HOWARD SPRINGS NATURE PARK AND HUNTING RESERVE

PLAN OF MANAGEMENT

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CONSERVATION COMMISSION OF THE
NORTHERN TERRITORY, NOVEMBER 1992

ACKNOWLEDGEMENTS

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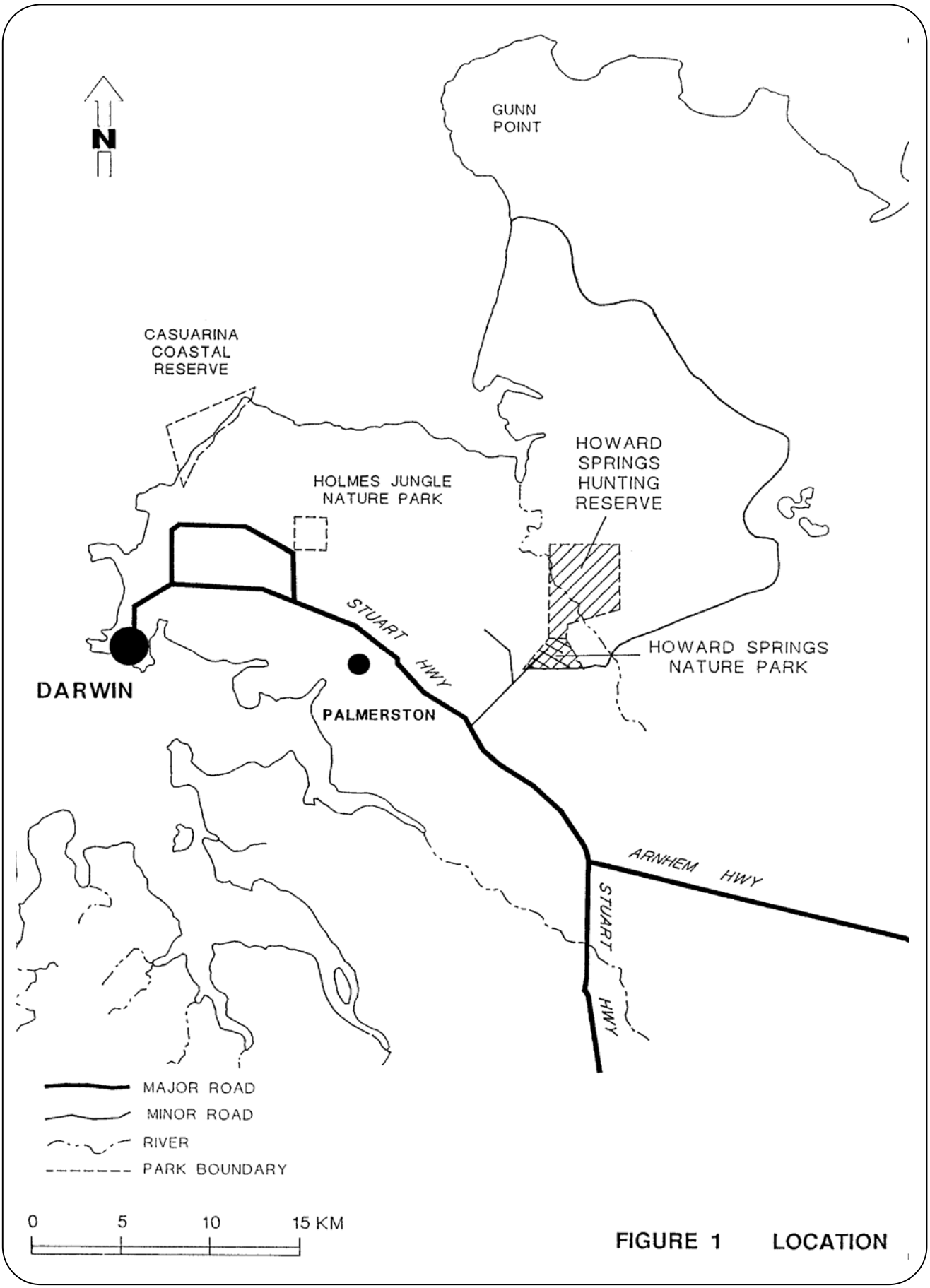

FIGURE 1 LOCATION

1 INTRODUCTION

1.1 Location and Reservation

Howard Springs Nature Park and Howard Springs Hunting Reserve are located approximately 35 km by road east of Darwin and 10 km east of Palmerston (Figure 1). Adjoining the Park to the south is the former Forest Reserve which was revoked and declared a park under section 12 of the *Territory Parks and Wildlife Conservation Act* in 1985 (Figure 2). This area will be subject to a separate Plan of Management. To the north and east of the Park and Reserve is Koolpinyah Station pastoral lease.

The Nature Park occupies an area of 283 hectares and was the first reserve placed under the management of the Northern Territory Reserves Board when the area was proclaimed a Recreation Reserve in 1952. In 1978, the Recreation Reserve was declared a Nature Park under Section 12 of the *Territory Parks and Wildlife Conservation Act*. The Park's primary focus is on the provision of opportunities for public recreation and enjoyment in an attractive setting close to Darwin.

Howard Springs Hunting Reserve was declared under Section 12 of the same act in 1984 for the conservation of flora and fauna and as a game reserve for duck and geese shooting. It is north of the Nature Park and covers an area of 1,605 hectares.

1.2 Planning Context

In addition to this Plan of Management, and flowing from it, a Landscape Masterplan for the Park is in preparation. The future directions for development of the Park will be as laid down in this Plan of Management with implementation following the Masterplan.

The 1982 Plan of Management for Howard Springs Nature Park is superseded by this Plan of Management. The only existing planning document for Howard Springs Hunting Reserve is an Area Statement. This Plan of Management may be regarded as a development and expansion of that document.

1.3 Values of the Park and Reserve

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 declaration of Howard Springs Hunting Reserve broadened the range of recreation opportunities available in the area to include activities such as hunting and fishing.

The **conservation values** of the Park and Reserve derive from the diversity of vegetation and wildlife habitats. Of special importance are the monsoon forest, extensive swamps and riverine areas which provide valuable wildlife habitats, especially for magpie geese, whistling ducks, radjah shelducks and pygmy geese.

The **tourist and recreational values** of the Park derive from the large spring-fed pool which provides safe year-round swimming close to Darwin. Landscaped picnic areas have been developed around the pool. The swamps and forests of the Park and Reserve are also important attractions, providing the opportunity for fishing, hunting and other recreational activities. Both the Park and the Reserve play an important role in providing opportunities for public recreation and enjoyment in close proximity to Darwin.

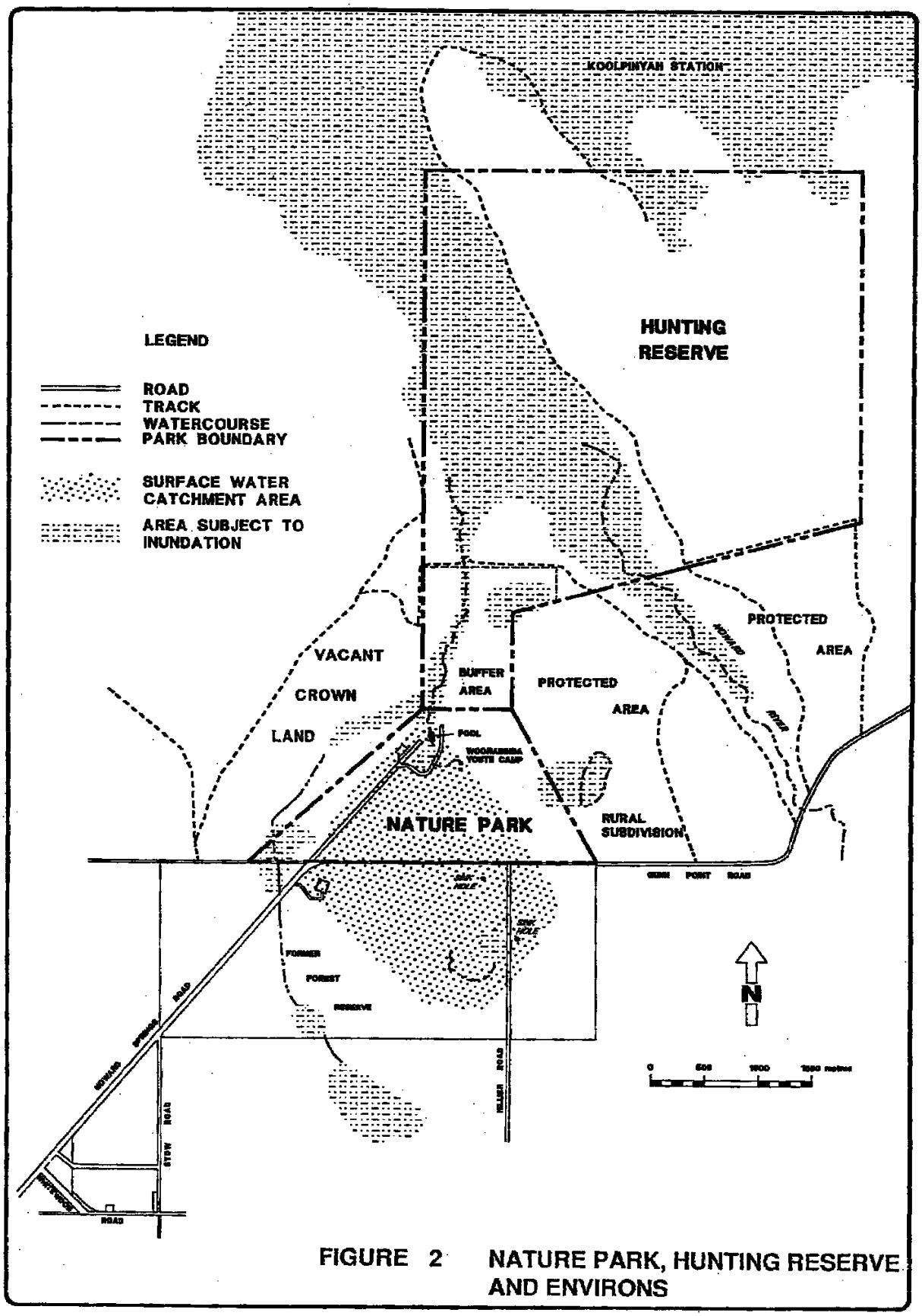

FIGURE 2 NATURE PARK, HUNTING RESERVE AND ENVIRONS

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The Park and Reserve also have considerable **value for education and interpretation** derived from the variety of ecosystems and wildlife 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.

With the increasing expansion of Darwin and nearby areas the Park and Reserve are likely to come under increasing pressure in the future with the respect of the provision of more recreation facilities and the protection of the remaining areas of natural bushland.

1.4 Intent of the Plan

This Plan states the intent of the Conservation Commission of the NT with respect to the management of the Nature Park and the Hunting Reserve. It sets management objectives, addresses current issues and proposes appropriate measures to guide management and development. It has been prepared in accordance with Sections 18 and 19 of the *Territory Parks and Wildlife Conservation Act*, and will remain in force until revoked by a new plan prepared under the Act.

The management proposals and works identified in this Plan are consistent with anticipated resources available to the Commission and anticipated community trends for the next 5 to 10 years.

2 OBJECTIVES OF MANAGEMENT

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

- the encouragement and regulation of the appropriate use, appreciation and enjoyment of the Park and the Reserve by the public;
- the preservation of the Park and the Reserve in their natural condition and the protection of their special features;
- the protection, conservation and management of wildlife within the Park and the Reserve;
- the protection of the Park and the Reserve against damage; and
- the interpretation of the natural features and wildlife of the Park and the Reserve through the provision of interpretative signs, walking trails and environmental education programmes.

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 forest areas;
- the provision of a range of recreational opportunities centred around the spring-fed pool;
- the protection of the water resources.

In addition to the general objectives, the Hunting Reserve will be managed for the following particular purpose:

- the provision of opportunities for sport hunting of approved game species on a sustainable yield basis, while minimising the impact on other wildlife and habitat values.

3 MANAGEMENT OF NATURAL AND CULTURAL RESOURCES

3.1 Landforms, Soils and Hydrology

The Nature Park and the Hunting Reserve are

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 (Figure 2).

The Nature Park is Reserved from Occupation under the *Mining Act.* Sand extraction presently occurs within the Reserve and on land adjoining the Reserve's eastern and western boundaries. This activity has a conspicuous visual impact and is a potential cause of erosion.

Exposed soils, particularly on slopes, are highly erodible. Soil erosion is evident around old sandscrapes, along unprotected creek banks and at informal entry and exit points of the pool. In 1986 the pool was closed, drained and dredged to remove accumulated silt.

The main feature of the Park is the spring-fed pool surrounded by monsoon forest. During normal wet seasons, the pool and its catchments are flushed out by increased surface runoff and spring flow. By the end of the wet season water quality is high. The flow of water from the springs decreases during the dry season and may occasionally totally cease. As the flow decreases and more animals visit the pool with other water sources drying up, the concentration of various materials (organisms, dissolved solids, leaf lifter etc.) slowly increases. Towards the end of the dry season bacteria levels are high and increase further when the first rains flush material that has accumulated in the catchment during the dry season. Although runoff from the catchment, particularly from water that area occupied by a flying fox colony upstream, contributes to the bacteria levels in the pool, the main influence on the pool's water quality, particularly with regard to micro organisms, is the pool's own ecosystem. Sediments at the bottom of the pool act as a reservoir for *Escherichia coli* and other bacteria. Agitating activities, such as weed slashing, dredging, active aquatic recreation and strong water currents, release the bacteria from the sediment and thus periodically cause high bacteria counts to be recorded.

Although there is a hydrological connection, it is unlikely that bores on properties near the Nature Park influence the flow from the springs (Van Der Velde, 1991). The catchment, however, is important and exerts a considerable influence on both the flow and quality of water reaching the pool. It extends across Gunn Point Road and includes a large section of the former Forest Reserve (Figure 2).

Guidelines produced by the National Health and Medical Research Council (NHMRC) specify the parameters for measuring the quality of waters for recreational use, in temperate climates. *E. coli* is generally not considered harmful to humans, but has traditionally been used in conjunction with faecal streptococci and coliform counts in temperate environments as an indicator of faecal contamination. Although the usefulness of these faecal pollution indicators in tropical environments is questioned, in the absence of suitable alternatives monitoring of water quality should continue to be based on the parameters recommended by the NHMRC. Water used for recreational purposes should also be screened rate for the free-living protozoan, *Naeglaria fowleri,* which can cause fatalities, especially in children and adolescents, by producing primary amoebic meningoencephalitis. *Pseudomonas aeruginosa* is also of some concern, as it is the bacteria that causes tropical ear infection.

It is inevitable that the quality of pool and creek associated with the Nature Park will alter markedly throughout the year, with bacteria levels sometimes exceeding those recommended

as safe for swimming. The period of most concern is from August to March. An appropriate management response will involve a combination of catchment management, public education and, when required, regulation of use.

Another tool to address tropical water quality concerns is interpretation. Interpretation can be used to inform the public that the pool is a natural water system and subject to varying water quality.

In the wetlands of the Hunting Reserve, the balance between freshwater inputs and saline tidal intrusion plus the resultant impacts on flora and fauna highlight the sensitive balance of the area. The increasing development in the Re*serve's* catchment and pressure on the aquifer will reduce water availability and affect flows. Stormwater drainage from the rural subdivision, to the southeast of the Reserve, may flow onto the Reserve and in so doing introduce pollutants.

Management Prescriptions

- Care will be taken to ensure that any works and developments do not cause soil erosion or pollution of streams or ground water or pool water. The option of extending the Nature Park boundary to include part of the former Forest Reserve, so that the pool's catchment area is protected, will be investigated. Should this area be added to the Park, the pool's catchment will be protected by encouraging natural regeneration and controlling fire in the previously cleared area of the former Forestry Reserve.

- Use of fertilisers on landscaped park areas, particularly those adjacent to and upstream of the pool, will be avoided except for the maintenance of erosion control.

- No soil will be extracted or removed from within the Nature Park and all eroded areas will be rehabilitated. Priority will be given to river banks and the edges of the pool.

- Operations for the exploration and recovery of minerals may be permitted in accordance with the requirements of relevant legislation, including the *Territory Parks and Wildlife Conservation Act*, the *Mining Act*, the *Petroleum Act* and the *Environmental Assessment Act*, and in accordance with the administrative arrangements set in place by the Conservation Commission and the Department of Mines and Energy, endorsed by Cabinet and tabled in the Legislative Assembly. Disturbance of soil and vegetation will be kept to a minimum, and rehabilitation measures will be undertaken immediately following extraction.

  Negotiations will be held with the Department of Mines and Energy with a view to having a Reservation from Occupation declared over parts of the Hunting Reserve, particularly areas subject to inundation (Figure 2), natural drainage lines and road alignments.

- Negotiations will also be held with the Department of Mines and Energy to ensure that the conditions attached to extractive mining permits in the Hunting Reserve aim to avoid soil erosion and minimise the visual impact the extraction activities. In this regard the Conservation Commission's *Guidelines for Effective Rehabilitation of Borrow Pits in the Top End* may form the basis of negotiations

- All former mining sites in the Hunting Reserve will be rehabilitated.

- Reticulated town water supply will be used where possible to avoid overuse of groundwater and possible effects on the spring.

- Monitoring of water quality in the pool will continue on a regular basis and measures to improve water quality will be investigated. Efforts will be made to monitor water quality following periods of heavy visitor use, aquatic weed clearing operations, and the first wet

season rains. Testing for *Naeglaria* sp. and *Pseudomonas* sp. will be part of the monitoring program. NHMRC guidelines for the quality of recreational waters will be followed. Whenever the pool water quality does not meet swimming health standards, swimming may be regulated.

- Care will be taken to ensure that works to improve the quality of the water in the pool do not affect other park resources such as the rainforest.

- Public education in regard to water quality of tropical fresh waters and associated health hazards will be part of the park visitor interpretative program. Interpretation, including signs, will be used to inform the public that the pool is a natural water system and subject to varying water quality.

- Drainage from the rural subdivision to the southeast of the Reserve will be investigated and appropriate action taken.

- Periodic monitoring of groundwater will be undertaken within both the Nature Park and Hunting Reserve to detect any increase in nutrient contamination of the aquifer. Measures may be taken to address any problems that arise.

- The hydrology of the Hunting Reserve will be investigated, with attention given to the saline balance. Rehabilitation works may be undertaken in areas affected by saltwater intrusion.

- Drainage from the Gunn Point Road and the Park's roads will be investigated and diversion channels and silt traps may be constructed to minimise the risk of soil and pollutants from the roads entering the pool.

- The pool will continue to be cleared of dead or dying floating vegetation.

- The pool may be pumped or dredged to remove accumulated silt.

- Natural drainage patterns will be retained except where drainage diversion is required to protect the resources or facilities of the Nature Park and Hunting Reserve.

3.2 Vegetation

The distribution of vegetation communities within the Nature Park and Hunting Reserve 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 tetrodonta)*, woollybutt *(E. miniata)* and ironwood *(Erythrophleum chlorostachys)*. Of importance is the dense rainforest of *Acacia Terminalia* and palms around the springs and the creek margins below the pool. Paperbark forests *(Melaleuca spp.)* dominate the damp depressions, mixed with ironwood *(Erythrophleum chlorostachys)* and swamp bloodwood *(Eucalyptus polycarpa*) on the slopes.

The Hunting Reserve contains patches of rainforest and large swampy plains which are subject to extensive flooding and inundation by the Howard River. The vegetation varies from closed *Melaleuca* forest to grasslands and scattered freshwater mangroves. The native waterplant *Typha domingensis* is found in the Reserve. While *Typha* provides a source of food and shelter it is also noted for its prolific spreading attributes.

Weeds found in the Nature Park and Hunting Reserve include *Hyptis suaveolens, Stachytarpheta spp, Salvinia molesta, Sida acuta* and *Sida cordifolia*. The exotic trees planted to provide shade near the pool in the Nature Park are seeding and thus a source of weeds to the surrounding bushland. The noxious weed *Mimosa pigra* is found just outside the northern boundary of the Hunting Reserve and poses a potential threat to the wetlands within both the Nature Park and Hunting Reserve.

The area has been subject to regular burning since pre-European settlement times. Speargrass provides a highly combustible fuel which when burnt under uncontrolled conditions late in the dry season can cause extensive damage to both the Park and Reserve. A number of swamps remain sufficiently wet throughout the year to generally exclude fires and act as natural firebreaks. However, in some years the swamps do dry out and after *3-5* years of biomass (fuel) accumulation they can become fire corridors. Elsewhere firebreaks have been constructed inside the perimeter of the Nature Park and Hunting Reserve and the area between the firebreak and the boundary burnt to give a broad protection zone. There are also a number of internal firebreaks to protect visitors and park developments, and to reduce the fire hazard.

Management Prescriptions

- Clearing of native vegetation will be kept to the minimum necessary for public safety, fire protection and the provision of recreation and management facilities.

- Expansion of the rainforest around the springs will be encouraged by seeding and planting on the edges of the forest out towards the road.

- No clearing or development will be undertaken in the rainforest.

- Planting of shade trees will continue in picnic areas and parking areas.

- Only native species endemic to the area will be planted in the Nature Park and Hunting Reserve except within the bounds of the existing staff residences or where use of exotic species is essential for rapid soil stabilisation. Any exotic plants spreading to surrounding areas will be removed.

- Weeds will be controlled and, where possible, eradicated within the Park and Reserve in accordance with a weed control programme. This will include the control of exotic species which have spread into bush areas but not the exotic shade trees near the pool.

- In association with the Department of Primary Industry and Fisheries, the spread of *Mimosa*, *Typha* and *Salvinia molesta* within and around the Park and Reserve, will be carefully monitored, and any outbreaks controlled.

- Liaison will be maintained with neighbours in order to minimise the introduction of weeds into the Park and Reserve.

- A Fire Action Plan will be prepared in consultation with the Bushfires Council and adjacent landowners. It will include the grading and maintenance of firebreaks where necessary around boundaries of the Park and Reserve and at strategic locations within these areas; Controlled burning will be undertaken inside the Park and the Reserve boundaries, around assets and in selected areas within these boundaries, to reduce fuel and provide broad protection zones in accordance with the Plan. The Fire Action Plan will be reviewed and updated annually.

- As far as possible fire will be excluded from rainforest areas, swamps, *Melaleuca* forests and the plantation forests.

3.3 Animals

The native fauna of the Park and the Reserve is typical of that found in the region, although the wide range of habitats supports a large number of species. Species recorded are shown in Appendix 1 and include 15 species of mammals, 126 species of birds, 34 species of reptiles (some of which are venomous), 14 species of amphibians, 21 species of fish and a large variety of insects and other invertebrates. No comprehensive survey has been undertaken of the Reserve.

The swamps and marshes of the Park and the Reserve 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 *(Crccodylus porosus)* are occasionally found in the river.

During the wildfowl hunting season, shooting of approved game is permitted in the Hunting Reserve. The Reserve is Darwin's closest approved waterfowl hunting area. This factor and the closure of Noogoo Swamp to hunting puts the Reserve under increasing hunting pressure. All hunters are required to hold a valid permit, to hunt approved species, from the Conservation Commission. For safety reasons no shooting is permitted in that part of the Reserve closest to the Park, shown as the Buffer Area (Figure 2). Hunting is also prohibited in the Protected Area which has been declared over privately owned land adjoining the Buffer Area.

There is evidence that birds, particularly magpie geese, are ingesting fallen lead shot when feeding or taking grit and subsequently perishing from lead toxicosis. Conservation Commission studies have shown that 20.4% of flying geese have ingested shot in their gizzards. Of the flying birds taken by hunters, 45% had lead concentrations that exceeded those accepted as evidence indicating lead exposure. The potential for human contamination resulting from the consumption of contaminated geese exists (Whitehead and Tschimer 1990). Use of lead shot is banned within the Hunting Reserve. A management programme for Magpie Geese in the Northern Territory is being prepared.

Mosquitoes and midges can cause considerable discomfort to visitors and are a potential health hazard in both the Nature Park and the Hunting Reserve.

Feral animals recorded within the Park and the Reserve include cats, dogs, buffaloes and pigs. They compete with native animals for food and destroy wildlife habitats. Domestic animals such as horses and pets can also adversely affect wildlife and are a nuisance in heavily used areas. Buffaloes and pigs have been largely excluded from the Nature Park by the boundary fence but the occasional animal still comes upstream along the creek from the Hunting Reserve. The Reserve is too small to allow hunting with high calibre weapons. If, however in the future, the Reserve is extended to the north, consideration may be given to permitting pig hunting within the extension provided an appropriate buffer zone is maintained. Buffaloes are being eradicated from the Reserve under the BTEC programme.

Management Prescriptions

- Interpretative information on native animals and their habitats will be prepared and made available to visitors.

- Feral animals will be removed or eliminated from the Nature Park. Feral animals will be controlled in the Hunting Reserve when they are found to cause significant environmental damage or pose a hazard to visitors.

- Regular survey monitoring for crocodiles will continue to be undertaken in the Park and the Reserve. Trapping will be undertaken in the Howard River and animals caught will be removed. Warning signs will be erected along the Howard River where crocodiles may be a danger.

- The Conservation Commission's Pets in Parks Policy will be adhered to. The present Policy states that, with the exception of guide dogs, pets will not be permitted in the Nature Park unless written approval is given by the Director of Conservation. Dogs may be taken into the Hunting Reserve for approved hunting purposes.

- Hunting, fishing, trapping and other methods of taking animals will not be permitted in the Nature Park without approval from the Director of Conservation.

- Hunting will be permitted in the Reserve (except for the Buffer Area shown in Figure 2) for approved species in season, or as required for the purposes of controlling feral animals.

- All hunters will be required to have a valid permit issued by the Conservation Commission pursuant to s. 29 of the *Territory Parks and Wildlife Conservation Act*, and s. 14,17, 22(1c) and 52 of the *Territory Parks and Wildlife Conservation Act Bylaws*.

- Waterfowl hunting regulations will be a key tool for managing waterfowl and waterfowl hunting. These regulations will be reviewed annually.

- Waterfowl hunting will be monitored. If over-exploitation occurs, options consistent with maintenance of the hunting experience and protection of the resource, such as establishment of a hunter "carrying capacity" for the Hunting Reserve, or enhancement of the Reserve or associated areas, will be investigated and acted upon.

- The use of lead shot is prohibited in the Hunting Reserve.

- A feral animal control programme for the Nature Park and Hunting Reserve will be prepared and implemented. It will aim at the elimination and exclusion of stock and feral animals from the Nature Park and the strict control of feral animals within the Hunting Reserve.

- Fishing will be prohibited in the Nature Park and permitted in the Hunting Reserve.

- Stock proof fencing will continue to be erected and maintained around the boundaries of the Nature Park and the Hunting Reserve.

- Surveys of the wildlife and habitat values of both the Park and the Reserve will be undertaken and will include hunting season bag counts and significant species monitoring.

- The management programme for Magpie Geese of the Northern Territory of Australia will be finalised and provide guidance for the conservation, management and control of this species.

3.4 Cultural Resources

The Nature Park and the Hunting Reserve lie within the area traditionally occupied by the Larrakeyah 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 or Reserve.

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 pool 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. It may be of interest for the World War II dumps to be investigated in the future.

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 under the control of the Northern Territory Reserves Board.

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 pool.

Management Prescriptions

- Any sites of Aboriginal or European cultural significance found in the Nature Park or the Hunting Reserve will be protected.
- The history of the area will be included in interpretative information on the Park and the Reserve.

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 and the Hunting Reserve. They have been generally determined by the capability of the soils and the need to protect important vegetation and habitat values.

Management Prescriptions

- The Park and the Reserve will be zoned as shown in Figure 3.
- The **Developed Zone** will provide visitors with the opportunity to experience the main attractions of the Park in a convenient, safe and social way. High standard facilities will be provided in a modified environment, including sealed access roads, picnic areas and toilets. Infrastructure and management will be provided to keep impacts within acceptable limits and to give a feeling of security and control.
- The **Semi-Natural Zone** will provide for a variety of recreation activities which do not have unacceptable impacts on the environment. Unsealed roads will provide access to key features or provide the opportunity for recreational driving, horseriding, etc. Basic visitor facilities may be provided, including picnic areas, walking trails and interpretative facilities.
- The **Natural Zone** will provide for the protection of important areas of vegetation, wildlife habitat and catchment values. Only low impact recreation, education and research activities which require minimal developed facilities will be permitted. Walking tracks will be provided to sites of interest and public access will be on foot only. Unnecessary use of management vehicles will be avoided and non-essential roads and tracks will be removed and rehabilitated.
- The **Service Zone** will provide for the essential servicing of the Nature Park and the Hunting Reserve arid the visiting public.

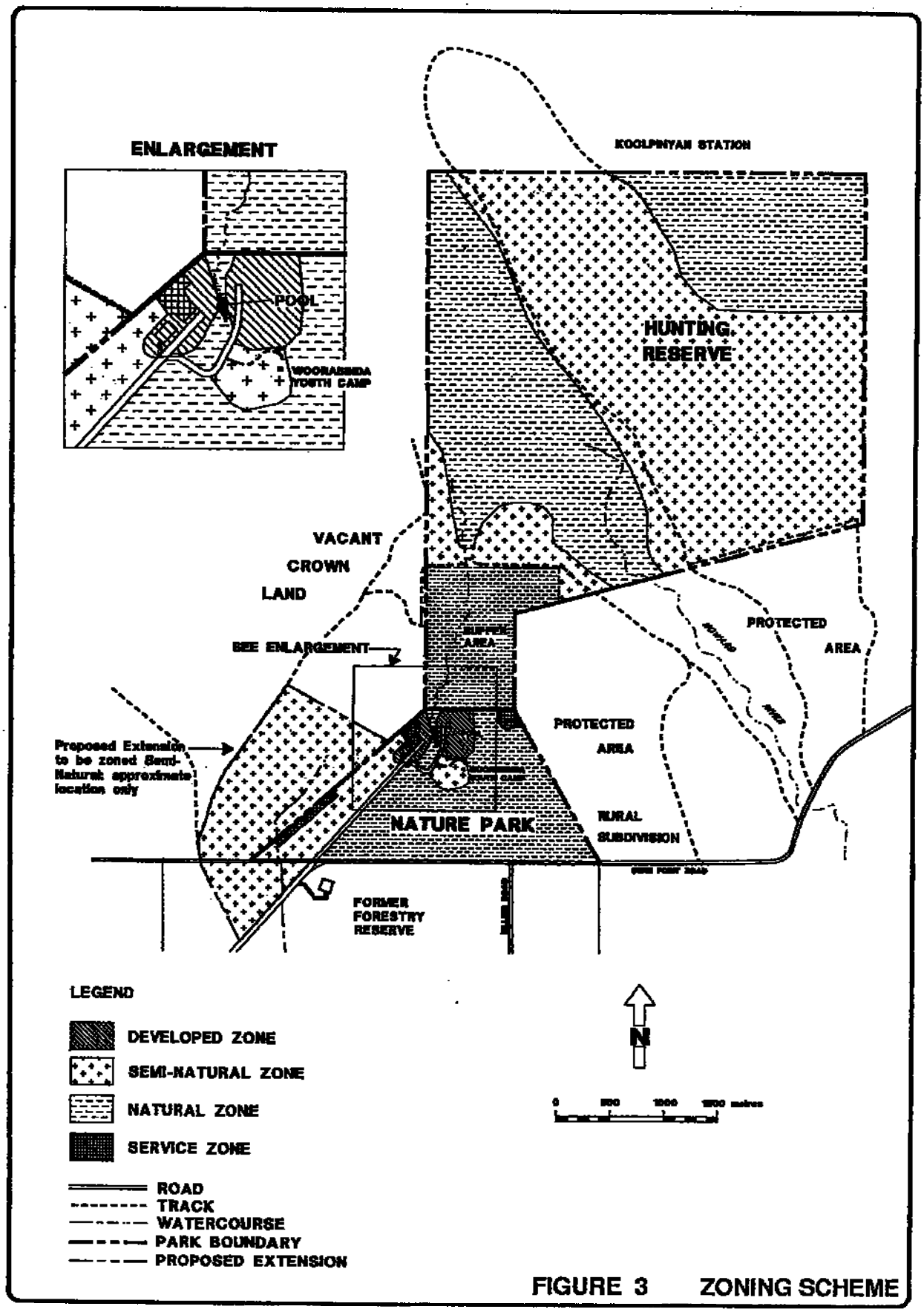

FIGURE 3 ZONING SCHEME

Developments necessary for the management of the Park and the Reserve will be provided, including staff offices, workshop areas and staff accommodation. Every effort will be made to ensure that these developments are as unobtrusive as possible. Public access to this zone will be restricted.

4.2 Visitor Facilities

Visitor use of the area is concentrated in the Nature Park, which attracts around 170,000 visitors per year, most of whom swim and picnic around the pool. Access is via an all-weather sealed road with a gate. The gate is locked at night (the opening hours are specified in Schedule 2 of the *Territory Parks and Wildlife Conservation Act By-laws).* There is scope for the entrance to the Park, via Howard Springs Road, to be made visually more appealing.

Of 495 visitors to the Park surveyed in July 1988, 38% were local and 38% were from interstate, with few people from elsewhere in the Northern Territory. The survey also showed an average of 4 visits per person to the Park within 12 months. The general comments made by visitors are of considerable interest. Negative comments were received on the condition of the toilets and change sheds, and requests were made for improved signposting to and within the Park, a children's playground, a pontoon in the pool, more parking close to the pool, more seating and barbecues, and more information on the flora and fauna of the Park.

Existing developments around the pool include grassed picnic areas, shade shelters, a kiosk, parking areas, children's wading pools, and toilets and change rooms (Figure 4). As noted in the visitor survey, many of the facilities require upgrading and new facilities are required to broaden the range of recreation opportunities for visitors. The future development of the Nature Park will be guided by the Landscape Masterplan which is being developed on the basis of this Plan of Management.

The facilities around the pool, which is the only area in the Park and the Reserve zoned as Developed, need to be upgraded to provide a high quality experience for visitors while still retaining the bush setting. The toilets need to be renovated and access suitable for the disabled should be provided. The picnic and parking areas are not up to standard and an additional playground is warranted. The car park, nearby roundabout, kiosk and ranger station on the western side of the Park take up valuable picnic space near the pool and are a visual intrusion on the bush setting. The kiosk is proving difficult to lease due to poor returns on weekdays, especially during the wet season; it does, however, provide a service to visitors. The wading enclosure (part of the main pool) and the small children's wading pool require considerable maintenance effort and at times are a health risk. They do, however, play an important role in the provision of safe swimming opportunities for small children. The picnic area to the east of the pool can be expanded to provide space for group picnics and informal ball games, while those areas of grass and carparking that are no longer used by the public need rehabilitation. The old shed between the pool and the eastern toilets, which is presently used for crocodile research purposes, is unsightly and should be removed.

Fish viewing and feeding are important visitor experiences, even though fish feeding is not actively encouraged. Some conflict has arisen between passive visitor activities such as fish viewing and more active pursuits centred on swimming The fish viewing area downstream of the main wall is not deep enough to support fish year round. The footbridge across the pool is an excellent viewing platform, however it is too narrow for both viewing and thoroughfare.

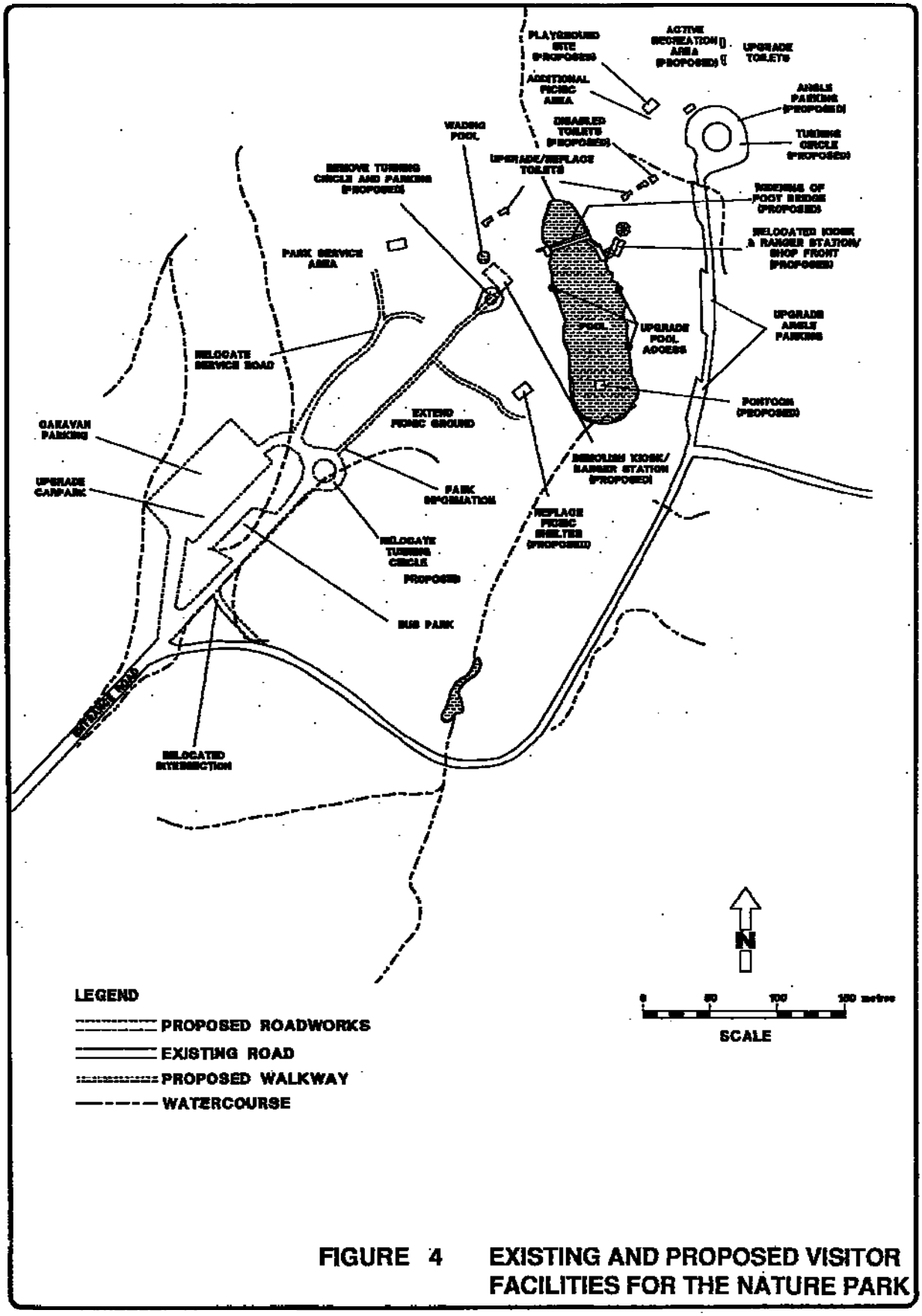

FIGURE 4 EXISTING AND PROPOSED VISITOR FACILITIES FOR THE NATURE PARK

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Boy Scouts and Girl Guides Associations in the past held special leases within the Nature Park. The facilities developed on these leases now comprise Woorabinda Youth Camp, a camping area for community and educational groups. The limited capacity and the age of the sewerage system restrict the size of groups using the camp and the amenities building requires upgrading. In order to maintain the bush camping experience, this area is zoned as Semi-natural.

The area west of the entrance road to the pool will also be zoned Semi-natural to permit the development of quiet areas for bird watching and picnicking away from the crowds and noise around the pool. In the remainder of the Nature Park, which is zoned as Natural, facilities will be limited to walking trails providing access to sites of interest.

The sewerage ponds are located on the eastern boundary of the Park less than 800 metres from a proposed residential development. 800 metres is the separation distance required by the Instrument of Determination for the subdivision. A report on sewerage treatment options has been produced. It is proposed to extend the Nature Park to include an additional area of adjoining Vacant Crown Land and to relocate the sewerage ponds to provide at least an 800 metre buffer between the ponds and possible future subdivisions. (Figure 3).

Use of the Hunting Reserve largely occurs between August and November during the declared open season for duck and geese shooting. Approximately 1200 permits were issued in the 1990-1991 season with individual permit holders visiting the Reserve a number of times. Outside the hunting season, there are opportunities for fishing and wildlife observation in the Hunting Reserve throughout much of the year. The many dirt roads and tracks through the Reserve are often impassable during the wet season. Off-road driving damages the vegetation and causes erosion. Some areas, particularly along the western boundary, are subject to inundation, impeding the establishment and maintenance of fences and firebreaks (Figure 2). Clearly visible fencing and signs are necessary to address legal and safety responsibilities associated with the use of firearms for hunting. These problems may be overcome by extending the boundaries to a more practical location. Basic facilities, including toilets and pits for the disposal of carcasses are necessary for the protection of the Reserve's natural environment. These should be provided at selected sites within the Semi-natural Zone.

That section of the Reserve nearest to the Nature Park is considered to be too close to the main visitor use area around the poo1 for hunting to be safely permitted and has been designated a buffer area. This buffer area (Figure 3) also contains areas of high recreational and educational value, including the river and rain forest below the pool and an attractive lagoon, and has therefore been included within the Natural Zone. A walking trail would allow visitors to view the vegetation and wildlife of this area, although controls may be necessary during the hunting season. Access by vehicle to this area would need to be restricted and an alternative site found for the trailbike riders who presently use the old sandpits.

Management Prescriptions

- Visitor use of the Park and the Reserve will be monitored on a regular basis.

- In general, developments in the Nature Park will be guided by the Landscape Masterplan.

- The Nature Park entrance road and immediate environs may be upgraded to improve the sense of arrival.

- On the western side of the pool, the roundabout, nearby carpark, ranger station and kiosk may be relocated to increase the area available for picnicking near the pool and to

provide a more open view of the pool.

- The intersection which links the entrance road to the eastern side of the pool will be relocated for safety reasons.

- The parking area on the eastern side of the pool will be upgraded and shade trees planted. A traffic roundabout will be constructed on the eastern side of the pool.

- Grassed areas and parking areas no longer in use will be rehabilitated;

- The Developed Zone around the pool in the Nature Park will be upgraded to meet the demands of visitors and provide a high quality recreation experience (Figure 4):

  - the Landscape Masterplan for the Park will be completed;

  - access to key park facilities will be provided for the disabled;

  - park furniture will be upgraded and additional seats, tables, water fountains and barbecues provided;

  - on the eastern side of the pool the picnicking area will be extended northwards, and an informal games area may be developed there;

  - the watering system and drainage will be improved to minimise flooding of the picnic areas;

  - interpretative and directional signs will be provided;

  - the ablution blocks on the western side of the pool will be replaced;

  - toilets suitable for the disabled will be provided;

  - playground equipment will be provided in the picnic area;

  - the footbridge across the pool may be widened to improve access;

  - consideration will be given to providing a pontoon in the pool;

  - the wading enclosure (part of the main pool) will be removed;

  - Actions will be taken to minimise conflict between passive visitor activities such as fish viewing and the more active pursuits such as swimming. Such activities may include modification of the area immediately downstream from the main wall to support fish year round. This area might then be used primarily for observing fish;

  - the children's wading pool will either be upgraded or removed. A decision in this regard will be made in the light of investigations and consultation with park users;

  - existing points of access to the pool will be upgraded and additional access points provided;

  - the old shed presently used for crocodile research will be removed and the research activities relocated to a site outside the Developed Zone;

  - the floating vegetation in the pool will be cleared as necessary to permit swimming; and

  - the old shelter on the western side of the pool may be removed and a replacement, such as a rotunda, may be constructed.

- Options for maintaining a basic food and drink service for park visitors will be investigated.

- A small picnic area will be provided near the lagoon to the west of the Nature Park entrance road.

- In the Nature Park the walking trail through the rainforest to the spring will be formalised. Additional walking trails and bicycle paths may be constructed providing access to sites of interest within the Park.

- For the present, camping within the Park will be restricted to Woorabinda Youth Camp, which will continue to be available for community and education groups. A decision on whether to introduce camping for the general public will be made following the review of commercial opportunities currently being undertaken (See Section 5). Otherwise the Park will be closed to visitors at night.

- Toilet facilities at Woorabinda will be upgraded.

- The sewerage disposal system will be relocated and the Park extended to provide a buffer zone.

- Interpretative information on the Nature Park and the Hunting Reserve will be provided at. picnic areas, along walking trails, and at the park office.

- Pits for the disposal of bird carcasses, parking areas and possibly a pit toilet will be provided at selected sites within the Semi natural Zone of the Hunting Reserve.

- The Western boundary of both the Nature Park and Hunting Reserve may be adjusted in order to make management of the areas more practical.

- The main track through the Hunting Reserve will be relocated onto higher ground and may eventually be upgraded to two-wheel drive standard.

- The old road through the Hunting Reserve and all other roads and tracks no longer essential for visitor access or management access will be closed and rehabilitated.

- The use of vehicles off designated roads will be prohibited.

- Directional and regulatory signs will be erected on all entrances and where necessary within both the Nature Park and Hunting Reserve.

- All signs will be consistent and of a high standard.

- All new developments will be designed, sited and constructed to have minimal visual impact on the environment.

- Organised activities within the Nature Park and the Hunting Reserve will require special permission, and only be permitted if they do not unduly interfere with other users.

- Activities likely to inconvenience or endanger other users or damage the resources of the Park or Reserve will be prohibited.

- Ongoing maintenance of roads, grounds and other visitor facilities will be undertaken as necessary.

5 COMMERCIAL OPERATIONS

It is intended that there will be opportunities for private enterprise to take up concessions in the Park. Concessions provide services that management considers are more appropriately

offered by private enterprise than by park staff. When operated appropriately, concessions can be an important tool for managing visitors and better utilising staff resources. Well managed concessions make parks easily accessible and more enjoyable to a greater number of people and benefit the tourist industry.

The attributes of the Nature Park and Hunting Reserve and the range of recreational opportunities available may be enhanced by selective small scale commercial developments. It must be ensured, however, that developments not threaten water quality or other aspects of the natural environment. Opportunities for appropriate concessions may include:

- the development of overnight accommodation facilities such as camping and caravan sites or cabins;
- the commercial sale of food, souvenirs and other supplies; and
- guided tours.

Management Prescriptions

- Concessionary operations may be considered for the Nature Park and/or the Hunting Reserve subject to the zoning provisions of this Plan (see Section 4.1) and to the conditions detailed below.

- A limited number of concessions which can offer appropriate high quality services may be selected to operate in the Park and Reserve.

- All commercial operations in the Park and Reserve will be required to meet the requirements of the Conservation Commission's Concessions Policy and operate under a concession lease or licence agreement. Such an agreement will include term contracts that clearly set out the rights and obligations of the concessionaire and the Conservation Commission.

- The operation of concessions in the Park and Reserve will be subject to fees as determined by the Director of Conservation.

- In the allocation of leases for concessions or commercial developments, preference will be given to those able to deliver reliable, high quality services which will enhance public use and enjoyment of the Nature Park and/or Hunting Reserve.

- The possibility of placing the management and operation of the whole or part of the Nature Park and/or Hunting Reserve on a commercial footing will be investigated, and may be implemented if the Conservation Commission is satisfied that the natural values of the area will be afforded adequate protection and that the visitor experience will be enhanced.

- Only concessionary operations which will not seriously effect water quality or cause unacceptable levels of natural resource deterioration will be permitted to operate in the Nature Park and/or Hunting Reserve.

6 ADMINISTRATION OF THE PARK AND THE RESERVE

Present management and administrative facilities include the workshop, staff residences, sewerage ponds, pipelines and electric cables servicing park facilities, a district office and the park office. With the exception of the park office and service corridors, these facilities are all located in the Service Zones and are separated from the visitor use area by fences, landscaping or areas of natural vegetation. The district office is located in one of the residences and others are occupied by contract research staff.

The ranger station consists of one room adjacent to the kiosk and has limited working space and privacy. Some interpretive material, and visitor information is offered by a number of posters in

the porch outside the office and brochures available in the office. Additional working space for park staff and visitor information areas are required. It is important, however, that the office should remain close to the main visitor use area.

Management Prescriptions

- All management facilities with the exception of the park office and service corridors will be located in the Service Zones, which will as far as possible be screened from the Developed Zone by native trees and shrubs.
- Services such as pipelines and electric cables will be placed underground and where possible will follow common corridors in order to minimise disturbance.
- The ranger station will remain in the Developed Zone.
- No further residences will be constructed on the Nature Park or Hunting Reserve as alternatives are available in the local area.
- Priority for occupation of existing residences will in future be given to park staff required to be on site for security purposes and to office space required for the management of the district, the Nature Park and Hunting Reserve.

7 PROGRAMMES

Some of the more specific prescriptions for the management of the Nature Park and Hunting Reserve have been regrouped and presented below as programmes. The systematic implementation of these programmes in accordance with the following table will result in the provision of a range of opportunities in the Park and Reserve for public recreation and enjoyment, as well *as* the protection of natural resources.

Priorities are assigned as follows:

High	Imperative to achieve the Plan's stated objectives;
Medium	Very important to achieve the Plan's stated objectives but subject to the availability of resources;
Low	Desirable, but will be undertaken only if the necessary resources are available or other conditions stated in the guidelines are fulfilled.

Action	Priority
Upgrade existing toilets in the Developed Zone and provide toilets suitable for the disabled.	High
Complete Landscape Masterplan for the Nature Park.	High
Upgrade existing recreation facilities and provide new facilities in the Developed Zone.	High
Erect directional signs.	High
Rehabilitate exposed soil areas, especially around pool.	High
Prepare a management programme for magpie geese in the Northern Territory.	High

Action	Priority
Prepare fire action plan.	High
Prepare park interpretative information.	High
Investigate possible southern extension of the Nature Park to provide protection for the pool's catchment area.	High
Investigate options and undertake actions to reduce the incidence of lead toxicosis in birds.	High
Conduct investigation and undertake works to minimise risk of pollutants and silt entering the pool.	High
Develop and implement weed control programme.	High
Relocate sewerage ponds and extend the Park boundary to provide a buffer area.	High
Expand picnic areas and provide informal games area.	Medium
Remove old shed from Developed Zone.	Medium
Expand rainforest areas around the pool by planting.	Medium
Rehabilitate old mining sites in Hunting Reserve.	Medium
Continue with the erection of stock proof fencing around both the Park and the Reserve.	Medium
Upgrade toilet facilities at Woorabinda.	Medium
Investigate possible western extensions of the Park and the Reserve.	Medium
Investigate the hydrology of the Hunting Reserve and take appropriate management action.	Medium
Relocate the access road through the Hunting Reserve.	Medium
Undertake wildlife survey.	Medium

Action	Priority
Develop new picnic area near lagoon in the Nature Park.	Low
Rehabilitate unnecessary roads.	Low
Provide rubbish pits and toilets in the Hunting Reserve.	Low
Construct new walking trails and bicycle paths to areas of interest.	Low

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APPENDIX 1 FAUNA SPECIES LISTS

FAMILY/SCIENTIFIC NAME	COMMON NAME
CLASS AMPHIBIA	***AMPHIBIANS***
FAMILY MYOBATRACHIDAE	**GROUND FROGS**
Limnodynastes convexiusculus	marbled frog
Limnodynastes ornatus	ornate burrowing frog
Notaden melanoscaphus	northern spadefoot toad
FAMILY HYLIDAE	**TREE FROGS**
Cyclorana australis	
Litoria bicolor	northern dwarf tree frog
Litona caerulea	green tree frog
Litona dahlii	
Litona inermis	
Litoria nasuta	rocket frog
Litoria rothii	
Litoria rubella	desert tree frog
Litoria tornieri	
Litoria wotjulumensis	
FAMILY MICROHYLIDAE	**NARROW-MOUTHED TOADS**
Sphenophryne adelphe	
CLASS REPTILIA	***REPTILES***
FAMILY CROCODYLIDAE	**CROCODILES**
Crocodylus johnstoni	freshwater crocodile
FAMILY CHELIDAE	**SIDE-NECKED TORTOISES**
Elseya dentata	northern snapping turtle
Emydura australis	
FAMILY GEKKONIDAE	**GECKOS**
Gehyra australis	northern dtella
Hemidactylus frenatus	house gecko
Heteronoiia binoei	Bynoe's gecko
FAMILY PYGOPODIDAE	**SNAKE LIZARDS**
Lialis burtonis	Burton's snake-lizard
FAMILY AGAMIDAE	**DRAGON LIZARDS**
Clamydosaurus kingii	frilled lizard
Diporiphora bilineata	two-lined dragon
Lophognathus gilberti	Gilbert's dragon
Lophognathus temporalis	

FAMILY VARANIDAE	**GOANNAS OR MONITOR LIZARDS**
Varanus gouldii	Gould's goanna (or sand monitor)
Varanus mertensi	Mertens' water monitor
Varanus timorensis	spotted tree monitor
FAMILY SCINCIDAE	**SKINKS**
Carlia amax	
Carlia foliorum	
Carlia gracilis	four-fingered skink
Carlia rufflatus	
Cryptoblepharus plagiocephalus	tree skink
Ctenotus essingtonii	
Sphenomorphus douglasi	
Spbenomorphus isolepis	
FAMILY BOIDAE	**PYTHONS**
Bothrochilus childreni	Children's python
Bothrochilus fuscus	water python
Bothrochilus olivaceus	olive python
FAMILY ACROCHORDIDAE	**FILE SNAKES**
Acrochordus arafurae	arafura file snake
FAMILY COLUBRIDAE	**COLUBRID SNAKES**
Amphiesma maim	keelback
Boiga irregularis	brown tree snake
Dendrelaphis punctulatus	common tree snake
FAMILY ELAPIDAE	**ELAPID SNAKES**
Demansia atra	black whip snake
Demansia olivacea	marble-headed whip snake
Furina diadema	red-naped snake
Pseudechis australis	mulga or king brown snake
Pseudonaja nuchalis	western brown snake or gwardar

CLASS MAMMALIA	***MAMMALS***
FAMILY TACHYGLOSSIDAE	**ECHIDNAS**
Tachyglossus aculeatus	short-beaked echidna
FAMILY DASYURIDAE	
Dasyurus hallucatus	northern quoll
Planigale maculata	common planigale
FAMILY MACROPODIDAE	
Macropus agilis	agile wallaby
FAMILY PTEROPODIDAE	
Macroglossus minimus	northern blossom-bat
Pteropus alecto	black flying fox
Pteropus scapulatus	little red flying-fox

FAMILY MURIDAE	
Hydromys chiysogaster	water rat
Mesembnomys gouldii	black-footed tree-rat
Mus musculus	house mouse
Rattus colletti	dusky rat
Rattus tunneyi	pale field-rat
FAMILY CANIDAE	**DOGS, FOXES**
Canis familiaris	dingo
FAMILY FELIDAE	**CATS**
Felis catus	feral cat
FAMILY SUIDAE	**PIGS**
Sus scrofa	feral pig
CLASS AVES	***BIRDS***
FAMILY PELECANIDAE	**PELICANS**
Pelecanus conspicillatus	australian pelican
FAMILY ANHINGIDAE	**DARTERS**
Anhinga melanogaster	darter
FAMILY PHALACROCORACIDAE	**CORMORANTS AND SHAGS**
Phalacrocorax carbo	great cormorant
Phalacrocorax melanoleucos	little pied cormorant
Phalacrocorax vaiius	pied cormorant
FAMILY ARDEIDAE	**HERONS AND BITTERNS**
Ardea alba	great egret
Ardea garzetta	little egret
Ardea intermedia	intermediate egret
Ardea novaehollandiae	white-faced heron
Ixobrychus flavicollis	black bittern
Nycticorax caledomcus	rufous night heron
FAMILY CICONIIDAE	**STORKS**
Ephippiorhynchus asiaticus	black-necked stork
FAMILY PLATALEIDAE	**IBISES AND SPOONBILLS**
Platalea flavipes	yellow-billed spoonbill
Platalea regia	royal spoonbill
Plegadis falcinellus	glossy ibis
Tbreskiornis aethiopicus	sacred ibis
Threskiornis spinicollis	straw-necked ibis
FAMILY ANSERANATIDAE	**MAGPIE GEESE**
Anseranas semipalmata	magpie goose
FAMILY ANATIDAE	**GEESE, SWANS AND DUCKS**
Anas gibbenfrons	grey teal
Anas superciliosa	pacific black duck

Dendrocygna arcuata	wandering whistling-duck
Neftapus puichellus	green pygmy-goose
Tadorna radjab	radjah shelduck
FAMILY ACCIPITRIDAE	**KITES, HAWKS AND EAGLES**
Accipiter cirrhocephalus	collared sparrowhawk
Accipiter fasciatus	brown goshawk
Aquila audax	wedge-tailed eagle
Aviceda subcristata	pacific baza (crested hawk)
Hamirostra melanosternon	black-breasted buzzard
Milvus migrans	black kite
Milvus sphenurus	whistling kite
FAMILY FALCONIDAE	**FALCONS**
Falco berigora	brown falcon
Falco cenchroides	australian kestrel
Falco longipennis	australian hobby
FAMILY MEGAPODIIDAE	**MOUND-BUILDERS**
Megapodius reinwardt	orange-footed scrubfowl
FAMILY PHASIANIDAE	**QUAILS AND ALLIES**
Coturnix ypsiophora	brown quail
FAMILY TURNICIDAE	**BUTTON-QUAILS**
Turnix maculosa	red-backed button-quail
FAMILY RALLIDAE	**RAILS AND ALLIES**
Eulabeornis castaneoventris	chestnut rail
FAMILY GRUIDAE	**CRANES**
Grus rubucundus	brolga
FAMILY BURHINIDAE	**STONE-CURLEWS**
Burhinus grallarius	bush thick-knee
FAMILY CHARADRILDAE	**PLOVERS AND DOTTERELS**
Charadrius ruficapillus	red-capped plover
Vanellus thiles	masked lapwing
FAMILY RECURVIROSTRIDAE	**STILTS AND AVOCETS**
Himantopus himantopus	black-winged stilt
FAMILY SCOLOPACIDAE	**SANDPIPERS AND ALLIES**
Numenius madagascariensis	eastern curlew
Numemus minutus	little curlew
FAMILY GLAREOLIDAE	**PRATINCOLES**
Stiltia isabella	australian pratincole
FAMILY COLUMBIDAE	**PIGEONS AND DOVES**
Ducula bicolor	torresian imperial pigeon
Geopelia cuneata	diamond dove
Geopeia humeralis	bar-shouldered dove

Geopeia placida
Chalcophaps indica
Ptilinopus regina

FAMILY PSITTACIDAE
Aprosmictus erythropterus
Cacatua galerita
Cacatua pastinator
Cacatua roseicapilla
Calyptorhynchus banksii
Leptolophus hollandicus
Platycercus eximius
Psitteuteles versicolor
Trichoglossus haematodus

FAMILY CUCULIDAE
Cacomantis variolosus
Centropus phasianinus
Chiysococcyx minutillus
Eudynamys scolopacea

FAMILY PODARGIDAE
Podargus strigoides

FAMILY AEGOTHELIDAE
Aegotheics cristatus

FAMILY CAPRIMULGIDAE
Caprimulgus macrurus

FAMILY ALCEDINIDAE
Alcedo azurea
Dacelo leachii
Todiramphus macleayii
Toclíramphus pyrrhopygius

FAMILY MEROPIDAE
Merops ornatus

FAMILY CORACIIDAE
Eurystomus orientalis

FAMILY PiTTIDAE
Pittairis

FAMILY HIRUNDINIDAE
Hinmdo nigricans

FAMILY CAMPEPHAGIDAE
Coracina novaehollandiae
Coracina papuensis
Coracina tenuirostris
Lalage leucomela
Lalage tricolor

peaceful dove
emerald ground-dove
rose-crowned fruit-dove

PARROTS AND COCKATOOS
red-winged parrot
sulphur-crested cockatoo
little corella
galah
red-tailed black-cockatoo
cockatiel
northern rosella
varied lorikeet
red-collared lorikeet

CUCKOOS, KOELS AND COUCALS
brush cuckoo
pheasant coucal
little bronze-cuckoo
common koel

FROGMOUTHS
tawny frogmouth

OWLET-NIGHTJARS
ustralian owlet-nightjar

NIGHTJARS
large-tailed mghtjar

KINGFISHERS
azure kingfisher
blue-winged kookaburra
forest kingfisher
red-backed kingfisher

BEE-EATERS
rainbow bee-eater

ROLLERS
dollarbird

PITTAS
rainbow pitta

SWALLOWS AND MARTINS
tree martin

CUCKOO-SHRIKES AND TRILLERS
black-faced cuckoo-shrike
white-bellied cuckoo-shrike
cicadabird
varied trifler
white-winged triller

FAMILY PACHYCEPHALIDAE	**ROBINS, WHISTLERS AND FLYCATCHERS**
Colluricincla megarhyncha	little shrike-thrush
Microeca flavigaster	lemon-bellied flycatcher
Myiagra alecto	shining flycatcher
Mylagra inquieta	restless flycatcher
Myiagra rubecula	leaden flycatcher
Pachycephala ruflventris	rufous whistler
Pachycephala simplex	grey whistler
Rhipidura leucophrys	willie wagtail
Rhipidura ruflfrons	rufous fantail
Rhipidura rufiventris	northern fantail
FAMILY POMATOSTOMATIDAE	**BABBLERS**
Pomatostomus temporalis	grey-crowned babbler
FAMILY MALURIDAE	**FAIRY-WRENS AND ALLIES**
Malurus melanocephalus	red-backed fairy-wren
FAMILY ACANTHIZIDAE	**SCRUB WRENS AND THORNBILLS**
Acanthiza chrysorrhoa	yellow-rumped thombill
Gezygone chioronota	green-backed gerygone
Gerygone magnirostris	large-billed gerygone
Smicrornis brevirostris	weebill
FAMILY NEOSITTIDAE	**SITTELLAS**
Daphoenositta chiysoptera	varied sittella
FAMILY CLIMACTERIDAE	**TREECREEPERS**
Climacteris melanura	black-tailed treecreeper
FAMILY MELIPHAGIDAE	**HONEYEATERS**
Conopophila albogularis	rufous-banded honeyeater
Entomyzon cyanotis	blue-faced honeyeater
Lichenostomus umcolor	white-gaped honeyeater
Lichmera indistincta	brown honeyeater
Manorina flavigula	yellow-throated miner
Meithreptus albogularis	white-throated honeyeater
Myzomela obscura	dusky honeyeater
Philemon argenticeps	silver-crowned friarbird
Philemon buceroides	helmeted friarbird
Philemon citreogularis	little friarbird
Ramsayorns fasciatus	bar-breasted honeyeater
FAMILY DICAEIDAE	**FLOWERPECKERS**
Dicaeum hirundinaceum	mistletoebird
FAMILY PARDALOTIDAE	**PARDALOTES**
Pardalotus striatus	striated pardalote
FAMILY PLOCEIDAE	**WEAVERS AND ALLIES**
Neocbmia phaeton	crimson finch
Pôephila acuticauda	long-tailed finch
Taeniopygia bichenovii	double-barred finch

FAMILY ORIOLIDAE	**ORIOLES AND FIGBIRDS**
Oriolus flavocinctus	yellow oriole
Oriolus sagittatus	olive-backed oriole
Sphecotheres viridis	figbird
FAMILY DICRURIDAE	**DRONGOS**
Dicrurus bracteatus	spangled drongo
MILY PTILONORHYNCHIDAE	**BOWERBIRDS**
Chiamydera nuchalis	great bowerbird
FAMILY GRALLINIDAE	**MAGPIE-LARKS**
Grallina cyanoleuca	australian magpie-lark
FAMILY ARTAMIDAE	**WOODS WALLOWS**
Artamus cinereus	black-faced woodswallow
Artamus leucorhynchus	white-breasted woodswallow
Artamus minor	little woodswallow
FAMILY CRACTICIDAE	**BUTCHERBIRDS AND CURRAWONGS**
Cracticus nigrogularis	pied butcherbird
Cracticus torquatus	grey butcherbird
FAMILY CORVIDAE	**CROWS, JAYS AND ALLIES**
Corvus orru	torresian crow

CLASS PISCES

FAMILY PLOTOSIDAE	
Neosilurus hyrthi	Hyrti's (yellow-finned) catfish
FAMILY BELONIDAE	
Strongylura kreffti	freshwater longtom
FAMILY MELANOTAENIIDAE	
Melanot.aema nigrans	black-banded rainbowwflsh
Melanotaenia splendida	red-tailed rainbowfish
FAMILY PSEUDOMUGILIDAE	
Pseudomugil gertrudae	spotted blue-eye
Pseudomugil tenellus	delicate blue-eye
FAMILY ATHERINTDAE	
Craterocephalus stercusmuscarum	fly-specked hardyhead
FAMILY CHANDIDAE	
Ambassis agrammus	sail-fin glassfish
Denariusa bandata	pennyfish
FAMILY TERAPONTIDAE	
Leiopotherapon umcolor	spangled grunter

FAMILY APOGONIDAE

Glossamia aprion	mouth almighty

FAMILY ELEOTRIDIDAE

Hypseleotris compressa	empire gudgeon
Mogurnda mogumda	purple-spotted gudgeon
Oxyeleotris lineolata	sleepy cod
Oxyeleotris nullipora	dwarf gudgeon
Oxyoletris sp.	