Park can be a major issue. Park staff will liaise closely with the Wildlife Operations and Litchfield Municipality to determine suitable methods of removing dogs from the Park.



Big headed ant, Pheidole megacephala
(CSIRO)

For over 15 years the big headed ant (*Pheidole megacephala*) has been found in the Park. Historically, this ant species has been confined to a single area of about 25 ha, with its distribution centred on drainage lines and the rain forest (Hoffman et al, 1999). It has had a significant impact on native ant species, insects, snails, spiders and centipedes. A survey in 2013 showed a decline in its population in the Park (pers comm B. Hoffman 2013). Research opportunities exist to use external sources to reduce the impact and possibly eradicate this species from the Park.

Management Actions

- Annually review and implement a Fire Action Plan in consultation with the NT Fire and Emergency Services and Bushfires NT. (High)
- Undertake controlled burning inside the Park boundaries, around assets and in selected areas, to reduce fuel loads and minimise the risk of large intense fires. In accordance with the *Bushfires Act*, the Fire Action Plan will be reviewed and updated annually. (Ongoing)
- Annually review and implement the Weed Action Plan (High) The Plan will:
 - *Target strategic areas where the weeds have the potential to spread into new areas; and*
 - *Where possible, maintain the main visitor use areas free of weeds, particularly the picnic areas and walking tracks;*
- Annually review and implement the Feral Animal Action Plan focussing on the removal of pigs and dogs from the Park. (High)
- Maintain boundary fencing. (High)
- The entry of pets will be consistent with the Parks and Wildlife Commission's Pets in Parks Policy. (Ongoing)
- Support opportunities for external sources to research management and possible eradication of exotic ants. (High)

Managing Cultural Values

Outcome

- Cultural heritage sites identified and appropriately managed.

Aboriginal Cultural Values

The Park lies within the area traditionally occupied by the Larrakia people. Little is known of early Aboriginal use of the area which is now the Howard Springs Nature Park. There is a recorded sacred site located within the Park and it is likely that the spring would also have had importance to the local Aboriginal people. There are recorded sites of significance in the adjacent Hunting Reserve and Shoal Bay Coastal Reserve and their presence suggests that the area was used by Aboriginal people over long periods of time and that the area was a productive hunting and gathering area.

Nothing in the *Territory Parks and Wildlife Conservation Act*, limits the right of Aboriginals who have traditionally used an area of land or water from continuing to use that area in accordance with Aboriginal tradition for hunting, food gathering and for ceremonial and religious purposes.

The Parks and Wildlife Commission acknowledge that cultural knowledge belongs to the traditional Aboriginal owners and will not use, or permit to be used, such knowledge without prior consent of traditional Aboriginal owners. The Parks and Wildlife Commission will assist the traditional Aboriginal owners assert their intellectual property rights consistent with Parks and Wildlife Commission policy.

European Historical Values

The area around the spring and creek below the spring was extensively cleared and 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 name of the Australian field regiment (Aust. Field Coy. RAE AIF – 1st Field Company Royal Australian Engineers Australian Imperial Force) and the year (1944) that the weir was built are inscribed in the concrete to the west of the weir.

The sites associated with the WWII rest camps are not declared a Heritage place under the *Heritage Act*, but are considered significant and are valued by the community. They provide insight into the lives of personnel serving in the Top End during the War. The rest camps were important to the troops as they enabled some respite from the stress of living under constant shelling and danger. Some statistics show that troops could not spend more than 30 days in a combat situation without losing their fighting abilities.



Left: The Royal Australian Engineers building the weir in 1944 (Images supplied by Australian War Memorial

Right: Soldiers of the 5th Battalion Australian Army enjoying the Park after an early morning route march (2012).



The Woorabinda Youth Camp could also be recognised as historically significant. In 1962, an NT News article stated that the Administrator had agreed to grant the Guides a special block of land near Howard

Springs. The site was called 'Woorabinda', meaning camp by a deep water hole. As mentioned previously, the camp ground amenities block was officially opened by the World Chief Lady Baden-Powell in 1967. 600 Guide and Scout youth members were present for the opening along with the Administrator.



Lady Baden-Powell
at the official
opening of the
Woorabinda Camp
Ground (Photos
courtesy of Girl
Guides NT)



The *Heritage Act* provides protection to prescribed archaeological places and objects and declared heritage places and objects in the Territory. Any proposed work on prescribed places and objects will require consultation and permission in accordance with the *Heritage Act*. Importantly, sacred objects are not protected under NTASSA, but the *Heritage Act*.

Management Actions

- Develop a Cultural Heritage Management Plan documenting all known cultural heritage sites and their management. The management and protection of sacred sites will be assured. Authority certificates from the Aboriginal Areas Protection Authority will be sought for works on the Park, as required. (Medium)
- Continue to manage the historical sites within the Park. Upgrades or works to the sites will be in accordance with the *Heritage Act*. (Ongoing)
- Include information about the history and use of the area in the interpretive program. (Medium)
- Staff will work with the relevant Agency responsible for Heritage to identify, record and where possible interpret the sites of historical significance in the Park. (Medium)

Park Administration

Outcome

- Effective management of Howard Springs Nature Park.

Overall management of the Park is guided by a legislative and policy framework, in particular the *Territory Parks and Wildlife Conservation Act*, Regulations and By-laws. For proper management of the Park, and the safety of persons and property, it is essential that By-laws and regulations are in place and properly enforced.

The Parks and Wildlife Commission are responsible for the daily management of the Park and finance and resource the Park's recurrent management programs including administrative, staffing, infrastructure and services.

Funding for the management of the Park is sourced through the Northern Territory Government. Capital works and funded works programs are subject to Territory-wide government priorities. Park managers need to ensure effective allocation of funding across Park management and infrastructure requirements. Park and agency-wide priority setting, monitoring, evaluation and reporting needs to be integrated into a management cycle.

Development Proposals

The Parks and Wildlife Commission welcomes proposals to develop commercial infrastructure within or adjacent to the Park. Such developments may present significant opportunities for business partnerships and result in benefits for visitors, local economies and expanded Park services. All proposals will be considered.

A mobile food van operates, by permit, in the Park. The van offers an added service in the Park through the sale of ice cream, food and shaved iced cones. The Park has long-term potential for private operators to be involved in the management or commercial elements of the Park. New ideas for commercial opportunities will be promoted and encouraged.

The Parks and Wildlife Commission's *Commercial Development Policy* provides the principles to facilitate the development of privately developed and operated tourism infrastructure and services in NT Parks. Any major proposals or new works will be required to comply with this policy and be assessed commensurate with the scale of potential impact consistent with Northern Territory and Commonwealth legislation.

The Parks and Wildlife Commission is developing a Tourism and Recreation Masterplan for the NT park estate. This document will identify opportunities for new or enhanced experiences primarily across the top 20 parks in the estate. Direction provided by the Masterplan will be considered in any future development of the Park.

Mining

There are two Reserved Lands under the *Mineral Titles Act* within the Park (RL 1143 and RL 1394). Due to the Park being only 283 ha in size, the Parks and Wildlife Commission in consultation with the Department of Primary Industry and Resources will apply to the Minister for Primary Industry and Resources to declare the entire Park as Reserved Land.

Work and Business Opportunities

The Parks and Wildlife Commission encourages business opportunities in parks and reserves. Enterprises that enhance the visitor experience or assist Park management will be encouraged.

Management Actions

- Commercial opportunities in the Park will be promoted and encouraged. Local Aboriginal people will be encouraged to take up commercial tourism opportunities within the Park. (Ongoing)
- Consider and assess potential impacts of any proposed activity or development commensurate with the scale of potential impact, consistent with Northern Territory and Commonwealth legislation, as appropriate. (Ongoing)
- With the assistance of the Department of Primary Industry and Resources apply to the Minister for Primary Industry and Resources to declare the whole Park as Reserved Land under the *Mineral Titles Act*. (High)



Larrakia artists painting animals of significance to the Larrakia people on the pumphouse walls (Photos: © Michael Barritt 2012)

References

Anh Tho Tien (2002) *Hydrology and Water Quality at Howard Springs Nature Park, Northern Australia*, Masters Thesis. (unpublished)

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1, The Guidelines*.

Australian Water Resources Council. (1988). *Waterplants in Australia*, Merrit Madden Printing, Sydney.

Department of Health and Community Services (2007). *Northern Territory Recreational Microbiological Water Quality Guidelines*. Northern Territory Government.

Hoffman B.D., Andersen A.N., Hill G.J.E., (1999). *Impact of an introduced ant on native rain forest invertebrates: Phedole megacephala in monsoonal Australia*. *Oecologia* 120:595-604.

National Health and Medical Research Council (2008). *Guidelines for Managing Risks in Recreational Water*. Australian Government.

Parks and Wildlife Commission of the Northern Territory (2016). *Visitor figures from the Parks Visits Database*. Data published on the web.

Price, O.F., Bach, C.S., Shapcott, A and Palmer, C (1998). *Design of Reserves for Mobile Species in Monsoon Rainforests*. Parks and Wildlife Commission of the Northern Territory, Darwin.

Sinclair Knight Merz (2010). *Howard Springs - Trial Water Improvement Works, Final Report*. Report prepared for the Northern Territory Government.