LITCHFIELD NATIONAL PARK

PLAN OF MANAGEMENT

CONSERVATION COMMISSION OF THE NORTHERN TERRITORY
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ACKNOWLEDGEMENTS

This Plan of Management has been prepared in pursuance of Section 18 of the Territory Parks and Wildlife Conservation Act by the Conservation Commission of the Northern Territory. The Park Planning Section gratefully acknowledges the assistance provided by other Commission staff, especially from within the Darwin Region. Significant and valuable input was also received from other government departments, and, most, importantly, from the general public in the public review process. Some eighty submissions were received from the public, and the draft plan has been amended and improved in the light of those submissions.
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1 INTRODUCTION TO THE PLAN

The Park and Its Values

Litchfield National Park comprises approximately 143 000 hectares of the Tabletop and Tableland Ranges 120 km south of Darwin (Map 1, separate fold-out at back cover). The Park was originally part of Stapleton Station, Tipperary Station and Camp Creek Station pastoral leases. In 1985, the lessees of Stapleton Station negotiated the surrender of the pastoral lease over N.T. Portion 2783 and it was subsequently taken up by the Conservation Land Corporation as Crown Lease Perpetual 616 and declared under Section 103 of the Crown Lands Act. The Park has been extended subsequently with the addition of Tipperary extension, N.T. Portion 3434, Camp Creek Sections 94 and 95, Hundred of Waterhouse, and Section 2922, Hundred of Goyder.

The Park is named after Frederick Henry Litchfield, a member of the original Finniss Expedition to the Northern Territory in 1864. The discovery of copper and tin in 1870 led to the establishment of several small scale subsistence mining operations which continued through to the 1950's. Pastoral occupation began in the 1870's and persisted until the recent declaration of the area as a Park. As the natural attractions of the area have been discovered in recent years there has been increasing use of the area by visitors using four wheel drive vehicles.

The Tabletop Range dominates the northern section of the Park and is a large woodland plateau surrounded by highly eroded escarpment and watercourses lined with monsoon forest. River tributaries flow from the plateau over the escarpment to form scenic waterfalls which plunge into clear pools surrounded by perennial spring-fed monsoon forest.

The recreation and tourism values of the Park are outstanding. The spectacular falls, scenic watercourses and varied wooded habitats make Litchfield one of the most attractive parks in the Top End. In summary, the recreational and tourism values derive from:

• outstanding scenery associated with numerous falls, rapids, rock pools, perennial spring-fed streams, weathered sandstone formations, meridian and cathedral termite mounds, historic buildings and abandoned mines;
• easy and improving access from Darwin;
• excellent opportunities for sightseeing, picnicking, relaxing, photography, camping, swimming and bush walking;
• opportunities for bush camping and four wheel driving;
• opportunities for extended bushwalking; and
• commercial tourism opportunities.
The natural values of the area derive from the diversity of vegetation and fauna associated with the Tabletop Range and its escarpment in the north and the Tableland Range and associated blacksoil plains in the south. Some survey work has been undertaken in the northern section of the Park, but, apart from crocodile surveys on the Reynolds River, little is yet known about the southern section. Specific known natural values include:

- remnant rainforest pockets along the bottom of the escarpment, significant because of their size and lack of disturbance;
- upland swamps of considerable botanical interest;
- a diverse flora and interesting and potentially varied fauna with a number of species of limited extent, thought to include:
  - two species of cycads (ancient plants of considerable botanical interest);
  - very important colonies of the vulnerable ghost bat (*Macroderma gigas*) and the orange horseshoe-bat (*Rhinonicteris aurantius*) which live in caves near Tolmer Falls;
  - a species of marsupial mouse (*Parantechinus bilarni*), the bush-hen (*Gallinula olivacea*), a frog (*Sphenophryne robusta*), and the primitive archer fish (*Toxotes lorentzi*), all of undetermined significance and occurring in the Wangi Falls area;

The cultural values of the Park stem from:

- several registered Aboriginal sacred sites;
- a variety of Aboriginal art sites; and
- several sites of minor historical significance associated with early European occupation of the area.

The Concept of the Park and its Purpose

It is intended that Litchfield National Park should be developed as a major national park offering a diversity of recreational experiences in a spectacular natural setting while at the same time providing for the promotion and protection of the area's natural and cultural values. The attraction of the Park for visitors lies in its natural character and relatively undisturbed state, and the aim of management is to protect this character.

Originally the Northern section of Litchfield was purchased by the Government as a site for commercial tourist development. Since the release of the original concept plan for the Park several years ago, access has been improved and Darwin residents and tourists have discovered the spectacular scenery and excellent recreational opportunities that Litchfield offers. Although the area was known only to a few locals a short time ago, the Park received more than 130 000 visitors during 1990. Many of these were from interstate and overseas.
The importance of Litchfield as a tourist destination has been acknowledged by the Government and is being acted upon in the planning and development currently being undertaken. The Scenic Drive through the Park from Batchelor to the Cox Peninsula Road is being progressively upgraded and sealed from the Batchelor end, providing easy access to several of the Park’s major attractions. In conjunction with this, facilities are being developed to provide the standard of visitor services required for a major national park and to concentrate use to protect park values. As the sealing of the Scenic Drive through the Park is completed and the infrastructure and information are put in place the number of visits is expected to increase to in excess of 200,000 annually.

It is intended that Litchfield National Park should develop its own identity and be different from and complement Kakadu National Park, the Top End Wetlands, the Territory Wildlife Park and other Top End tourism elements.

It is anticipated that there will be opportunities for private enterprise to assist with development of the Park through the commercial operation of camping facilities and through the development of appropriate accommodation facilities in areas adjacent to the Park.

**The Intent of the Plan**

The aim of this Plan of Management is to ensure the protection of the Park's significant natural and cultural values while providing ample opportunity for people to use and enjoy the Park. The Plan states the intent of the Conservation Commission with respect to the management of the Park, sets management objectives, addresses current issues, and proposes appropriate measures to guide management and development. The Plan has been prepared in accordance with Section 18 of the *Territory Parks and Wildlife Conservation Act*. 
2 ZONING SCHEME

The Zoning Scheme (Map 1, separate fold-out at back cover, and Table 1) is one of the major tools used in pursuing the intent of the Plan. The Scheme provides a basis for the regulation of activities and developments within defined zones so that the human uses of the Park are compatible with the overall need to conserve the natural and cultural values of the area.

Public access within any of the zones may be regulated if it is shown to be having an adverse impact on the values of the area. In addition, access may be further restricted to protect sites of Aboriginal significance. All developments will be carried out with a minimum of interference to the natural environment and according to the requirements of the *Environmental Assessment Act*.

The Park has been divided into five zones:

- **Intensive Use Zone**
- **Dispersed Use Zone**
- **Minimum Use Zone**
- **Special Protection Zone**
- **Service Zone**

Table 1 details the level of development and range of uses to be permitted in each zone. The purpose of each zone, determined on the basis of the values occurring in specified areas within the zone, is outlined below. Relevant scientific research and monitoring is regarded as an appropriate activity in all five zones. Fees will be charged for camping in all zones, in accordance with Conservation Commission policy.

**Intensive Use Zone**

The Intensive Use Zone will cater for those park visitors who require easy access to attractive settings by conventional vehicles. This zone will be used by a majority of park visitors and must contain a range of major attractions that offer high quality enjoyable recreational experiences. The development of high quality facilities and services which complement and amplify the attractions of the Intensive Use Zone is the key to the operation of Litchfield as a major tourist park.

*Management Strategy*

The major goal of management in the Intensive Use Zone is to manage sites containing major attractions to cope with high intensity use and to enable large numbers of visitors to enjoy the features of the Park.
<table>
<thead>
<tr>
<th>MANAGEMENT ZONE</th>
<th>PURPOSE</th>
<th>MANAGEMENT STRATEGY</th>
<th>DEGREE OF ACCESS</th>
<th>PROVISION OF FACILITIES</th>
<th>APPROPRIATE ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. INTENSIVE USE ZONE</strong></td>
<td>To provide access to the key features of the Park for the general public while catering for intensive use by large numbers of visitors.</td>
<td>Provision of public vehicle access with intensive management at selected high use sites to provide camping, picnicking and sightseeing facilities for visitors; thus concentrating use in areas which can be landscaped and managed to minimise impacts.</td>
<td>Vehicle access permitted along designated roads and in parking areas. In general, high standard two wheel drive access.</td>
<td>All major developments including sealed and unsealed roads and parking areas, camping areas, picnic areas, interpretative facilities, toilets, barbeques and a range of park furniture. There is also the potential for the development of minor retail facilities in this zone. Possible development of Aboriginal cultural centre.</td>
<td>Vehicle based camping, picnicking, swimming, sightseeing, bushwalking, photography and relaxation.</td>
</tr>
<tr>
<td><strong>2. DISPERSED USE ZONE</strong></td>
<td>To provide opportunities for visitors to experience more natural settings in less crowded surroundings accessible by four wheel drive vehicle, on foot, or by managed horse rides.</td>
<td>The provision of alternative natural settings with limited and unobtrusive visitor services will provide the basis for low impact dispersal of visitors through less crowded areas of the Park. Subject to further on ground investigations, some areas may be set aside for special protection.</td>
<td>Access by four wheel drive in designated areas, on foot along marked and/or constructed trails, or on horseback with managed horse rides.</td>
<td>Basic visitor facilities including walking trails, four wheel drive roads, bush camping sites, picnic areas, lookout sites and interpretive facilities.</td>
<td>Bushwalking along marked trails as well as untracked destination bushwalking, bush camping and nature appreciation. Extended managed horse trail riding.</td>
</tr>
<tr>
<td><strong>3. MINIMUM USE ZONE</strong></td>
<td>To minimise human impact on the natural environment while providing opportunities for visitors to experience bushland settings isolated from development and facilities.</td>
<td>Development will be limited in order to minimise disturbance to the natural environment. More adventure oriented experiences will be provided for visitors, and only those facilities necessary for safety will be provided.</td>
<td>Visitor access by foot. Some marked trails may be provided, but there will also be opportunities for untracked destination bushwalking. In addition, extended managed horse trail rides will be permitted. Use of helicopters in line with Conservation Commission Policy.</td>
<td>Limited measures for the zone’s preservation, interpretation or essential management. Siting to be as unobtrusive as possible.</td>
<td>Bushwalking along marked trails as well as untracked destination bushwalking, bush camping and nature appreciation. Extended managed horse trail riding.</td>
</tr>
<tr>
<td><strong>4. SPECIAL PROTECTION ZONE</strong></td>
<td>To recognise and undertake special conservation measures in areas of the Park with natural and cultural values requiring special management.</td>
<td>Special provisions and limitations may apply in selected areas. In general, the aim will be to only introduce regulatory controls when it is apparent from monitoring programmes that they are necessary.</td>
<td>Restrictions and /or regulation of visitor access may be applied as required.</td>
<td>No visitor facilities will be provided in this zone.</td>
<td>Scientific research and monitoring.</td>
</tr>
<tr>
<td><strong>5. SERVICE ZONE</strong></td>
<td>To provide essential park services to meet the needs of the Park and the visiting public.</td>
<td>Selected to provide for essential administrative and support facilities where they will have minimum impact on the values of the Park and on visitors.</td>
<td>Public access regulated to provide for business/information contact only.</td>
<td>Developments necessary for the day-to-day administration and management of the Park, including ranger accommodation, offices, workshops and storage areas.</td>
<td>Official contact with park staff and some interpretive activities.</td>
</tr>
</tbody>
</table>
Overcrowding of particular sites is to be avoided through regulating visitor numbers by providing a variety of alternatives within the Zone. Care in the design of access and facilities and in the use of information will add to visitors' enjoyment and encourage them to use the sites correctly.

The development of an Aboriginal Cultural Centre by local Aboriginal interests would be appropriate in this zone, and would be of considerable interest to visitors.

The provision of developed overnight accommodation facilities in the Intensive Use Zone of the Park is to be restricted to camping facilities at Florence Falls, Wangi Falls and development of a proposed woodland camping area (see p. 22). The development of further camping facilities at Florence and Wangi is to be kept to the minimum required for effective management. There will be no lodge or motel type development within the Park.

Camping facilities at Florence Falls and Wangi Falls are to be subject to the institution of a booking system to strictly limit occupancy to the number of available sites. Any overflow is to be directed to the proposed woodland camping area (see p. 22) or to commercial facilities available outside the Park. Large groups and bus tour groups are to be excluded from Florence and Wangi Falls camping areas and are similarly to be accommodated in the woodland campground or outside the Park.

A rigorous environmental monitoring programme is to be developed for all the major waterfall sites in the Park, with levels of visitor use being controlled as required by the findings of the programme.

Zone Boundaries

The Intensive Use Zone is centred on the sealed Scenic Drive through the northern section to the Park. It includes the facilities and attractions around Florence, Tolmer, and Wangi Falls as well as a range of smaller attractions along the Scenic Drive. This zone caters for the majority of park users.

Dispersed Use Zone

The Dispersed Use Zone will provide opportunities for visitors to experience more natural settings in less crowded surroundings accessible by 4WD vehicles, on foot or by managed horse rides. A substantial number of local residents and a growing number of tourists are seeking the type of opportunities which are provided in the Dispersed Use Zone. The Park is an important recreational resource for 4WD clubs, groups and individuals living in the Darwin area. Many commercial tour operators have recognised the market segment that is seeking adventure in natural bushland settings such as those found in this Zone. The southern section of the Park contains some exciting attractions which offer excellent opportunities
for nature-based activities. A 4WD track is proposed leading from the sealed Scenic Drive to the southern boundary of the Park.

Management Strategy

The maintenance of natural settings will be the major management strategy in this Zone. Facilities and developments will be limited to those which delineate access routes, designate use areas and protect resources. Visitor services will be unobtrusive and limited to essentials. Management will closely monitor sites to ensure that impacts remain within acceptable levels and initiate site or visitor management strategies to control deterioration.

Zone Boundaries

The Dispersed Use Zone encompasses areas of high visitor attraction away from the major road system. Dispersed Use Zone areas bordering the Intensive Use Zone provide opportunities for extended day walks, bushwalking, and managed horse riding.

Minimum Use Zone

This Zone provides opportunities for visitors to experience bushland settings isolated from developments and facilities. A number of education and special interest groups in Darwin use the Minimum Use Zone. The Park is also used by a growing number of local bushwalkers and tourists. Litchfield has the potential to attract tourists interested in bushwalking and commercial tour operators to guide visitors into remote areas.

Management Strategy

The major goal of this Zone is to maintain the natural diversity of bushland settings and to minimise the visual effects of human use. This is to be achieved through minimizing the provision of facilities; only those necessary for visitor safety should be provided. The impact of continued use in some areas may require site hardening or minor facilities but this should be kept to a minimum and used only as necessary to protect the resource. The main strategy for visitor management in this Zone will be to limit development in order to minimise disturbance to the natural environment. In order to ensure park safety, a Walking Trail Management Strategy will be developed which will address such issues as bush camping permits, registration of walkers and other safety measures. The provision of extended (overnight) managed horse trail rides may be undertaken within this Zone. The use of helicopters may be permitted to drop off/pick up hikers or horseriders from remote trail heads.
Zone Boundaries

The Minimum Use Zone covers a large portion of the Park, mostly the remoter areas.

Special Protection Zone

Normally, the Special Protection Zone will embrace areas of very limited extent within the Park. Visitors will be restricted from areas of the Park where their activities could conflict with special conservation values. The Special Protection Zone includes very sensitive areas of natural or cultural significance, such as the bat colonies at Tolmer Falls, and the historic Blyth Homestead and Bamboo Creek Tin Mine. As research proceeds, this Zone may be extended in selected defined areas.

Management Strategy and Zone Boundaries

See Map 1 and Table 1. Special provisions will apply to the area at the base of Tolmer Falls. Because of the presence of rare fauna and fragile vegetation, visitors will not be permitted into the area embracing the stream banks, monsoon forest and rock pools below the falls unless under the guidance of a Ranger or with a permit from the Director of Conservation. Signs prohibiting access will be erected and the rangers will patrol the area regularly. As an alternative, attractive recreational opportunities, including the provision of spectacular views of the area below, will be provided at the top of the falls.

Service Zone

This Zone caters for the provision of administrative and support services necessary in the efficient management of the Park. It includes staff housing areas, areas needed to provide infrastructure for park facilities, and areas being used by contractors (see Map 1 and Table 1). This Zone may in the future be extended to include a small area to accommodate a ranger station in the southern section of the Park.
3 MANAGEMENT OF THE PARK FOR RECREATIONAL USE

Objectives

1. To offer a balanced diversity of tourism and recreational opportunities consistent with the preservation of the Park's natural and cultural values.

2. To provide appropriate visitor facilities and access.

3. To provide more remote adventure oriented experiences in the southern section of the Park to complement and expand the range of attractions available in the more developed northern section of the Park.

4. To develop an information management system which aims to enhance visitor appreciation of the Park and promote appropriate visitor behaviour.

5. To monitor and, where necessary, modify the recreational use of the Park.

Management of Access

Currently road access to Litchfield Park is shown on Map 1 (separate fold-out at back cover). The Park is serviced by the Litchfield Park Road, a loop road from the Stuart Highway connecting Batchelor with Berry Springs. Two wheel drive spur roads lead to the main tourist attractions along this route.

It is intended that the Litchfield Park Road should:

• provide access to the Park, adjoining properties and neighbouring communities;
• provide a scenic tourist drive taking in points of interest; and
• minimise the impact on the natural resources of the Park.

Several 4WD tracks lead from the Litchfield Park Road providing access to a number of remote areas. A 4WD track connects the Litchfield Park Road with the Daly River Road through the southern section of the Park. Access via the Litchfield Park Road is currently restricted by the Finniss River crossings at either end and outside the Park. At peak flooding levels all access is restricted. At other times in the wet season access may be restricted to 4WD. The Daly River 4WD road is inaccessible for several months during the height of the wet season and often well into the dry season due to large stretches of black soil plains. ‘Road closed’ signs are erected only when there is the likelihood of serious road damage from flooding or a demonstrated risk to visitor safety or responsible natural resource management. Road closures and conditions are relayed to the Northern Territory Emergency Service for radio broadcasts on a daily basis when required.

Air access currently consists of fixed-wing air tours operating out of Batchelor and Darwin and occasional helicopter tours. Emergency helicopter landing sites have
been constructed at Wangi, Tolmer and Florence Falls and the Walker Creek Ranger Station in accordance with an Emergency Response Plan (Map 1, separate fold-out at back cover).

The owners of Labelle Station have previously consented to the use of the station airstrip (adjacent to the western boundary) for emergency and limited park management operations. Fixed wing and helicopter operations over the Park are conducted for park management purposes including feral animal control, surveys and fire management.

**Management Issues**

- The Litchfield Park Road and spur roads are being progressively upgraded from Batchelor to bitumen standard providing improved and extended access into the Park well into the wet season.
- Wet season traffic on unformed roads and 4WD tracks causes significant impact on natural and cultural resources and may constitute a danger to visitors.
- Normal wet season flooding can wash out facilities including walkways, roads and bridges.
- 'Road closed' signs are ignored and often regarded by 4WD users as an indication of exciting road conditions.
- Road construction is causing landscape scarring and some environmental impact associated with gravel extraction.
- Because of the high standard road design and construction standards vehicles tend to travel at high speeds within the Park.
- The demand for 4WD and remote camping and recreational experiences is high which places high pressure on 4WD tracks in the Park.
- The current alignment of the Daly River Track is producing significant environmental impacts along the black soil plains.
- Park entrance stations with visitor orientation and information signs are required.
- Bus and caravan use in the Park is increasing and existing campgrounds do not provide for these user groups. Bus and caravan numbers are expected to escalate further with the proposed road upgrading program.
- Local and small scale tour operators in small 20 seater buses are looking for alternatives to major visitor destinations.
Management Guidelines (Vehicle Access)

- Close liaison with the Department of Transport and Works will be maintained to ensure environmental and aesthetic guidelines on road alignment and construction, gravel extraction and rehabilitation works are adhered to. Approved Conservation Commission environmental guidelines are included in all Department of Transport and Works contracts for roads, public works and facility development to minimise impacts on natural and cultural resources.

- All roads will be aligned and designed to incorporate safety, environmental and aesthetic considerations.

- Road closures will continue where there is an obvious risk to visitor safety and the Park's natural and cultural resources, where there is the potential for serious road damage, or where it is necessary for park management purposes (eg. feral animal control). Road closures will be published and sign-posted.

- Advice on road conditions will be passed to the Northern Territory Emergency Service as required or on a daily basis during the wet season for radio broadcasting.

- In conjunction with the Department of Transport and Works and where appropriate speed limits will be placed on roads in the Park.

- As resources allow, a range of driving experiences and opportunities will be developed consistent with zoning, recreation and resource management objectives. These will include the following:
  - Litchfield Park Road progressively upgraded to bitumen standard from the Batchelor end providing extended 2WD and wet season access;
  - Wangi and Florence Falls spur road: upgrade to 2WD bitumen standard access;
  - Southern Access Track: realign and maintain as 'dry season' 4WD access;
  - Sandy Creek: 4WD 'dry season' access;
  - Florence Falls 4WD track: maintain as 'dry-season' 4WD access;
  - Blyth Homestead access: maintain as 'dry-season' 4WD access;
  - Bamboo Creek Tin Mine: upgrade to 2WD access;
  - Upper Walkers Creek: maintain as 4WD access;
  - Walkers Creek Day Use: maintain 2WD gravel access;
  - Termite Mounds access road: maintain 2WD access;
  - Ada Creek Headwaters Day Use: maintain as 2WD access;
  - Green Ant Creek Day Use: develop as 2WD access;
- Tabletop Swamp: maintain as 2WD access;

- Bus camping facilities will be provided at the proposed woodland campground (p.22).

- Parking facilities for large buses will be developed at Florence Falls (see p. 16), Meridian Termite Mounds (see p. 21) and the Bamboo Creek Tin Mine (see p. 24). Other developments along the Intensive Use Zone (see pp. 20-25) will provide access for small buses.

- Park entrance stations including a sealed layby with orientation information will be provided at both ends of Litchfield Park Road near to the Park boundary and at the southern end of the Southern Access Track.

Management Guidelines (Air Access)

- Aerial operations for park management purposes will continue under general conditions applying to unrestricted airspace.

- The Conservation Commission will conduct negotiations with the department of Civil Aviation with a view to instigating appropriate control over air tours in the Park, including:
  - restriction of aerial operations to those considered appropriate in the various zones of the Park;
  - a stipulation that aerial operations will not impact significantly on the Park's natural resources or other park users;
  - regulation of the number of operators, flight frequency, flying height, and routes, with consideration of seasonal factors.

- Ongoing liaison will be maintained with Labelle Station to seek continued use of airstrip for emergency and limited park management purposes.

- Parachuting, hang gliding and ultralight flying will be prohibited in the Park.

The Management of Commercial Operations in the Park

It is intended that there will be further opportunities for private enterprise to take up concessions in the Park. Concessions provide services in parks that management considers are more appropriately offered by private enterprise than by park staff. When operated appropriately in high volume tourist parks, concessions can be a very 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 contribute to the value of the tourist industry.

Litchfield National Park offers a number of opportunities for appropriate tourist concessions such as:
- the commercial operation of camping facilities and associated sale of food, souvenirs and other supplies;
- guided tours;
- helicopter tours (to be excluded from the Intensive Use Zone):
- campground management;
- bushwalking and horse riding.

A number of potential sites for such developments are identified on Map 1. Other concessionary operations and sites may be considered subject to the zoning provisions of this Plan (pp. 4-8) and to the conditions detailed below.

**Management Issues**

- Well managed concessions that meet Park objectives make visitor management much easier. Concessions that are not well operated or that operate outside accepted behaviour patterns add to management problems.

- Poor quality tours and services not only compromise the experience of the visitors but reflect badly on the entire Park and the Commission.

- The number and distribution of commercial tours in the Park will have to be carefully controlled so that they do not conflict with each other or with management strategies being adopted in the Park.

- Concessionaires have the same responsibility to care for the resources of the Park as the park managers and they must be required to use the park settings with minimum impact and to care for the areas over which they have certain rights.

- The operation of concessions should not interfere with the use of the Park by visitors. Concessions should not be given exclusive rights over areas that are of wide interest to others. Existing user attitudes towards the Park should be taken into account.

- The level of facility development should be in accord with the management strategy for the zone concerned.

**Management Guidelines**

- A limited number of concessions which can offer high quality services that are appropriate to Litchfield National Park will be selected to operate in the Park.

- Individuals and organizations wishing to undertake commercial activities within Litchfield National Park, whether or not these involve the carrying out of works, will discuss their proposal with the Conservation Commission prior
to submission of a Concessions Application as detailed below. The Conservation Commission will advise the proponents of the requirements of the Environmental Assessment Act, the requirements of the Plan of Management, relevant Conservation Commission policies, specific planning criteria and, where relevant, the Commission's requirements with respect to the design and finish of structures. If required, the Conservation Commission will provide written guidelines for the Concessions Application.

- A Concessions Application formalises a proponent's desire to take up a concession within Litchfield National Park. This application will be accompanied by the documentation specified by the Conservation Commission as well as requirements under the Environmental Assessment Act. Aspects such as leasing and licencing arrangements, the 'function' of the proposal, access requirements and other details will be assessed at this stage.

- All commercial operations in the Park will be required to operate under a signed concession lease or licence agreement. These will include term contracts that clearly set out the rights and obligations of the concessionaire.

- The operation of concessions in the Park will be monitored and the information collected will be used to evaluate the application for lease/licence renewal.

- The Conservation Commission will give consideration to introducing a programme for the training and accreditation of tourist operators making use of the Park.

- Concession leases and licences will be subject to fees as determined by the Director of the Conservation Commission or by the Conservation Land Corporation in the case of leases.

- All leases and licences will be subject to conditions designed to ensure the protection of the Park's natural and cultural values in accordance with the Conservation Commission's Concessions Policy.

- A number of potential concessionaire camp sites are identified on Map 1. These will be managed under the above conditions and camping will be allocated through a booking system. These sites will be monitored and facilities developed as required. Following further surveys, a maximum of three additional sites will be established in the southern section of the Park.

- The services offered by the various concessions will be in keeping with the image of the Park and the quality of services offered by the Commission.
- Sales outlets for liquor or fuel will not be permitted in the Park.
• Helicopter tour concessions will not be permitted to operate within the Intensive Use Zone because of their potential to cause disturbance to other park users.

• Concession operators will be expected to supply clients with accurate information about Litchfield National Park and cooperate with Park staff to encourage visitors to care for the Park environment.

• The Director of Conservation may bar from the Park any concession operation which fails to meet conditions set.

Management of the Intensive Use Zone

Florence Falls

At Florence Falls there is a scenic double waterfall and an attractive pocket of monsoon rainforest in a highly eroded rocky gorge. A series of attractive rockpools are found upstream.

Existing Facilities include:

• a 5 km unsealed road from the main scenic drive ending in a parking area for 30 vehicles and/or several small coaches, including ablution facilities;

• a 2WD campground with about 13 campsites and an ablution block;

• a 4WD campground with approximately 10 campsites;

• a day use area and campground with six camp sites and two picnic sites near Buley Rockhole about 2 km above the falls;

• a network of walking trails linking the carpark, lookout platform, camping and day use areas and the falls plungepool, and an extended circuit trail returning to the carpark from the base of the falls.

Management Issues
• The landform and small watercourse limits the capacity of the Florence site; therefore careful development is necessary to allow visitors to fully utilise the site without overcrowding or compromising natural values.

• There is considerable potential for erosion in this area of the Park.

• The site has potential to be used by commercial tour operators as well as other park users, but the parking area is not well designed for cars and inadequate to cope with both cars and coaches.

• The attractive creek settings upstream of the falls are underutilised.

• The area around Buley Rockhole is a valuable access point to encourage the distribution of visitors along the creek and aid in the management of visitors at the site.

• Information and interpretation are necessary to change the current use patterns at Florence Falls.

Management Guidelines

• The parking area will be redesigned to provide for the accommodation of additional vehicles including buses and trailers. The design will take into account the need to reduce the erosional effects of storm-water, both in the parking area and along the access road.

• Florence Falls and Buley Rockhole will be linked by a walking trail.

• The 2WD campground will be expanded to provide a number of additional sites.

• The camping area will be subject to the institution of a booking system to strictly limit occupancy to the number of available sites. An assessment of the current capacity of the camping areas will be undertaken. Any overflow is to be directed to the proposed woodland campground (see p. 22) or to commercial facilities available outside the Park.

• During the dry season, large tour groups and bus tours will not be permitted to camp at Florence Falls and caravans will be discouraged from using the area. Provision will be made for these forms of camping at the woodland campground (p. 22).

• Additional short and more extended walks will be designed and developed in accordance with the overall strategy for walking tracks connecting features within the Park.
• The area will be monitored for the effects of overcrowding. Should this become a serious problem, consideration will be given to implementing controls on visitor access to the site.

• The information supplied at Florence Falls will encourage visitors to choose from the full range of opportunities which the site offers, and not just visit the falls and the plunge pool.

**Tolmer Falls**

Tolmer Falls is arguably the most spectacular site in Litchfield National Park. Tolmer Creek flows over two high falls into a large plunge pool and rocky gorge with luxuriant monsoon forest.

Several caves bordering the plunge pool and along the gorge contain colonies of bats, including the ghost bat, classified as vulnerable, and the orange horseshoe-bat. Because of the vulnerability of the bat colonies and the erodible nature of soils in the monsoon forest below the plunge pool, the only suitable recreational use of the area below the falls is ranger-guided walking tours.

**Existing Facilities** include:

• a sealed 1 km access road ending in a parking area designed for 30 cars and three buses;

• a well formed walking track leading from the parking area across Tolmer Creek above the falls, and then along the top of the far side of the gorge and plunge pool. No access is provided to the bottom of the falls although visitors are still making their own way to the pool and at least one tour operator is taking clients there.

**Management Issues**

• Because of the location of the Tolmer Falls relative to Wangi Falls and its position midway along the scenic drive, the development of the area as a major tourist attraction is important to the overall management and dispersal of visitors in the Intensive Use Zone.

• The major difficulty is to balance appropriate recreational use of the area with the necessary measures for the conservation of the flora and fauna, and in particular the conservation of the very rare bat species found there.
**Management Guidelines**

- A lookout will be constructed at the top of the gorge downstream of the plunge pool. This will serve to concentrate visitor activity away from the rare and fragile flora and fauna below.

- A circuit walk from the carpark to the lookout will be constructed and will be designed to cope adequately with high visitor numbers.

- The lookout will be developed to serve as an information point, and attention will be given to the minimization of congestion which may detract from visitors’ experience.

- Interpretation will be provided at special interest points to enhance visitor appreciation of the site.

- The circuit walk will, in the future, permit the provision of other trails enabling the dispersal of more adventurous walkers to features such as Stapleton Falls and Tjaetaba Falls.

- As outlined under the Zoning Scheme (p.8), visitors will not be permitted into the area embracing the stream banks, monsoon forest and rock pools below the falls unless accompanied by a Ranger or possessing a permit from the Director of Conservation.

**Wangi Falls**

Wangi Falls attracts more visitors than any other site in Litchfield. The beautiful twin falls with large plunge pool accessible for swimming and the large grassed area bordered by the monsoon forest has very wide appeal. Currently Wangi is the central focus of the Intensive Use Zone. This is not only the result of the site attributes, but a product of the information available about Litchfeld. Wangi Falls will continue to attract large numbers of visitors, but will have to be managed carefully to preserve the quality of the experience available and to avoid unacceptable impacts.

**Existing Facilities** include:

- access via a 2 km gravel road from the scenic drive;

- a sealed carpark for cars and coaches at the end of the access road;

- a formed path leading from the carpark through an irrigated grassed day use area to the plunge pool near the bottom of the falls;
• picnic facilities and two pit toilets provided on the grassed area;
• two pool access points;
• a spur track leading from the access road to a camp ground located along Wangi Creek downstream from the the picnic area;
• A campground ablution block with showers and flush toilets;
• a short walking track connecting the campground to the picnic area and the plunge pool;
• a walking track to a lookout at the top of the falls.

Management Issues

• The improved access, camping facilities, and day use facilities that have been developed at Wangi Falls to increase the attractiveness of the site for a majority of visitors have changed the site from a natural bushland setting to a highly modified site which is capable of catering for significant numbers of people. The problem is to ensure that the natural values of Wangi Falls and the quality of experiences offered to visitors are not compromised as site modification continues to cope with current and projected visitation.

• The capacity of the camp ground is often exceeded during the dry season resulting in some soil compaction, lack of vegetation between sites and the inability of the ablution facilities to cope.

• Despite the fact that the day-use area is large and flat enough to cope with a large volume of visitors, its capacity is already being reached on busy weekends during the dry season.

• The management goal is to develop the Wangi Falls site to cope with an increasing number of visitors.

• The problem of overcrowding and the inability of facilities to cope needs urgent attention.

Management Guidelines

• The Wangi Falls area will be developed as the prime recreational and tourist centre for the Park. Therefore, in order to cater for the very large numbers of visitors attracted to the area while at the same time protecting the natural environment, an appropriate degree of landscape hardening and amenity planting will be undertaken. In addition, well developed day use and camping facilities will be provided. Toilets and a change room will be provided to replace the pit toilets.
The camping area will be subject to the institution of a booking system to strictly limit occupancy to the number of available sites. An assessment of the current capacity of the camping area will be undertaken. Any overflow is to be directed to the proposed woodland campground (see p. 22) or to commercial facilities available outside the Park.

During the dry season, large tour groups and bus tours will not be permitted to camp at Wangi Falls and caravans will be discouraged from using the area. Provision will be made for these forms of camping at the woodland campground (p. 22).

A viewing area near the edge of the pool will be established to separate the swimming access from those who wish to photograph or observe the Falls.

The Wangi Falls walking trail will be completed, providing a high standard loop walk through the monsoon vine forest to the top of the Falls and then back down the other side.

Some camping areas may be closed during the wet season to aid in campground management. Sites will be opened at the beginning of the dry season as demand warrants.

In accordance with the By-laws, the use of generators will not be permitted in the Park.

As resources allow, extended day-walks will be established along the escarpment north via Bine-Jeruk and Tjenya Falls to the cascades and southeast along the escarpment to Tolmer Falls.

An information and interpretive facility will be developed in the vicinity of the day-use area.

Park information will encourage visits to other attractions in the Intensive Use Zone as well as Wangi Falls. Information will alert visitors to periods when crowding at Wangi Falls is most likely and offer alternative destinations with similar attributes that may be less crowded.

**Other Attractions in the Intensive use Zone**

The sites already dealt with constitute the major attractions in the Intensive Use Zone and will accommodate a majority of visits. The design and development of visitor facilities and information for smaller sites encourages the wider dispersion of visitors and offers them alternatives to large crowded sites. Careful planning
and design of access, facilities and information is essential to managing small recreation sites in the Intensive Use Zone.

Management Issues

• Small sites often have a very limited carrying capacity and when they become overcrowded visitors have poor experiences and unacceptable impacts can occur.

• With respect to many of the smaller sites, it is important that visitors be provided with accurate information about their limited capacity, and about other recreational opportunities available in the Park.

• These sites offer opportunities for small tour operators and provide a different range of experiences for visitors.

Black-soil Plains and Termite Mounds

The black-soil plains and the meridian termite mounds are a significant attraction of the Top End. Meridian termite mounds have no equivalent anywhere else in the World and some of the best examples are found in Litchfield Park. This site provides a good opportunity to view both meridian mounds and the equally spectacular cathedral mounds in a picturesque blacksoil plain setting.

Management Guidelines

• The scenic drive will be realigned and a parking area for cars and coaches will be developed in the vicinity of the current alignment.

• A viewing area and walking access will be provided for viewing, photography and the opportunity to closely observe the termite mounds and associated black-soil plains. The walking access which may include a board walk, will be used to guide visitors in a way which minimises damage to the mounds.

• Interpretative facilities will be developed for the site in accordance with the Interpretation Plan (p. 56).

Ada Creek Day-use Area

The headwaters of Ada Creek cascade over the eastern end of the plateau to form a series of small scenic waterfalls and plunge pools. This site has the potential to be developed as a scenic picnic area and a trailhead for walks to several of the falls along the escarpment.
Management Guidelines

• An access track, carpark and picnic area will be provided near the creek at the bottom of the jumpup.

• A series of longer marked trails will be developed along the bottom of the escarpment highlighting the scenic features and providing access to several of the waterfalls.

Woodland Campground

A large flat area containing one of the best examples of mature woodland forest in the Park exists just south of the scenic drive about 3 km west of the Florence Falls turnoff. The area provides an appropriate setting for developing an interesting woodland campground (Map 1).

Management Guidelines

• A campground will be designed and developed on the woodland site providing sites for caravans, buses and large tour groups, as well as family car/tent sites, and possibly a small kiosk or minor retail facility. The opportunity for the campground and associated facilities to be developed and/or managed by private interests will be investigated.

• The campground will be managed as an overflow area for the campground at Wangi Falls and Florence Falls and may be open only during the dry season.

• As resources allow, a walking trail may connect the campground to Buley Rockhole along the headwaters of Florence Creek.

• Should an equivalent facility be developed on private land adjacent to the park and in close proximity to the major features, the proposed development of the woodland campground may not be proceeded with.

Tabletop Swamp

This small swamp is located 5 km northeast of the Tolmer Falls turnoff. The swamp is an easily accessible example of the tabletop water storage areas that assist the permanent waterflow that is so important to the major attractions of the Park. The swamp is surrounded by paperbark forest and contains interesting swamp vegetation and wildlife.
Management Guidelines

• This area will be developed as an interpretive stop. Information about the swamp will be provided and a small car park constructed.

• A short walking track loop will be constructed from the car park to the edge of the swamp. As resources permit a viewing platform and walk may be provided.

The Western Escarpment

A series of small waterfalls and monsoon forest patches lie along the western escarpment. These will be accessible to walkers by way of a series of trails interconnecting them with major features and by provision of trail heads located along the adjacent Litchfield Park Road.

Management Guidelines

• These sites will be subject to low key development only. Access will be from small parking bays on the main Scenic Drive via marked walking trails. No facilities will be provided at the sites, and access will only be able to be achieved through a walk of some several kilometres. This will provide some automatic protection for what are very small, attractive sites which have a capacity to handle only one or two groups at a time.

• The sites will be monitored and steps will be taken to realign the trails, treat the sites or restrict visitor numbers if the impact becomes unsustainable.

Walker Creek

Walker Creek headwaters begin in attractive small gorges and sandstone outcrops. However, the perennial flow of this Creek finds its source in a palm fringed spring upstream of a series of rockholes and small cascades. The Creek meets the Litchfield Park Road at the bottom of the jump-up near the ranger station. It then parallels the Scenic Drive through a series of long pools lined with large trees and interesting riverine vegetation until it meets Bamboo Creek before crossing the road.

Management Guidelines

• Following the realignment of the Scenic Drive, the current road will be maintained as an access road and parking area near the bottom of the jump-up.
• A trailhead and picnic sites will be designed and developed near the creek at the end of the access track. Additional sites may be developed along the creek where it parallels the road.

• A walking trail will be formed along the creek from the carpark to the headwaters.

• Rehabilitation of areas badly eroded as the result of indiscriminate four wheel drive use will be undertaken.

**Bamboo Creek Tin Mine**

The tin mine was closed only within the past 25 years, and the old structures and machinery are typical of much of the mining activity around the area earlier this century. The mine site offers a different type of attraction for visitors, and with proper interpretation and management will become an important site. The area is quite attractive with creeks featuring monsoon forest vegetation.

Bamboo Creek is a very good location to develop a campsite for education and other special interest groups for a number of reasons: there are a variety of habitats near the site; it will be a good base camp for bushwalks into interesting relatively safe areas; the site has easy access to the ranger station; and a campsite on Bamboo Creek would separate special interest groups from other visitors.

**Management Guidelines**

• Consideration will be given to the construction of a conventional vehicle standard access track to the tin mine site on Bamboo Creek.

• A parking area for cars and buses, walking trails and site interpretation will be designed and developed for the tin mine site.

• A picnic area may be designed and developed at a site near Bamboo Creek to complement the tin mine site.

• As resources allow, a group campground for education and other special groups may be designed and constructed at a site that can accommodate buses. The site will be located so that camping groups do not interfere with the use of the mine site by other visitors.
**Lost City**

The Lost City features a number of weathered sandstone pillars of considerable scenic interest to visitors. It is currently located on an extremely rough 4WD track connecting the Scenic Drive with the Southern Access Track via Blyth Homestead. It may also be reached along a less demanding 4WD track which joins the scenic loop road between the Florence Falls and Tolmer Falls turn-offs.

Management Guidelines

- For the present, access to the site will remain at 4WD standard.
- Interpretive facilities will be provided on site.
- The site will be monitored and day use visitor facilities provided as required.

**Green Ant Creek Day-use Area**

This site features attractive riverine vegetation along Green Ant Creek leading to the remote, two-tiered Tjaetaba Falls. The waterfall is relatively small and enclosed and is suitable for use by only small numbers of visitors.

Management Guidelines

- A trailhead and picnic area will be developed at Green Ant Creek with 2WD access, carpark and basic toilet facilities. It will, however, cater for only a small number of visitors.
- Access will be provided to Tjaetaba Falls by a walking trail and future consideration will be given to including this trail as part of a network of trails in the vicinity of Tolmer Falls.
- A group picnic area will be developed at the site.
- Because of this site's environmentally sensitive nature, visitor impact will be closely monitored, and management adjusted accordingly.
Management of the Dispersed Use Zone

The Southern Access Track

It is intended to provide opportunities for remote bush camping in this section of the Park. There is an existing four wheel drive track which has been established by a past pattern of usage. Unfortunately, it traverses black soil plains and is the cause of problems of land degradation and visitor safety. Therefore, it has been necessary to propose the realignment shown on Map 1. The proposed Southern Access 4WD Track will cover more than 50 km from the Scenic Drive to the Daly River Road through regionally outstanding scarps, watercourses and plains associated with the Tableland Range (Map 1, separate fold-out at back cover). The Track will give visitors access to a number of important attractions in Litchfield National Park. Once completed the southern track will be a major tourist attraction that will appeal to visitors interested in 4WD travel. The Track will be aligned to feature the prominent landscapes of the Tableland Range.

Management Issues

• The real challenge in managing the Southern Access Track will be to maintain the perception of challenge and natural isolation while accommodating the increasing number of visitors, providing for their safety, and keeping visitor impacts within acceptable levels.

• The track will be passable to 4WD vehicles but will still require considerable road works and realignment initially and on-going maintenance to ensure that it remains passable and safe.

• The new alignment is only an approximation; the track will have to be accurately ground surveyed

• The track will be impassable in the wet. The southern section of the track which passes over the plateau should be passable longer than the plains section. Closing the track seasonally will require appropriate publicity and subsequent enforcement of the closure.

• Popular sites along the track that are used for activities such as camping, picnicking and relaxation will begin to deteriorate and require development and treatment. Unless this is done carefully, attributes that are attractive to visitors will be destroyed.

Management Guidelines

• In order to reduce the possibility of land degradation, improve visitor safety and enhance the recreational opportunities available in the area, the existing
four wheel drive track through the southern section of the Park will be realigned within proximity of the route shown on Map 1. Consideration will be given to involving 4WD user clubs and tour operators in determining the precise alignment.

- As resources allow, the track will be stabilised and maintained to cope with the increased traffic that will occur when the southern section is developed for visitor access. It may still be necessary, however, to close the track during the wet season.

- The use of this section of the Park will be monitored, and camping sites developed as required to a standard appropriate for a remote natural setting.

- Information encouraging visitors to care for the bush, practice minimum impact camping and assist in protecting the resource will be designed and made available to visitors.

**Tableland Creek**

Tableland Creek is the main watercourse draining the southern end of the Range. From the top of the Range, Tableland Creek flows through a gorge over eroded bedrock creating a series of cascades, rockpools and small waterfalls. The gorge protects the major attractions from vehicle access and allows more controlled access by walking trail. The rockholes are large enough and the length of the gorge long enough to accommodate a number of walk-in groups without giving the perception of overcrowding.

**Management Issues**

- There has been little recreation use of the Tableland Creek; therefore, the opportunity exists to provide a very attractive destination for visitors. The problem is to provide access and allow visitors to use the gorge while maintaining the natural setting and the feeling of isolation that the gorge now has.

- The gorge will require more than one access point because of its length and the nature of the surrounding terrain.

- Most waterholes in the gorge are quite rocky and resistant to erosion, but many of the attractive shady areas are very sandy and erodible.

**Management Guidelines**

- Access to the gorge will be provided via marked walking trails from the mouth of the gorge near the proposed Reynolds River Campground (see below).
• The gorge will be restricted to day use only.

• Information will encourage visitors to stay on designated walking tracks and aid in the protection of the resource.

• The possibility will be investigated of establishing in this area a trailhead for extended overnight walks taking in Tableland Creek, Surprise Creek, the Reynolds River and the escarpment.

**Reynolds River Campground**

Near the southern border of the Park the Reynolds River flows through a series of rockpools and rapids. The large rockpools are surrounded by shady trees, exposed rock and sandy beaches, and some areas of dense monsoon forest. The river and surrounding vegetation makes a very attractive setting for a campground. The campground would be in close proximity to the Daly River Road.

**Management Issues**

• The number of visitors using Daly River Road will increase once the road is sealed and the attractions in the area are more widely known.

• Estimating the demand for the campground is difficult, but there is likely to be a very heavy demand for the facilities throughout the year.

• The Reynolds is a known habitat of saltwater crocodiles, and this will limit the recreation opportunities of visitors and restrict camping to safe areas away from large waterholes.

• Many campground visitors will arrive in conventional vehicles. These visitors will require access to some of the attractions in the southern section of the Park.

**Management Guidelines**

• The need for developing a campground accessible by 2WD vehicles along the Reynolds River near the Daly River Road large enough to cope with visitors using the Southern Access Track and the Daly River Road will be investigated. Such a campground could utilise the natural features of the river to provide isolated sites, but would need to be developed with designated sites and formed access track to protect the site. The demand generated by the campground would probably require an ablution block with a septic system.
• Information will be supplied to visitors about the Reynolds River and the problem of camping near crocodile habitat.

• Information and walking tracks will be developed to encourage visitors to explore the edge of the escarpment, the Tableland Creek Gorge and the other small watercourses.

Surprise Creek

The headwaters of Surprise Creek form a number of interesting small rockpools in the rocky plateau of the Tabletop Range. The creek forms a series of very attractive falls and pools as it flows over the edge of the escarpment. Below the escarpment the creek flows through sandy pools surrounded by monsoon forest before it crosses the Southern Access Track and flows on to the Reynolds River.

Management Issues

• The falls and plunge pools on Surprise Creek are a popular site for visitors. The area below the lower pool is already deteriorating due to vehicles driving on the soft erodible soil below the pool.

• A mining exploration company constructed a number of tracks and a campsite on the south side of the creek above the falls. These tracks end at exploration sites and are becoming very eroded.

• The headwaters of the creek will be accessible by vehicle for the first time with the new alignment of the Southern Access Track.

Management Guidelines

• Camping will be permitted to continue at Surprise Creek Falls. However, vehicles will be restricted to the point before the last crossing about 100 metres downstream.

• The sites will be monitored to prevent deterioration and facilities will be provided as required.

• Efforts will be made to rehabilitate the old mining tracks throughout the area.

Sandy Creek

Tjaynera Falls on Sandy Creek is one of the major attractions in the southern section of the Park. The area is accessible only by four wheel drive vehicle. The beautiful falls and plunge pool provide an ideal recreation setting for small groups.
Existing Facilities include:

- a camp ground and car park about one kilometre below the falls;
- a small ablution block with flush toilets servicing the campground;
- a walking track from the camp ground to the plunge pool near the bottom of the falls.

Management Issues

- The camp ground may be insufficient to cope with the demand. The potential exists to expand the camp ground, but the decision will have to be made about the impact of additional campers on the entire site.

- There is potential in the area for establishing 4WD access to a trail head as a base for extended bush walking into the Minimum Use Zone of the Park.

Management Guidelines

- The area will be managed according to the strategy outlined (Zoning Scheme, p. 6) for the Dispersed Use Zone. The emphasis will be on remote adventure oriented activities, including four wheel driving.

- Use of the area will be monitored to determine whether the facilities are meeting the needs of visitors and to ensure that impacts remain within acceptable limits. Basic facilities will be provided as required.

- Consideration will be given to establishing 4WD access to a trail head which provides access for bush walkers to the Minimum Use Zone of the Park.

Stapleton Track

Stapleton Track is the old Daly River Road leading from the Camp Creek Road south to the new Daly River Road. It is passable only by 4WD vehicles and many of the creek crossings along the track are very eroded and difficult to negotiate. Much of the country the track passes through is quite stark and sparsely vegetated, but there are interesting rock outcrops and many of the creeks have waterholes surrounded by attractive riparian vegetation.

Management Issues
• The track is not well maintained and many of the creek crossings would be difficult to maintain with increased traffic.

• The track provides an alternative for visitors who use the Southern Access Track and will be of interest to some visitors using 4WD vehicles.

• Near the southern border of the Park the track passes through Tipperary Station. The station owner has indicated an unwillingness for park visitors to travel through the Station.

Management Guidelines

• The demand for visitor access to the Stapleton Track is unclear. A decision will be made concerning the need for the track to be stabilised and developed for visitors use following the first year of operation of the Southern Access Track. In the interim period, the track will not be closed to visitors, but park information will not encourage its use.

• In the future, the Stapleton Track may be connected with the Southern Access Track. This will involve closing that part of the Stapleton Track which passes through Tipperary Station and constructing a track along a suitable alignment to link up with the Southern Access Track. 4WD clubs will be consulted about this project and their advice sought with respect to the detailed alignment.

Management of the Minimum Use Zone

The Minimum Use Zone occupies a large portion of the Park. It will have a growing importance for recreation and has very significant conservation values. Specific sites will not be designated in this Zone at this stage because it is necessary to work with visitor groups to determine the areas that contain attributes which they find attractive. The escarpment and watercourses offer many challenging and exciting bush walking opportunities to choose from.

Management Issues

• Little work has been done to identify sensitive conservation areas that may be adversely affected by bush walkers.

• Factors such as natural and cultural features ease of access, isolation, access to permanent water, and the difficulty of the terrain will have to be considered in choosing the best areas for bush walking.

• Since the major goal in this Zone is limiting the effects of human activity, a trail marking system which ensures visitor safety but is very unobtrusive may be required.
• Groups have different levels of bush walking skills and will require a range of different kinds of opportunities. Information from a cross section of groups should be used in determining a bush walking system.

• Visitor information is a key in determining the bush walking areas chosen by visitors and influencing their behaviour while bush walking in the Park.

Management Guidelines

• The active cooperation of a cross section of bush walking groups and relevant tour operators will be used to identify a range of bush walking opportunities.

• Surveys will be undertaken on the proposed routes to identify sensitive conservation areas that must be avoided by bush walkers.

• Arrangements for bush walking will be determined with the cooperation of bush walking groups and tour operators. Possibilities include a system of trail markers or a system of numbered trig points at strategic locations in association with a suitable map and registration system.

• Bush walking maps and visitor information will be designed and produced for the Park.

• A registration system for bush walkers in the Park will be maintained to aid in visitor safety and to help monitor visitor numbers on various trails.

• Bush walking trails and campsites will be monitored to evaluate impacts and visitor attitudes.

• Unobtrusive treatments will be used to stabilise sites or trails which deteriorate beyond acceptable limits.

• A permit system will be introduced for extended overnight bush walks.

• Bush walking trails or areas may be closed at certain times due to seasonal conditions or for park management reasons such as fire control or feral animal control.

• Some opportunities for bush walking and walk-in camping will be available in the Dispersed Use Zone. These will be used to complement those in this Zone and a strategy for managing bush walking opportunities will be developed for the entire Park.
4 MANAGEMENT OF THE PARK’S RESOURCES

Objectives

1. To manage and protect the natural environment, including native plants and animals, soils, geological resources and water resources.

2. To give special protection to rare and endangered species of native flora and fauna in the Park, and to species which are locally significant (unusual, unusually abundant or rare).

3. To minimise deleterious impacts on the Park's resources by introduced plants and animals, and by existing and proposed developments.

4. To conserve and promote the cultural, historical and archaeological resources of the Park.

5. To ensure public safety as far as possible from dangerous animals or situations.

Geology and Landforms

The Park is dominated in the north by the Tabletop Range, a sandstone plateau bounded on most sides by steep slopes. It is along these slopes that are found the many waterfalls and lush pockets of rainforest vegetation which are the key attractions of the Park.

The plains below the western escarpment of the Tabletop Range are mostly formed from transported Quaternary sediments. Large quantities of sand have been deposited from the more elevated sandstones of Tabletop Range forming relatively extensive areas of sand plains.

Geology has a controlling influence on the landforms of the Park. Seven landform classes have been mapped for the northern section of the Park. These are shown on Map 2 and are summarised in Appendix 1. Although the southern section has not been mapped, the same landforms may be recognised there and the classification remains valid.

The area is considered to be prospective for minerals. A number of exploration licences, mineral claims, mineral leases and licence applications apply within the Park's boundaries. These are shown on Map 3. Reservations from Occupation cover Florence, Wangi, Tolmer and Tjaynera Falls (RO 1229) and parts of the Camp Creek Extension (RO 1257).
MAP 2: LANDFORMS OF LITCHFIELD NATIONAL PARK (NORTHERN SECTION)

1. Plateau surface
2. Sideslopes
3. Secondary plateau surface
4. Steep hills and slopes
5. Undulating lowlands
6. Drainage floors and depressions
7. Stream channels and levees
Management Issues - Geology and Landforms

• The retention of the Park’s natural character depends upon minimising impact on the scenery associated with geology and landforms. Visitors should be able to enjoy the scenic beauty of the Park without seriously degrading the experience for others.

• The area appears to be prospective for minerals and a mineral exploration programme is currently being undertaken in the Park.

• Some areas of the Park are highly susceptible to erosion, and others are impassable when wet.

• Land use evaluation for specific uses, including roads and carparks, picnic and camping areas, and walking trails has been undertaken by Lynch and Manning (1988). Most of the land units within the Park have properties which limit their use for development.

Management Guidelines - Geology and Landforms

• Care will be taken to ensure that developments within the Park do not detract from its natural character and scenic qualities.

• Sites of geological or geomorphological interest will be identified to ensure that they are not inadvertently damaged by management operations, development works or visitor activities. They may also be featured in the Interpretive Programme for the Park.

• No soil will be removed or disturbed within the Park except where necessary for management purposes.

• Any developments within the Park, including construction of roads and firebreaks, will be undertaken with the minimum of soil disturbance possible, and will be followed by rehabilitation measures.

• Visitor access may be controlled in the Park where such access threatens to cause soil erosion or land degradation. This applies particularly to the use of four wheel drive vehicles in waterlogged areas. Use of vehicles will be limited to approved roads and tracks.

• Operations for the exploration and recovery of minerals may be permitted in accordance with the Government's Multiple Land Use Policy and 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 Government and tabled in the Legislative Assembly.

- As far as possible, areas of soil erosion in the park will be progressively rehabilitated.

- Specific agreements are in place with the Department of Mines and Energy and Reservations from Occupation in areas of biological or recreational sensitivity have been introduced. Further close consultation will take place over any additional areas to be set aside for visitor use or other areas found to have significant natural values.

- In general, care will be taken to ensure that all developments within the Park take into account land capability as recommended by the Land Conservation Unit of the Conservation Commission.

- As resources allow, the land unit survey of the Park will be extended to the southern section.

Water

The unique value of the Park is to some extent dependent upon a continuous year-round water supply to the various falls, soaks and streams. These are supplied by a precisely balanced hanging aquifer, such that a very small outflow occurs at the end of the dry season. This contains a critical balance of nutrients for the maintenance of aquatic life.

Management Issues - Water

- Disturbance of the aquifer could have serious implications for the Park. The aquifer could be disturbed by:
  - puncturing of the aquifer;
  - drawdown;
  - pollution.

Wells, bores and effluent treatments could have these three effects.

- It will be necessary to supply water and toilet facilities for developments at the top of falls, e.g. Tolmer Falls and Florence Falls.

Management Guidelines - Water

- Advice will be sought from the relevant authorities about the likely impact of proposed developments on the Park’s natural water system and associated aquifer.
TABLE 2  SUMMARY OF VEGETATION COMMUNITIES

<table>
<thead>
<tr>
<th>Community</th>
<th>Dominant Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Tall closed forest</td>
<td>Monsoon forest species and/or <em>Melaleuca</em> species.</td>
</tr>
<tr>
<td>C2 Tall open woodland and/or tall open forest</td>
<td><em>Eucalyptus miniata, E. tetradonta</em> over <em>Grevillea</em> and <em>Acacia</em> shrubs.</td>
</tr>
<tr>
<td>C3 Tall woodland and/or very tall sparse shrubland</td>
<td><em>E. miniata, E. tetrodonta, Callitris intratropica</em> and <em>Blepharocarya depauperata</em> over mixed shrubs.</td>
</tr>
<tr>
<td>C4 Mid high to tall open woodland</td>
<td>Variable vegetation. Mixed <em>Eucalypts, Erythrophleum chlorostachys</em> and <em>Terminalia spp.</em> over shrubs.</td>
</tr>
<tr>
<td>C5 Mid high woodland to tall open forest</td>
<td><em>Melaleuca spp.</em> and <em>Lophostemon lactifluus.</em></td>
</tr>
<tr>
<td>C6 Mid high open woodland</td>
<td><em>Melaleuca nervosa, Pandanus spiralis</em> and <em>Grevillea pteridifolia</em> over mixed grasses and sedges.</td>
</tr>
<tr>
<td>C7 Low open woodland</td>
<td><em>E. brachyandra, Gardenia megasperma</em> and shrubs.</td>
</tr>
<tr>
<td>C8 Very tall sparse shrubland</td>
<td><em>Acacia</em> and <em>Grevillea shrubs, Jacksonia dilatata</em> and <em>Calytrix spp.</em></td>
</tr>
<tr>
<td>C9 Grassland and/or sedgeland</td>
<td>Sedges or perennial grasses. Isolated <em>Pandanus</em> and/or <em>Melaleuca spp.</em></td>
</tr>
</tbody>
</table>
• The Conservation Commission will seek advice from the Department of Health and Community Services and from other relevant authorities with respect to establishing a waste management strategy for the Park.

Vegetation

General

The vegetation communities occurring in the Park largely vary according to the landform classes discussed above. The various communities are summarised in Table 2 (opposite page) and are described in more detail in Appendix 2.

Communities of Limited Extent

Of particular interest in the Park are the vegetation communities of limited extent. Of the 194 plants recorded in the Park, none is considered rare or endangered, but the communities of limited extent are regarded as being ecologically significant and may require protective management where subject to disturbance.

Monsoon Forests

• Monsoon forest communities usually occur in association with the major waterfall attractions and spring fed creeks. They are confined to areas that have permanently available water and are not prone to bush fires. The community at Tolmer Falls has been subjected to intensive visitor pressure, and is now undergoing a slow process of rehabilitation.

Cycad Stands

• Cycas is one of the oldest plant genera and occur throughout Litchfield Park on rocky hill slopes in isolated stands. Cycas armstrongii grows as understory in Eucalyptus miniata and E. tetrodonta savanna and C. calcicola is mostly found in isolated stands in the moister areas.

Upland Drainage Depressions

• Within the plateau surface a few seasonally inundated drainage depressions occur. These support numerous aquatic plants including the water lily species Nymphaea gigantea and N. hydrocharioides.
**Introduced Plants**

The Park has significant infestations of *Sida*, *Hyptis* and *Cassia* along the Reynolds River and many of the creeks, and in the northern section. These weeds are becoming increasingly evident along the main Batchelor-Wangi Falls Road.

No known *Mimosa* or *Salvinia* infestations occur in the Park. However, the surrounding pastoral properties do have significant areas of *Mimosa* and, therefore, it will be necessary to protect areas such as Tabletop Swamp from invasion.

The Finniss River is heavily infested with *Salvinia* and appropriate care will need to be taken to ensure that it does not become established in the Park. In addition, both mission grass and grader grass are established on the access roads from Daly River, Batchelor and Finniss River, and they are likely to encroach on the Park.

Gamba grass, an introduced pasture grass, has been sown on several surrounding pastoral properties, and has the capacity to displace native vegetation and alter fire patterns.

**Management Issues - Vegetation**

- The escarpment habitats of the Park exhibit unusual ecological diversity due to their isolation. Among the significant conservation values along the escarpment are the remnant pockets of dense rainforest, the stands of cycads and several extensive upland swamps. It is important that visitor activity be effectively managed for the protection of these values.

- Major threats to the vegetation communities are likely to result from introduced weeds, the impact of feral animals, uncontrolled fire and use of vehicles in unsuitable areas.

- In the vicinity of major visitor use areas there is the potential for damage to the open forest understorey from increased traffic, firewood collection and wildfires. Regeneration and rehabilitation will be difficult as long as visitor impact remains uncontrolled.

- Effective fire management is crucial for the protection of the Park's vegetation communities.

- The loose sandy soil occurring along the rivers in the Park indicates that vegetation is highly susceptible to disturbance and erosive processes.
• Areas currently degraded due to 4WD access, camping and trampling should be rehabilitated.

• Degraded areas will probably revegetate naturally if human access and fire are restricted and compacted areas are ripped to allow natural colonization.

• Cycas species in the Park merit special protective measures because:
  - they represent a group of plants that is not well known, but which occupies an important position in the evolutionary lineage of plants;
  - they represent a group of plants that is disappearing worldwide;
  - they have cultural significance as a source of food for Aboriginal people;
  - they occur in relatively untouched stands in the Park.

Management Guidelines - Vegetation

• Care will be taken to minimise disturbance to the natural vegetation in the Park.

• Because of the importance of the monsoon forest habitats in the Park, pedestrian access will be restricted to defined trails sited to avoid the softer areas and stream banks. Wherever possible, heavy traffic will be contained on constructed walkways.

• Both vehicular and pedestrian traffic will be carefully managed within the Park to avoid undue impact on the natural vegetation. Public access will be according to the Zoning Plan (Section 2) and in general, vehicles will be restricted to designated roads. In addition, defined trails will be provided for pedestrians at the major points of interest within the Intensive Use Zone.

• Rehabilitation of areas severely degraded by feral animal activity will be undertaken as resources allow.

• A Feral Animal Control Programme for the Park will be prepared and implemented. It will aim at eliminating and excluding stock and feral animals from the Park.

• A Weed Management Programme will be prepared for the Park. This will make provision for systematic monitoring and will detail the types and extent of infestations and relevant control programmes. This programme will be implemented and will be reviewed annually.
• The important monsoon vegetation communities downstream of Tolmer Falls will be afforded protection through exclusion of visitors and the deliberate focussing of visitor activities at the top of the falls (see Special Protection Zone, p. 8 and discussion of Tolmer Falls, pp.17-18).

• Vegetation communities of limited extent in the Park will be afforded special protection and, because they are of considerable interest to visitors, will be featured in the Interpretive Programme.

• The Draft Fire Management Plan for Litchfield Park will be finalised and implemented, and reviewed annually. This plan aims to provide for visitor safety and environmental protection through various fuel reduction techniques including a prescribed burning programme undertaken in conjunction with the Bushfires Council. Under this plan, the aim will be to produce a mosaic of burnt and unburnt vegetation. The fire sensitive areas requiring maximum protection are identified as:
  - all developed areas, Conservation Commission assets, visitor facilities and the meridian termite mounds;
  - monsoon forest pockets throughout the Park;
  - cypress pine groves;
  - historic sites (Blyth Homestead, Bamboo Creek Tin Mine);
  - paperbark swamps.

• Care will be taken to minimise the risk of visitors cutting native vegetation for use as firewood. This may be achieved by erection of signs encouraging visitors to collect firewood in appropriate areas away from the intensive use areas. If necessary, in the future, consideration will be given to the provision of alternatives to park supplied firewood for use in camping and picnic areas.

• A survey will be undertaken to identify the distribution of Cycas species in the Park and measures such as careful fire management and control of 4WD vehicle use will be taken to ensure their protection. This will particularly apply to Cycas calcicola.

• Mainly local and endemic native species will be used for amenity plantings in the Park. Any non-native plantings will require the approval of the N.T. Environment Unit.

• Research programmes on native vegetation will continue as determined by management requirements. Areas identified as of immediate concern include:
  - further identification of rare or uncommon plants and mapping of the Park’s vegetation communities, especially in the Park extensions;
- past and present impact of fire on the ecosystems of the Park and the identification of the most appropriate fire regimes;
- the recovery of damaged vegetation;
- the impact of visitors on various Park ecosystems;
- the potential for the introduction of plant diseases, including die back.

- The collection of limited numbers of plant specimens for necessary research or other scientific purposes will be allowed under permit and within acceptable limits. This includes specimens collected for propagation or colonisation programmes to enhance their chances of survival.

**Fauna**

No comprehensive survey of the fauna of the Park has been carried out. Some research has been conducted on individual species in the northern section of the Park, but there is a significant information gap with respect to the southern section.

The initial surveys do indicate that the escarpment habitats of the Park are interesting and potentially varied due to their isolation. Such 'island' habitats can be expected to produce endemic forms and associations, and to be sensitive to human influences.

**Species of Interest**

Associated with the escarpment springs and areas of monsoon forest are a number of species of interest. These include the orange horseshoe-bat *Rhinonicteris aurantius*, the ghost bat, *Macroderma gigas*, the primitive archer fish, *Toxotes lorentzi*, meridian termites, crocodiles, both freshwater, *Crocodylus johnstoni*, and estuarine, *Crocodylus porosus*, and a varied bird life. The bush hen, *Gallinula olivacea*, occurs in the Park and is of some interest, although its status remains undetermined.

**Birds**

The birds found in the Park are typical of those found in similar habitats throughout the Top End (see Species List in Appendix 3). The bush hen, *Gallinula olivacea*, is a species of interest.

**Bats**

The orange horseshoe-bat, *Rhinonicteris aurantius*, is the only member of the Australian genus *Rhinonicteris*. It is restricted in range to only a few caves in Northern Australia. The caves at the base of Tolmer Falls
are at present the major stronghold for this species with an estimated population of 29,000 out of a total estimated population of 34,000 in the world. It is not known what would be the effects of disturbance on the colony, but there was a dramatic decline in numbers at Cutta Cutta Caves when the caves were opened to visitors. Orange horseshoe-bats have very specific roosting requirements which appear to be the major limiting factor in the distribution of the species. The species is currently classified as vulnerable and any further loss of roosting sites could place it on the endangered list. The protection of the colony at Tolmer Falls may be regarded as the key to preventing the species from becoming endangered.

Other bat species found at Tolmer Falls include the ghost bat, Macroderma gigas, also a vulnerable species, the dusky horseshoe-bat, Hipposideros ater, the common bent-wing bat, Miniopterus schreibersii, the diadem horseshoe-bat, Hipposideros diademi inornatus, and the common sheath-tail bat, Taphozous georgianus. The diadem horseshoe-bat is endemic to the Northern Territory and is known only from Western Arnhem Land and Tolmer Falls.

Various of these bat species are also known to occur at the bases of a number of smaller waterfalls scattered throughout the Park.

**Crocodiles**

The freshwater crocodile, Crocodylus johnstoni, is common in the upstream section of many Top End rivers and streams, including those in Litchfield National Park. It is usually regarded as being harmless to humans. The larger, more dangerous saltwater or estuarine crocodile, Crocodylus porosus, does occur within the Park. It is to be found in the larger water bodies associated with the Reynolds and Finniss Rivers, both of which are known estuarine crocodile breeding habitats. Therefore it is possible for it to enter the Park’s small streams and pools.

**Termites**

There are numerous species of termites in the Park. Most notable are the meridian termites, Amitermes meridionalis, which produce unusual wedge shaped mounds aligned in a strictly N-S direction. These mounds occur in large numbers on the black soil plains and are of considerable interest for visitors. They are found only in the general vicinity of the Park which may be regarded as a stronghold for the species. The other castle or cathedral type mounds produced by woodland termites, and also occurring in the Park, offer an interesting contrast. These two species of termites are only two of a whole suite of mound building species. They are the most visible because of the sheer size of their mounds.
Other Native Fauna

As far as is known, other fauna in the area appear to be typical of that occurring in similar habitats throughout the Top End. Species lists for mammals, amphibians, reptiles and fishes are to be found in Appendix 3.

Introduced Animals

A control programme for feral animals and stock has been in operation for a number of years. This has been closely integrated with the Brucellosis and Tuberculosis Eradication Campaign (BTEC). As a result numbers of buffalo and cattle are extremely low. 50% of the Park has been fenced through the BTEC Programme and it is proposed to complete the fencing as resources allow.

Pigs are the source of significant localised damage. They occur along the water courses in relatively low numbers, but tend to congregate towards the end of the dry season.

Horse trail riding concessions are permitted in the Park, and the Zoning Scheme (Map1) identifies areas suitable for this activity.

As with most areas of the Northern Territory, feral cats are a threat to native wildlife.

Management Issues - Fauna

• There is a need for more research into the fauna of the Park and for more detailed and comprehensive wildlife surveys to provide a baseline against which to assess management practices.

• Fauna management is closely dependent upon habitat management (See section on Vegetation Management above, pp.38-43).

• Species of limited extent, in particular the bat populations in the vicinity of Tolmer Falls, warrant special management initiatives.

• An active crocodile management programme is required for the Park, and visitors should be educated about appropriate and safe behaviour in streams and pools where crocodiles are likely to occur.

• An effective fire management programme is required for the protection of the Park’s fauna and habitats.
• Dogs, cats and all feral animals present a threat to the environment and to native wildlife in the Park.

• The creeks and pools within the Intensive Use Zone of the Park are of very limited extent and contain the primitive archer fish. They are unsuitable for recreational fishing.

• The termite mounds found within the Park are of considerable interest to visitors.

• Horse trail riding operations in the Park should be subject to strict environmental controls.

Management Guidelines - Fauna

• Management of the fauna in the Park will be facilitated by the Zoning Scheme (Section 2, especially the Special Protection Zone).

• The habitats of native animals in the Park will be conserved through the protection of native vegetation (see above, p. 38-43).

• Any new works in the Park will be undertaken in such a way as to minimise the impact on native animals and their habitats.

• Research on native fauna will be encouraged. Areas identified as of particular interest include:
  - the impact of fire on the fauna of the Park;
  - the presence of rare or endangered species in the Park and the measures necessary for their conservation;
  - the distribution and extent of animal habitats;
  - the likely effects of human disturbance on bat populations of the Park.

Management policies will be refined, amended or initiated in accordance with the findings of this research.

• Limited numbers of native animals may be taken, under permit and within acceptable limits, for necessary research or other scientific purposes.

• A Feral Animal Control Programme will be developed and implemented and will provide a plan of action for the active control of all feral animals.

• Horse trail operations in the Park will be subject to strict environmental conditions similar to those applying in other Australian national parks. These conditions will extend to proper feeding routines and stabling to eliminate the risk of outside seed introduction and dispersal. Horse trail riding under these conditions will be
allowed in specific areas (see Map 1 for general indication) on a concessionaire basis.

• Implementation of the Fire Management Plan (see above, p.42) will greatly assist in the protection of animal habitats in the Park, and lessen the risk from very hot wildfires.

• The Crocodile Management Plan for the Park will be finalised and implemented. It will give due attention to:

  - informing visitors of the risks associated with crocodiles and of appropriate recreational behaviour in the Park;
  - establishing several designated safe swimming areas in the Park through a programme of trapping downstream, constant survey, and the removal of any estuarine crocodiles detected;
  - discouragement of visitors from swimming elsewhere than in designated safe swimming areas;
  - appropriate training for park staff.

• Every effort will be made to protect the bat populations found in the Special Protection Zone at Tolmer Falls. Particular attention will be directed at the orange horseshoe-bat.

• In accordance with the Conservation Commission's 'Pets in Parks Policy', domestic pets will not be permitted in the Park without a permit from the Director of Conservation.

• Fishing will not be permitted in the Intensive Use Zone of the Park. Recreational fishing will be permitted in the Reynolds River where appropriate access has been provided.

• The protection of identified species of limited extent will be an important consideration with respect to any developments undertaken in the Park.

• The varied wildlife of the Park and its conservation will form an important element in the Interpretive Programme for the Park (see Section 5).

Management of the Park's Historical and Archaeological Resources

The Park is named after the explorer Frederick Henry Litchfield who first visited the area in 1865. Litchfield was a member of the party under Government Resident B. T. Finnis which conducted the first survey expedition of the inland areas south of Darwin to the Finniss and Reynolds Rivers towards the mouth of the Daly River. Tin was discovered soon afterwards and mines opened at Mt. Tolmer and Bamboo Creek. These were small scale subsistence mining operations which never proved really
successful. The remnants of the mine on Bamboo Creek may still be seen. Eventually, much of the area was taken up for pastoral purposes.

Blyth Homestead was constructed in 1929 by members of the Sargeant family as an outstation of the Stapleton Pastoral Lease. It was sited to take advantage of the good cattle grazing country and the nearby paperbark forests. The homestead, still standing today, consists of a single roomed Cypress pine (bush pole) based structure, clad in corrugated galvanised iron. Remains of the former cookhouse, saddle shed and garden are still visible.

A Conservation Plan for Bamboo Creek Tin Mine and Blyth Homestead has been prepared (Service Enterprises, 1986). Recommended conservation works have been completed at Blyth Homestead and will be undertaken at Bamboo Creek. The need for further work at Blyth Homestead will be reviewed.

Over the years, the area has been subjected to small scale selective logging to supply a saw mill located on a nearby property.

There are several sites of importance to Aboriginal people within the Park. There is a burial site at Bamboo Creek and a registered sacred site at Wangi Falls. There are also a number of known significant sites within the Park which are not registered.

Aboriginal sites involve either or both an archeological component or a cultural component. All sites with an archeological component (material artefacts, rock art, stone tools etc.) are protected under the Heritage Conservation Act. Sites with a cultural component come under provisions of the Sacred Sites Act. Sites with mixed components are protected by both acts.

Little work has been done on the archeology of the Park. It is likely, however, that prehistoric archeological sites, other than art sites, do exist there.

Management Issues - Historical and Archaeological Features

• The pastoral and mining history of the area is of interest to visitors to the Park and lends itself to incorporation in the Interpretive Programme for the Park.

• Bamboo Creek Mine and Blyth Homestead, as features of some historical interest, merit conservation, and interpretation to visitors.

• Sites of importance to Aboriginal people within the Park should be managed according to the wishes of the traditional custodians and relevant legislation.

• N.T. legislation requires the protection of archaeological sites.
**Management Guidelines - Historical and Archaeological Features**

- The Interpretive Programme for the Park (see Section 5 below) will deal with the exploration history of the area and its mining and pastoral occupation phases.

- The Bamboo Creek Mine site will be conserved, stabilised and made accessible to visitors. In this regard the Conservation Plan for the mine will be finalised and implemented as resources allow.

- Provision will be made for access by conventional vehicles to the Bamboo Creek site and by 4WD vehicles to Blyth Homestead. In both instances the car parking area will be at a sufficient distance from the site to ensure that undue intrusion is prevented.

- The condition of the two historic sites will be regularly monitored by park staff and actively managed with respect to fire protection, insect protection and visitor control.

- The management of Aboriginal sites of significance within the Park will be in accordance with the wishes of the traditional custodians and the relevant Northern Territory and Commonwealth laws. Such management will be undertaken in conjunction with the Aboriginal Areas Protection Authority. In some instances, restrictions may be imposed on visitor access to sites.

- Archaeological surveys will be undertaken within the Park as need dictates, and identified sites will be protected as required under relevant legislation.

**Management of Aboriginal Cultural Resources**

The Aboriginal Areas Protection Authority identifies four contemporary Aboriginal groups as having a legitimate association with the northern section supported by the registration of a sacred site.

Evidence of long association of Aboriginal people occurs at scattered art sites. An evaluation of known art sites indicates a common style best described as 'naturalistic' depicting simple monochrome figures and bold linear and abstract polychromatic circular designs probably dating back beyond 10,000 years BC.
Management Issues

- One sacred site is currently registered with the Aboriginal Areas Protection Authority.
- Park visitors are interested in learning about Aboriginal culture.
- Traditional custodians for the area should be consulted about matters affecting their interests.

Management Guidelines

- Through consultation, park management will take into consideration the interests of those Aboriginal groups with a demonstrated association with the Park.
- With respect to the management of Aboriginal sites, the Conservation Commission will be guided by the Aboriginal Areas Protection Authority and by relevant legislation.
- In consultation with the relevant Aboriginal groups, Aboriginal culture will be interpreted to the visitors in a positive way in the Interpretation Programme for the Park (see Section 5).
5 PARK ADMINISTRATION, RESEARCH AND INFORMATION

Objectives

1. To provide responsible management and an effective interface between the Park and its visitors.

2. To provide appropriate and efficient administration of the Park.

3. To ensure that management procedures and practices achieve the objectives of this Plan by adhering to the Plan’s guidelines.

4. To integrate the management of the Park with other regional operations.

5. To administer the Territory Parks and Wildlife Conservation Act, By-Laws and other relevant legislation.

6. To cooperate with neighbouring landholders.

7. To provide an information and interpretive service for visitors so that they may be better able to use and enjoy the Park.

8. Through the provision of appropriate facilities to enable the Park to be used for educational purposes.

9. To provide for the establishment of a Research and Monitoring Programme for the Park in order to better guide the management process.

10. To make adequate provision for the safety of visitors and staff, and the protection of personal property and park assets.

Management Arrangements, Staffing and Facilities

Most staff and management facilities are based in Batchelor and outside the Park, including Housing Commission industry accommodation units and temporary district office. Batchelor functions as a focus for entrance to Litchfield Park; a role reinforced by the Litchfield Park road development program.

The Walkers Creek Ranger Station provides accommodation for two rangers with associated workshop, water reticulation, power generation and fuel storage. It also provides a useful public contact point for park emergencies and a base to service the north-western sector of the Park.
Information signs dispersed through the Park for specific sites, and general park orientation/entrance signs are being developed to replace temporary signs currently in place.

The Park is divided into three sectors for management purposes, under the direct control of the senior park ranger. Resources are based at Walker Creek Ranger Station and shared by all districts.

A UHF radio network with direct telephone access provides reliable communications cover for most of the Park. There are also public access emergency call devices at Wangi, Florence and Tolmer Falls. Telephones are located at the Walker Creek Ranger Station and most adjoining properties.

A current maximum staffing level (MSL) of 8 extends beyond Litchfield Park to cover a commitment to service the Pine Creek area and regional wildlife management.

Management Issues

- Staff and management facilities need to be developed in the southern section for effective management, maintenance and development of this area of the Park.

- Rapidly increasing visitation levels and associated facility developments, together with extensions to the Park area will result in increased demand upon staff and facilities.

- Rubbish collection and toilet cleaning comprise a large proportion of ranger duties during the peak visitor period (May to September).

- Management facilities inside the Park may be provided by concession developments.

- Effectiveness of radio communications in the new southern and south-east sections of the Park is not accurately known.

- Having resources and workshop facilities based solely at the Walker Creek Ranger Station reduces the efficiency of operation and maintenance programmes.

Management Guidelines

- As resources allow, staffing levels will be reviewed to provide responsible management to meet the demands of increased visitation, facility development and extensions to the Park.

- Every effort will be made through concession management, contract services or other alternatives to divest rangers of rubbish collections.
and toilet cleaning duties. This will free rangers to concentrate on visitor management, interpretation and resource management tasks.

- Educational facilities may be developed at appropriate locations within the Park such as the Bamboo Creek Tin Mine Site (see p. 24).

- A secure compound will be established in Batchelor to provide vehicle parking and storage facilities to service Batchelor based staff and increase operational efficiency.

- A feasibility study will be conducted to determine the most suitable site for a ranger station to service the southern section of the Park. The station may also provide a base for a limited regional management role for the Daly River.

- The Conservation Commission will negotiate through concession management guidelines to incorporate appropriate small scale public contact points/information centres in association with any concession developments at major Park centres.

- Public telephone facilities will be required at concession developments at major centres.

- Radio communication for southern and eastern sections of the Park will be investigated and additional repeaters installed as required.

- Efforts will be made to cooperate with the neighbours with respect to matters impinging on the Park. In this regard, a Local Management Committee may be established under provisions of the Territory Parks and Wildlife Conservation Act, if required. In particular, the owners of Pethericks Rainforest will be consulted with respect to common interests.

- Tour operators using the Park will be consulted when changes affecting their operations are proposed or implemented.

**Health and Safety Provisions**

A comprehensive Litchfield Park Emergency Response Plan has been developed and park management is now proceeding with implementation of this and an associated staged purchase of equipment. The Plan provides for:

- the establishment of recommended procedures for Conservation Commission staff;
- the stationing of an emergency response trailer initially at Walker Creek Ranger Station;
- an effective safety information programme;
• the performance of a regional role in conjunction with N.T. Emergency Service Counter Disaster Planning Committee, Batchelor Operations; and
• A comprehensive staff training programme.

Provisions for the safety of Conservation Commission Staff have been made through the installation of telephone communication at the Walker Creek Ranger Station and expanded UHF radio communications including direct radio access to the Batchelor Police and Health Service vehicles. Necessary first aid, fire control and crocodile catching equipment are located at the Walker Creek Ranger Station.

Insect disease vectors within the Park can have a considerable effect on visitors, their health and the Park’s reputation. Mosquitoes are a problem in the wetter areas and the scrub typhus mite has recently been found on native mammals in the Park.

Management Issues

• Improved access and increasing visitation in association with the Park’s remote location, rugged terrain and water-based recreation result in a high risk environment as far as visitor use is concerned, and there is always the potential for accidents.

• Safety equipment and facilities need to be concentrated at major destinations along the length of the Intensive Use Zone.

• There is a requirement for emergency contingencies for those park user groups who visit the remoter areas of the Park in four wheel drive vehicles or on foot.

• Staff based at the Walker Creek Ranger Station are relatively isolated and access can be cut off for extended periods during the wet season.

• Walker Creek Ranger Station functions as a front line emergency park contact.

• Measures should be taken to lessen the threat from insect disease vectors in the Park.

Management Guidelines

• Safety standards and procedures will be followed in all aspects of park management.

• Signs will be erected along the Scenic Route informing visitors of the location of emergency call devices installed in the Park.
• In conjunction with interested user groups a Bushwalking Action Plan will be developed for the Park, providing for a range of recreational experiences, and including provisions for visitor safety. The Plan will cover development of a system of topographic maps, trail marking, and a registration system.

• With the advice of the Conservation Commission Safety Officer high work safety standards will be developed and maintained, together with a safety plan for the Walker Creek Ranger Station.

• Close liaison will be maintained with the Police and the Northern Territory Emergency Service with a view to staff emergency training, conduct of combined exercises and involvement with regional Northern Territory Emergency Services counter disaster operations.

• Visitor safety will be promoted through information management, including the use of signs, publications and the overall Interpretive Programme for the Park.

• Rangers will report on road conditions to the Northern Territory Emergency Service and the Conservation Commission Darwin Regional Office on a weekly basis as required during the wet season for broadcasting of any road closures required for safety purposes (See Section on Access (pp. 9-12).

• The Park's Crocodile Management Plan, Fire Management Plan and Emergency Response Plan will be reviewed and updated annually.

• Concessionaire arrangements may be used to provide an extended telephone service in the Park.

• Park staff will continue to liaise closely with neighbours over safety matters;

• Emergency helicopter landing pads will be maintained at all major tourist destinations, and negotiations will be undertaken with the management of Stapleton Station with a view to ensuring emergency access to the station's airstrip.

• All park facilities will be designed and constructed to minimise risk of injury.

• All emergency, first aid, fire control and communications equipment will be maintained to a high standard in a 'ready to use' condition.

• In conjunction with the Northern Territory Roads Authority, appropriate speed limits will be imposed on all Park roads.
• Regular mosquito surveys will be conducted in the Park with emphasis on park facility areas. The aim will be to evaluate potential disease risks at various locations so that effective measures can be taken.

• Surveys will be conducted on the fauna in the Park to determine the location and abundance of the scrub typhus mite. Particular attention will be directed at areas containing park facilities, the major attractions and walking trails.

• The Interpretive Programme for the Park (brochures, signs etc.) will give due attention to informing the public about health risks from insects, and suggesting ways in which the risks can be minimised.

**Interpretation and Information**

Work has commenced on an Interpretation and Information Programme for the Park. Basic directional and orientation signs have been installed, and the Rangers have commenced taking ranger-guided tours in some sections of the Park.

An Interpretation Plan for the Park has been prepared and is being implemented.

**Management Issues**

• Resource data on the Park is limited.

• Park management can be facilitated by careful attention to information management at the various sites throughout the Park, and in publications available outside the Park.

• Aspects of the natural and cultural resources of the Park are of considerable interest to visitors, and provide an excellent basis for the development of an Interpretive Programme.

**Management Guidelines**

• High priority will be given to the establishment of a Park Information Programme designed to assist in visitor guidance and control, and in park management generally.

• As resources allow, the Interpretation Plan for the Park will be implemented.

• As far as resources allow, ranger-conducted tours will form part of the Interpretive Programme for the Park.
Research and Monitoring

A limited amount of scientific research has been undertaken within the Park, but much remains to be learned about the natural and cultural resources of the area and how these resources are affected by human activities.

The Conservation Commission currently has in place a Research and Monitoring Programme which includes:

- the development of a Geographic Information System (GIS) database for the Park;
- annual monitoring of the orange horseshoe-bat population at Tolmer Falls;
- undertaking a comprehensive fauna survey of the Park.

Earlier sections of this Plan identify a number of research and monitoring projects to be undertaken or encouraged during the life of the Plan.

Management Issues - Research and Monitoring

- There is a need to develop a Research and Monitoring Programme for the Park so that the resultant increase in knowledge about the Park's natural environment will lead to more effective management practices.

Management Guidelines - Research and Monitoring

- The current Research and Monitoring Programme for the Park will be continued. Additional projects, as discussed in previous sections, and in accordance with priorities outlined in Section 6, Programmes, will be incorporated in the Research and Monitoring Programme.

- A rigorous environmental monitoring programme will be developed for all the major waterfalls sites in the Park, with levels of visitor use being controlled as required by the findings of the programme.

- A visitor monitoring system will be established for the Park.

- The Conservation Commission will encourage further research and surveys on the archaeological sites and, with the approval of traditional custodians, Aboriginal sites of significance.

- Flora and fauna surveys will be undertaken within the Park as a matter of priority. Initially, attention will be directed at those areas not covered in previous surveys and/or subject to visitor pressure, especially the monsoon forest and waterfall areas.
• The Conservation Commission will encourage the involvement of other accredited individuals and institutions in the Research and Monitoring Programme for the Park.

• All research proposals must be approved by the Director of Conservation or his/her delegate, and approval to conduct the research will be subject to the results and any published or unpublished reports being made available to the Conservation Commission.

• The Director of Conservation may furnish research personnel with scientific licences which may or may not permit the collection of plant or animal specimens for research purposes.

• The establishment of a data base for the Park on a Geographic Information System integrated with the Biological Records Scheme will be used as an aid in the further identification of the Park's natural and cultural values and in making appropriate management responses.
6 PROGRAMMES

In this part of the Plan, some of the more concrete and interdependent guidelines are regrouped and presented as Programmes for systematic implementation. Also included are capital works which will be implemented in accordance with this Plan. Actions in these Programmes are referred back to the Guidelines by page numbers.

Priorities are assigned as follows:

**Ongoing**  
Action Plans are intended to facilitate effective management on an ongoing basis;

**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.

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<tr>
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<td>* Establish conditions for holding leases / licences</td>
<td>14</td>
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**Florence Falls**

<p>| * Redesign parking area | 16 | High |
| * Complete walking trail to Buley Rock Hole | 16 | Medium |
| * Expansion of 2WD campground | 16 | Medium |
| * Development of additional walks | 16 | Medium |
| * Assessment of capacity | 16 | High |</p>
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<tr>
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APPENDIX 1

Summary of Landform Classes of Litchfield National Park

1. Plateau Surface

Tabletop Range consists largely of a flat to gently undulating lateritic plateau surface. The plateau surface lacks any definite drainage network and most of the rainfall infiltrates. Since there is no appreciable runoff and subsequent geological erosion, the plateau surface has remained intact.

A number of drainage depressions occur within the plateau surface. These depressions are most probably intake areas for the groundwater reserve which assists the flow of water to the waterfalls, particularly those on the western edge of the range.

2. Sideslopes

The plateau surface gives way to a more dissected upland surface. Between these two surfaces is a series of sideslopes (Map 2). The upper slopes, adjacent to the plateau surface, are gently inclined to moderately steep and rounded with extensive laterite and sandstone outcrop. Below these, the slopes are very steep with extensive sandstone outcrops.

Runoff on the sideslopes has the potential to erode back into the plateau surface. However, this process is impeded by the residual rock outcrop, stones and gravel.

3. Secondary Plateau Surface

The surface referred to as the secondary plateau surface is an erosional derivative of the lateritic plateau surface. The lateritic surface has been removed exposing the underlying Depot Creek Sandstone. This surface is dissected and rolling and has varying amounts of massive sandstone outcrop. Despite the obvious drainage network, significant areas of deep sands and loose rocks would allow for infiltration as groundwater.

Depot Creek Sandstone appears to hold the groundwater reservoir which supplies the perennial streams within the Park. A regional dip to the west accounts for the abundance of seepage areas, waterfalls and streams on the western boundary of Tabletop Range.
A number of upland seepage areas occur where underground water flows to the surface. Prominent seepage areas occur at the headwaters of major stream channels.

4. **Steep Hills and Slopes**

The dissected plateau surface breaks away to a series of steep slopes and hills. Except for an area of escarpment caused by a significant fault on the north-western boundary of Tabletop Range, steep rugged hills abut the upland plateau.

5. **Undulating Lowland**

This terrain consists of a gently undulating surface and low rises that occur in the northern area of the Park and below the western escarpment. In the northern areas low rises of quartz gravel predominate over granite sub-outcrop. The south-western edge and smaller areas in the north of the Park are flat to gently undulating and appear to have formed through deposition of the erosional products removed from Tabletop Range. This has resulted in the distribution of large areas of deep sands and earth soils. The terrain is usually well drained apart from the seepage areas which occur below the steep slopes supporting monsoon forest. These latter areas maintain a very high water table throughout the year.

6. **Drainage Floors and Depressions**

The drainage floors and depressions provide surface drainage and occur in association with the undulating lowlands. These areas are usually non-incised, poorly drained and are subject to waterlogging and inundation during the wet season. Such areas are impassable when wet. The deposition of sand from the sandstone geology of Tabletop Range has been the major influence on the formation of most of these areas.

The slightly more elevated sand plains on the Park’s western edge are not as prone to inundation but do exhibit a seasonally high water table. These were probably former drainage floors that have been infilled.

7. **Stream Channels and Levees**

These areas include major stream channels and their associated levees. They are sandy and unstable and very susceptible to disturbance. As with many other lowland areas the levees have formed from the deposition of sand from more elevated terrain.
1. Communities of the Plateau Surface

The plateau surface is flat to gently undulating with well drained sandy to gravelly soils. Most of the plateau is dominated by tall woodland (C2) of *Eucalyptus miniata* and *E. tetrodonta* with *Livistona humilis* and a wide variety of *Grevillea* and *Acacia* species forming a mid stratum.

In the very shallow gravelly soils and droughty sandy soils, *E. miniata* and *E. tetrodonta* are absent and the shrub layer predominates (C8).

Numerous drainage depressions occur within the plateau and are subjected to inundation during the wet season. Although community structure varies somewhat, floristic composition remains basically the same with *Melaleuca viridiflora* and *Lophostemon lactifluus* dominating the wetlands (C5) or occurring as emergents over grasslands in areas of less severe inundation. Other commonly occurring species include *Melaleuca cajuputi*, *M. symphyocarpa*, *Pandanus spiralis*, *Osbeckia australiana* and a number of aquatic forbs.

2. Communities of the Sideslopes

Due to steep slopes and shallow gravelly soils, these areas have very low moisture holding capacities and support a less vigorous community than the plateau surface. The community is mid high to tall open woodland (C4) composed of *E. miniata*, *E. tetrodonta* and *Erythrophleum chlorostachys* over *Eucalyptus phoenicea*, *Terminalia latipes*, *Cochlospermum fraseri*, *Livistona humilis* and *Calytrix extipulata*.

Shallow gravelly soils and extensive areas of rock outcrop inhibit the development of a definite lower stratum. However, scattered clumps of grasses do occur. These include hardy species such as *Cymbopogon procerus*, *Schizachyrium fragile*, *Sorghum plumosum* and *Eriachne* species.

3. Communities of the Secondary Plateau Surface

The terrain of the secondary plateau surface is quite variable, as is the vegetation, with six distinct communities occurring throughout. The major community (C4) is found on the rolling dissected upland surface where soils range from deep siliceous sands to shallow gravelly lithosols. *E. miniata*, *E. tetrodonta* and *Erythrophleum chlorostachys* dominate the open woodland over minor *Terminalia*
Terminalia latipes and a wide variety of eucalypts. Minor floristic variations occur throughout the shrub layer and may be related to different soil types. *Acacia* and *Grevillea* species are common throughout, while *Calytrix extipulata* and *Cochlospermum fraseri* usually occur on shallow lithosols, and *Jacksonia dilatata* on siliceous sands.

On the steep slopes of the secondary plateau, sandy areas with columnar sandstone outcrops support tall woodlands of *E. miniata*, *E. tetrodonta* with *Callitris intratropica* and *Blepharocarya depauperata*. Between the slopes, sandy drainage depressions support mid high open woodlands of *Melaleuca nervosa* with associated *Banksia dentata*, *Grevillea pteridifolia* and sedges. This community often occurs in very small localised patches.

Low open woodlands (C7) of *E. brachyandra*, *Livistona humilis* and *Gardenia megasperma* occur on dissected rolling terrain where shallow veneers of sand provide the only growing medium between extensive areas of rock outcrop.

A community of minor occurrence (C9) occupies small sloping seepage areas within the secondary plateau. Tall sedgeland/grassland predominates with isolated clumps of *Pandanus spiralis* and *Melaleuca leucadendra*. Small pockets of tall closed forest (C1) are commonly found at the head of these seepage areas. This community consists mainly of *Carallia brachiata*, *Lophostemon lactifluus* and *Cupaniopsis sp.* over scattered *Melastoma polyanthum*, *Osbeckia australiana*, dense clumps of *Amorphophallus paeoniifolius* and a variety of ferns.

4. Communities of the Steep Hills and Slopes

Steep slopes and shallow gravelly soils of the hilly terrain support a relatively uniform community (C4) of mid high to tall open woodland with *Terminalia latipes*, *Gardenia megasperma* and mixed eucalypts.

Minor communities of *E. ptychocarpa*, *Pandanus spiralis* and *Lophostemon lactifluus* over *Eriachne burkittii* and *Germainia grandiflora* are found along the narrow ephemeral drainage lines, which occur within this terrain.

In contrast with the open woodlands, small pockets of tall closed forest occur adjacent to waterfalls on the western escarpment of Tabletop Range. The community (C1) consists of monsoon forest species including *Rapanea benthamiana*, *Canthium lucidum*, *Carallia brachiata* and *Vavaea australiana* with numerous ferns, epiphytes and vines.
5. Communities of the Undulating Lowlands

Variations in structure and floristic composition of the communities on the undulating lowlands are associated with variable soil and drainage conditions.

On the well drained lithosols of the upper slopes, mid high to tall open woodlands (C4) of *E. foelscheana*, *E. clavigera*, *E. tectifica* and *E. grandifolia* dominate, while the less permeable soils of the lower slopes are favoured by *E. polycarpa*, *E. ptychocarpa* and *E. papuana*. The understorey is more consistent than the upper stratum with common occurrences of *Livistona humilis*, *Petalostigma pubescens* and *Grevillea* spp. throughout.

On the footslopes below the western escarpment, a number of seepage areas occurs. Despite slopes of up to 10%, the organic soils in these areas are very poorly drained and the water table may remain at or near the surface throughout the year. The community (C9) is a mid high sedgeland of *Fimbristylis nutans* with minor occurrences of the grasses *Eulalia fulva* and *Mnesithea rottboellioides*.

6. Communities of the Drainage Floors and Depressions

These areas of broad plains and drainage depressions differ from the drainage depressions of the plateau by their size and greater species diversity. Community structure is variable, ranging from low woodland to tall open forest with extensive areas of tussock grassland. As these areas do not remain waterlogged all year round, they are often subjected to the effects of burning which may have some influence on the irregular structure of the community.

The grey earths support low woodland (C5) of *Melaleuca* spp. and *Lophostemon* spp. either in pure stands or with scattered *Pandanus spiralis*, *E. papuana* and/or *E. latifolia*. On the yellow podzolic soils, woodland gives way to grassland/sedgeland (C9) with the above species occurring occasionally as isolated trees.

On the highly permeable sands, the above woodland species remain dominant, with frequent occurrences of *Grevillea pteridifolia*, *Banksia dentata* and *Syzygium suborbiculare* (C6). Ground cover is dense and consists of a wide range of species. Those most commonly occurring are *Xyris complanata*, *Fimbristylis nutans*, *Eriachne* spp., *Themeda triandra* and *Mnesithea rottboellioides*. 
7. **Communities of the Stream Channels and Levees**

Floristically, the vegetation of the stream channels remains fairly uniform (tall *Melaleuca* woodland or forest) although density varies considerably. In areas of open woodland, *Lophostemon lactifluus* and *Pandanus* spp. usually occur as subdominant species.

A few small areas of monsoon forest (C1) occur adjacent to stream channels below waterfalls, where permanently moist conditions prevail and fire does not present a natural hazard. The tall closed monsoon forest communities are characterised by *Carpentaria acuminata*, *Gmelina schlechteri*, *Helica australasica*, *Fagraea racemosa* and *Myristica insipida* as well as numerous epiphytes, vines and ferns. The most significant of these are the *Rhaphidophora australasica* and *Stenochlaena palustris* which grow prolifically along undisturbed banks, and *Drynaria quercifolia*, an epiphytic fern which occurs frequently on trees and shaded rock faces.

On the sandy levees adjacent to stream channels, the vegetation merges into extremely sparse shrubland (C8). These areas may be flooded during the wet season but are rapidly drained and remain dry for extensive periods throughout the dry season. The major species in this community are *Acacia* spp., *Jacksonia dilatata*, *Grevillea pteridifolia*, *Pandanus spiralis*, *Calytrix extipulata* and *Livistona humilis*. 
APPENDIX 3

FAUNA LIST LITCHFIELD NATIONAL PARK

CLASS PISCES (FISHES)

FAMILY MEGALOPIDAE
Megalops cyprinoides     ox-eye herring

FAMILY PLOTOSIDAE
Anodontiglanis dahli      toothless catfish
Neosilurus hyrtli      Hyrtl’s (yellow-finned) catfish
Neosilurus ater      black catfish

FAMILY BELONIDAE
Strongylytura kreffti      freshwater longtom

FAMILY MELANOTAENIIDAE
Melanotaenia maccullochi     McCullochs rainbow fish
Melanotaenia nigrans      black-banded rainbowfish
Melanotaenia splendida australis   red-tailed rainbowfish

FAMILY PSEUDOMUGILIDAE
Pseudomugil gertrudae      spotted blue-eye

FAMILY Atherinidae
Craterocephalus stercusmuscarum   fly-specked hardyhead
Craterocephalus sp.

FAMILY CENTROPOMIDAE
Lates calcarifer      barramundi

FAMILY CHANDIDAE
Ambassias agrammus      sail-fin glassfish
Denariusa bandata      pennyfish

FAMILY TERAPONTIDAE
Amniataba percoideoi      banded grunter
Hephaestus fuliginosus      sooty grunter
Leiopotherapon unicolor      spangled grunter

FAMILY APOGONIDAE
Glossamia aprion      mouth almighty
FAMILY ELEOTRIDIDAE
Mogurnda mogurnda       purple-spotted gudgeon
Oxyeleotris lineolata    sleepy cod
Oxyeleotris nullipora    dwarf gudgeon

FAMILY TOXOTIDAE
Toxotes lorentzi         primitive archerfish

CLASS AMPHIBIA

FROGS

FAMILY MYOBATRACHIDAE
Limnodynastes convexiusculus    marbled frog
Limnodynastes ornatus           ornate burrowing frog
Ranidella bilingua

FAMILY HYLIIDAE.
Cyclorana australis
Cyclorana longipes
Litoria coplandi               saxicoline tree frog
Litoria caerulea               green tree frog
Litoria inermis
Litoria meiriana
Litoria nasuta                 rocket frog
Litoria pallida
Litoria rothi
Litoria tornieri
Litoria wotjulumensis

FAMILY MICROHylidae
Sphenophryne adelphae
(formerly S. robusta)

CLASS REPTILIA

CROCODILES

FAMILY CROCODYLIDAE
Crocodylus johnstoni      freshwater crocodile
Crocodylus porosus       estuarine crocodile

TURTLES AND TORTOISES

FAMILY CHeLIDAE
Elseya dentata           northern snapping turtle
Emydura victoriae
LIZARDS

FAMILY GEKKONIDAE
Gehyra australis
Gehyra nana
Hemidactylus frenatus
Heteronotia binoei
Oedura marmorata
Oedura rhombifer
Gehyra australis      northern dtella
Gehyra nana
Hemidactylus frenatus
Heteronotia binoei
Oedura marmorata
Oedura rhombifer

FAMILY PYGOPODIDAE
Lialis burtonis
Lialis burtonis       Burton’s snake-lizard

FAMILY AGAMIDAE
Clamydosaurus kingii
Diporiphora bilineata
Lophognathus gilberti
Lophognathus temporalis
Clamydosaurus kingii       frilled lizard
Diporiphora bilineata     two-lined dragon
Lophognathus gilberti     Gilbert’s dragon
Lophognathus temporalis   northern water dragon

FAMILY VARANIDAE
Varanus acanthurus
Varanus glebopalma
Varanus gouldii
Varanus mertensi
Varanus mitchelli
Varanus panoptes
Varanus timorensis scalaris
Varanus tristis orientalis
Varanus acanthurus       ridge-tailed monitor
Varanus glebopalma       long-tailed rock monitor
Varanus gouldii          Gould’s goanna (sand monitor)
Varanus mertensi         Mertens’ water monitor
Varanus mitchelli        Mitchell’s water monitor
Varanus panoptes         northern sand monitor
Varanus timorensis       spotted tree monitor

FAMILY SCINCIDAE
Carlia amax
Carlia foliorum
Carlia gracilis
Carlia rufilatus
Cryptoblepharus plagiocephalus
Ctenotus essingtonii
Ctenotus inornatus
Morethia ruficauda
Morethia storri
Carlia amax
Carlia foliorum
Carlia gracilis
Carlia rufilatus
Cryptoblepharus plagiocephalus
Ctenotus essingtonii
Ctenotus inornatus
Morethia ruficauda
Morethia storri
Sphenomorphus crassicaudus darwiniensis
Sphenomorphus douglasi
Sphenomorphus isolepis
### SNAKES

**FAMILY TYPHLOPIDAE**
- Rhamphotyphlops sp.     blind snake

**FAMILY BOIDAE**
- Aspidites melanocephalus     black-headed python
- Liasis childreni     Children’s python
- Liasis fuscus     water python
- Liasis olivaceus     olive python
- Morelia spilota variegata     carpet python

**FAMILY ACROCHORDIDAE**
- Acrochordus arafurae     arafura file snake

**FAMILY COLUBRIDAE**
- Amphiesma mairii      keelback
- Boiga irregularis      brown tree snake
- Dendrelaphis punctulatus     common tree snake
- Enhydris polylepis      Macleary's water snake

**FAMILY ELAPIDAE**
- Acanthophis praelongus     northern death adder
- Demansia atra     black whipsnake
- Demansia olivacea     marble-headed whip snake
- Demansia papuensis     papuan whip snake
- Denisonia punctata     little spotted snake
- Furina diadema     moon snake
- Furina ornata     orange-naped snake
- Oxyuranus scutellatus     taipan
- Pseudechis australis     mulga or king brown snake
- Pseudonaja nuchalis     western brown

#### snake(gwardar)

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**CLASS AVES (BIRDS)**

**FAMILY PODICIPEDIDAE**
- Podiceps ruficollis     Australian little grebe
- Podiceps poliocephalus     hoary-headed grebe

**FAMILY PHALACROCORACIDAE**
- Phalacrocorax melanoleucos     little pied cormorant
- Phalacrocorax sulcirostris     little black cormorant
- Phalacrocorax varius     pied cormorant
FAMILY ANHINGIDAE
Anhinga melanogaster     darter

FAMILY PELECANIDAE
Pelecanus conspicillatus     australian pelican

FAMILY CICONIIDAE
Xenorhynchus asiaticus     black-necked stork (jabiru)

FAMILY ARDEIDAE
Ardea novaehollandiae     white-faced heron
Ardea pacifica     white-necked heron
Ardea sumatranæ     great-billed heron
Ardeola ibis     cattle egret
Egretta alba     large egret
Egretta garzetta     little egret
Egretta intermedia     intermediate egret
Dupetor flavicollis     black bittern
Nycticorax caledonicus     Nankeen night heron

FAMILY PLATALEIDAE
Platalea flavipes     yellow-billed spoonbill
Platalea regia     royal spoonbill
Plegadis falcinellus     glossy ibis
Threskiornis molucca     white ibis
Threskiornis spinicollis     straw-necked ibis

FAMILY ACCIPITRIDAE
Accipiter cirrhocephalus     collared sparrowhawk
Accipiter fasciatus     brown goshawk
Aquila audax     wedge-tailed eagle
Circus assimilis     spotted harrier
Circus aeruginosus     swamp harrier
Elanus notatus     black-shouldered kite
Haliaeetus leucogaster     white-breasted sea eagle
Haliastur sphenurus     whistling kite
Hamirostra melanosternon     black-breasted buzzard
Hieraaetus morphnoides     little eagle
Lophoictinia isura     square-tailed kite
Milvus migrans     fork-tailed kite (black kite)

FAMILY FALCONIDAE
Falco berigora     brown falcon
Falco cenchroides     australian kestrel (Nankeen)
Falco longipennis     australian hobby
Falco peregrinus     peregrine falcon
Falco subniser     black falcon
FAMILY MEGAPODIIDAE
Megapodius freycinet     scrub fowl

FAMILY ACANTHIZIDAE
Gerygone chloronata     green-backed warbler
Gerygone magnirostris    large-billed warbler
Smicrornis brevirostris weebill

FAMILY ANSERANATIDAE
Anseranas semipalmata magpie goose

FAMILY ANATIDAE
Anas gibberifrons       grey teal
Anas superciliosa       pacific black duck
Dendrocygna arcuata     water whistling duck
Dendrocygna eytoni      grass whistling duck
Tadorna radjah          white-headed shelduck

FAMILY PHASIANIDAE
Coturnix australis      brown quail

FAMILY RALLIDAE
Gallinula olivacea      bush hen

FAMILY TURNICIDAE
Turnix pyrrhothorax      red-chested button-quail

FAMILY OTIDIDAE
Ardeotis australis      kori (or australian) bustard

FAMILY GRUIDAE
Grus rubicundus         brogla

FAMILY RECURVIROSTRIDAE
Himantopus himantopus   black-winged stilt

FAMILY BURHINIDAE
Burhinus magnirostris   bush thick-knee

FAMILY GLAREOLIDAE
Glareola maldivarum     oriental pratincole
Stiltia isabella        australian pratincole

FAMILY CHARADRIIDAE
Charadrius melanops     black-fronted dotterel
Charadrius ruficapillus red-capped plover (dotterel)
Vanellus miles          masked plover
FAMILY SCOLOPACIDAE
Numenius minutus       little whimbrel
Numenius phaeopus     whimbrel
Tringa nebularia      greenshank

FAMILY COLUMBIDAE
Ducula spilorrhoa    torresian imperial pigeon
Geopelia cuneata     diamond dove
Geopelia humeralis    bar-shouldered dove
Geopelia striata     peaceful dove
Geophaps plumifera    spinifex pigeon
Geophaps smithii     partridge pigeon
Ocyphaps lophotes     crested pigeon
Phaps chalconotera    common bronzing
Phaps histrionica    emerald ground-dove
Ptilinopus regina    rose-crowned fruit-dove

FAMILY PSITTACIDAE
Aprosmictus erythropterus    red-winged parrot
Cacatua galerita       sulphur-crested cockatoo
Cacatua pastinator     little corella
Cacatua roseicapilla   galah
Calyptrornynchus banksii red-tailed black cockatoo
Leptolophus hollandicus cockatiel
Platycercus eximius     northern rosella
Psittuteles versicolor  varied lorikeyt
Trichoglossus haematodus red-collared lorikeyt

FAMILY CUCULIDAE
Cacomantis variolosus   brush cuckoo
Centropus phasianinus   pheasant coucal
Chrysococcyx basalis    Horsefield's bronze-cuckoo
Chrysococcyx minutillus little bronze-cuckoo
Cuculus pallidus       pallid cuckoo
Cuculus saturatus      oriental cuckoo
Eudynamys scolopaceae  common koel
Scyphrops novaehollandiae channel-billed cuckoo

FAMILY GRALLINIDAE
Grallina cyanoleuca    Australian magpie-lark

FAMILY STRIGIDAE
Ninox connivens        barking owl
Ninox nonaeseelandiae  southern boobook
Ninox rufa             rufous owl
Tyto alba             barn owl
<table>
<thead>
<tr>
<th>FAMILY PODARGIDAE</th>
<th>Podargus strigoides</th>
<th>tawny frogmouth</th>
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<tbody>
<tr>
<td>FAMILY AEGOTHELIDAE</td>
<td>Aegotheles cristatus</td>
<td>australian owlet-nightjar</td>
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<tr>
<td>FAMILY APODIDAE</td>
<td>Apus pacificus</td>
<td>forktailed swift</td>
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<tr>
<td>FAMILY CAPRIMULGIDAE</td>
<td>Caprimulgus argus</td>
<td>spotted nightjar</td>
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<td>FAMILY ALCEDINIDAE</td>
<td>Ceyx azureus</td>
<td>azure kingfisher</td>
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<td>Ceyx pusillus</td>
<td>little kingfisher</td>
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<td>Dacelo leachii</td>
<td>blue-winged kookaburra</td>
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<tr>
<td></td>
<td>Todiramphus macleayii</td>
<td>forest kingfisher</td>
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<td>Todiramphus pyrrhopygius</td>
<td>red-backed kingfisher</td>
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<tr>
<td>FAMILY MEROPIDAE</td>
<td>Merops ornatus</td>
<td>rainbow bee-eater</td>
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<tr>
<td>FAMILY CORACIIDAE</td>
<td>Eurystomus orientalis</td>
<td>dollarbird</td>
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<tr>
<td>FAMILY PITIDAE</td>
<td>Pitta iris</td>
<td>rainbow pitta</td>
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<td>FAMILY HIRUNDINIDAE</td>
<td>Hirundo ariel</td>
<td>fairy martin</td>
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<td>Hirundo nigricans</td>
<td>tree martin</td>
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<td>FAMILY MOTACILLIDAE</td>
<td>Anthus novaeseelandiae</td>
<td>Richard’s pipit</td>
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<tr>
<td>FAMILY CAMPEPHAGIDAE</td>
<td>Coracina novaehollandiae</td>
<td>black-faced cuckoo-shrike</td>
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<td>Coracina papuensis</td>
<td>white-bellied cuckoo-shrike</td>
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<td>Coracina tenuirostris</td>
<td>cicadabird</td>
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<td>Lalage leucomela</td>
<td>varied triller</td>
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<td>Lalage tricolor</td>
<td>white-winged triller</td>
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<td>FAMILY PACHYCEPHALIDAE</td>
<td>Colluricincla harmonica</td>
<td>grey shrike-thrush</td>
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<td>Colluricincla megarhyncha</td>
<td>little shrike-thrush</td>
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<td>Melanodryas cucullata</td>
<td>hooded robin</td>
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<tr>
<td></td>
<td>Microeca flavigaster</td>
<td>lemon-bellied flycatcher</td>
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</table>
Microeca leucophaea  
Meliphaga albilineata  
Myiagra alecto  
Myiagra inquieta  
Myiagra rubecula  
Myiagra ruficollis  
Pachycephala rufiventris  
Rhipidura leucophrys  
Rhipidura rufifrons  
Rhipidura rufiventris  

FAMILY POMATOSTOMATIDAE  
Pomatostomus temporalis  

FAMILY SYLVIIDAE  
Cinclorhamphus mathewsi  
Cisticola exilis  

FAMILY MALURIDAE  
Malurus lamberti  
Malurus melanocephalus  

FAMILY NEOSITTIDAE  
Daphoenositta chrysoptera  

FAMILY CLIMACTERIDAE  
Climacteris melanura  

FAMILY MELIPHAGIDAE  
Conopophila albogularis  
Conopophila rufogularis  
Entomyzon cyanotis  
Lichenostomus keartlandi  
Lichenostomus penicillatus  
Lichenostomus unicolor  
Lichenostomus virescens  
Lichmera indistincta  
Manorina flavigula  
Melithreptus albogularis  
Myzomela obscura  
Philemon argenteiceps  
Philemon buceroides  
Philemon citreogularis  
Ramsayornis fasciatus  

FAMILY DICAEIDAE  
Dicaeum hirundinaceum  

jacky winter  
white-lined honey eater  
shining flycatcher  
restless flycatcher  
leaden flycatcher  
broad-billed flycatcher  
willie wagtail  
rufous fantail  
northern fantail  
grey-crowned babbler  
rufous songlark  
golden-headed cisticola  
variegated fairy-wren  
red-backed fairy-wren  
varied sittella  
black-tailed treecreeper  
rufous-banded honeyeater  
rufous-throated honeyeater  
blue-faced honeyeater  
grey-headed honeyeater  
white-plumed honeyeater  
white-gaped honeyeater  
singing honeyeater  
brown honeyeater  
yellow-throated miner  
white-throated honeyeater  
dusky honeyeater  
silver-crowned friarbird  
helmeted friarbird  
little friarbird  
bar-breasted honeyeater  
mistletoebird
FAMILY PARDALOTIDAE
Pardalotus rubricatus  red-browed pardalote
Pardalotus striatus  striated pardalote

FAMILY PLOCEIDAE
Erythrura gouldiae  Gouldina finch
Neochmia phaeton  crimson finch
Poephila acuticauda  long-tailed finch
Poephila personata  masked finch
Taeniopygia bichenovii  double-barred finch
Taeniopygia guttata  zebra finch

FAMILY ORIOLIDAE
Oriolus flavocinctus  yellow oriole
Oriolus sagittatus  olive-backed oriole
Sphecotheres viridis  figbird

FAMILY DICRURIDAE
Dicrurus bracteatus  spangled drongo

FAMILY PTILONORHYNCHIDAE
Chlamydera nuchalis  great bowerbird

FAMILY ARTAMIDAE
Artamus cinereus  black-faced woodswallow
Artamus leucorhynchus  white-breasted woodswallow
Artamus minor  little woodswallow
Artamus personatus  masked woodswallow

FAMILY CRACTICIDAE
Cracticus nigrogularis  pied butcherbird
Cracticus torquatus  grey butcherbird

FAMILY CORVIDAE
Corvus bennetti  little crow
Corvus orru  torresian crow
CLASS MAMMALIA

MONOTREMES

FAMILY TACHYGLOSSIDAE
Tachyglossus aculeatus short-beaked echidna

MARSUPIALS

FAMILY DASYURIDAE
Antechinus bellus fawn antechinus
Dasyurus hallucatus northern quoll
Parantechinus bilarni sandstone antechinus
Phascogale tapoatafa brush-tailed phascogale
Planigale maculata common planigale
Smynthopsis sp. dunnart
Smynthopsis virginiae red-cheeked dunnart

FAMILY MACROPODIDAE
Macropus agilis agile wallaby
Macropus antilopinus antilopine wallaroo
Macropus robustus common wallaroo or euro
Peradorcas concinna nabarlek
Petrogale brachyotus short-eared rock wallaby

FAMILY PERAMELIDAE
Isoodon macrourus northern brown bandicoot

FAMILY PETAURIDAE
Petaurus breviceps sugar glider

FAMILY PHALANGERIDAE
Trichosurus arnhemensis northern brushtail possum

PLACENTALS

FAMILY PTEROPODIDAE
Macroglossus lagochilus northern blossom-bat
Pteropus alecto black flying-fox
Pteropus scapulatus little red flying-fox

FAMILY MEGADERMATIDAE
Macroderma gigas ghost bat

FAMILY RHINOLOPHIDAE
Hipposideros ater dusky horseshoe-bat
Hipposideros diadema inornatus  diadem horseshoe-bat
Rhinonicteris aurantius  orange horseshoe-bat

FAMILY EMBALLONURIDAE
Taphozous flaviventris  yellow-bellied sheathtail-bat
Taphozous georgianus  common sheathtail-bat

FAMILY VESPERTILIONIDAE
Chalinolobus gouldii  Gould’s wattled bat
Chalinolobus nigrogriseus  hoary bat
Eptesicus caurinus  northern brown bat
Eptesicus pumilus  little cave eptesicus
Miniopterus schreibersii  common bent-wing bat
Myotis adversus  large-footed mouse-eared bat
Nycticeius greyii  little broad-nosed bat
Nyctophilus arnhemensis  Arnhemland long-eared bat
Nyctophilus bifax  North Queensland long-eared bat
Nyctophilus walkerii  pygmy long-eared bat
Pipistrellus tenuis  Timor pipistrelle

FAMILY MURIDAE
Hyromys chrisogaster  water rat
Melomys burtoni  grassland melomys
Mesembriomyx gouldii  black-footed tree-rat
Pseudomys delicatulus  delicate mouse
Rattus colletti  dusky rat
Rattus tunneyi  pale field-rat
Zyzomys argurus  common rock-rat

FAMILY CANIDAE
Canis familiaris dingo  dingo
SELECTED INFORMATION SOURCES


