

4. MANAGEMENT OF MANTON DAM RECREATION AREA VALUES

This section identifies a number of values of Manton Dam Recreation Area including natural and social values. Natural values include physical, chemical, geological and biological characteristics of the area. Natural values are significant in terms of their biodiversity (i.e. representative, rare or unique) and ecosystem integrity role. Social values are those cultural, recreational, historical and educational characteristics for which the area is significant or well known.

Summary of values of Manton Dam Recreation Area:

- Clean water,
- Native flora and fauna,
- Opportunities for undertaking water sports (swimming, boating, sailing, windsurfing, canoeing, water skiing and jet skiing),
- Opportunities for recreational fishing,
- Land based recreational activities (picnicking, bushwalking, bird watching etc.),
- Areas of cultural significance,
- Areas of historical significance,
- Opportunities for education and interpretation,
- Back up water supply for Darwin.

Management of the Area aims to maintain the natural and social values, whilst providing for recreational activities where these activities are compatible with maintaining the Area's values.

Additionally General Park Management Principles and Guidelines have been developed for all parks and reserves in the Northern Territory and are provided in Appendix 3. These principles and guidelines focus on the following areas

- management of native plants, animals and the natural environment;
- management of Aboriginal interests and sites;
- management of non-Aboriginal historic sites;
- visitor management and the provision of recreational opportunities;
- park administration, stakeholder management and concessions management.

The principles and guidelines set out the broad objectives and actions for managing parks and reserves whilst this section concentrates on management objectives and strategies specific to the identified values of Manton Dam Recreation Area

It is necessary to determine how each value is, or is likely to be, affected by existing or future pressures. The pressures on the Area's values are either a primary or secondary impact of user activities. Therefore, the management plan's strategies focus primarily on alleviating the effects of human activities. Strategies for the management of each value are addressed under the following headings.

Management Objectives

Management Objectives identify the primary aims of Parks and Wildlife Commission in managing the Value. Management objectives have been developed for all of the natural and social values stated in this plan.

Management Actions

Management actions relate to the actions to be taken in achievement of the management objectives. The actions outlined in this Plan have been assigned a High (H), Medium (M) or Low (L) ranking as an indication of their relative importance.

Performance Measures

The performance measures are indicators of management effectiveness in achieving objectives and targets. Performance measures should be quantitative, representative and cost-effective in their implementation. In association with the performance measures are desired trends which indicate the preferred direction of a performance measure (positive, negative or neutral/constant) and any monitoring activity associated with the performance measure.

Short and Long Term Targets

Short-term targets refer to a benchmark for management to achieve within a specified time period and are generally a step towards achievement of a long-term target. Long-term targets are targets to be achieved within the life of the Plan.

4.1 Natural Values

Natural values are the physical, geological, chemical and biological characteristics of an area. Their value is measured in relation to their local, regional, national and global biodiversity significance and their role in maintaining the structure and functioning of ecosystems. For convenience the natural values are treated individually in this Plan. In reality the environment is generally a structurally and functionally complex array of relationships between plants and animals interacting with their physical environment.

Natural values also have a social significance in that many social values are functionally dependent on the maintenance of natural values.

4.1.1 Water Quality

Value	Water Quality
<p>Background</p>	<p>The water quality of Manton Dam is a reflection of its catchment geology, soils and vegetation, as well as its land-use. The minimal human activity in the catchment, with no land clearing, agriculture or urbanisation, underpins the dam's natural water quality. The productivity of the dam is about middle ranked when compared to other dams and lakes in the region. Water plants grow in the shallows of the dam and along the shoreline. Near the dam wall, the steep slopes of the dam, which floods a small gorge, restrict water plant growth. Algae are microscopic plants that grow in the dam, their concentrations are typical of a water body of medium productivity. An interesting feature of the dam's primary productivity is photosynthetic bacteria that grow in narrow bands in the deep waters where there is no oxygen.</p> <p>Other features of the dam are:</p> <ul style="list-style-type: none"> • During an average wet season, the volume of the dam is flushed twice by catchment runoff. • The dam is thermally stratified most of the year, this means the water is layered with warm waters lying on top of cooler (more dense) waters. This is a natural phenomenon and has important water quality implications (e.g. sediment quality). • Waters in the deeper parts of the dam (less than 4 m) have little or no oxygen, because they are isolated from oxygen produced from algae in the surface waters and oxygen which enters the dam from the atmosphere. • The dam has medium concentrations of nutrients, with the amount of algae being limited by phosphorus. • Algae in the dam are mainly <i>Botryococcus</i> and dinoflagellates. Nuisance blue-green algae, which can impair water quality for recreation use, are present but in very low amounts. <p>Changes in environmental conditions, particularly increases in nutritional input, can reduce the water quality of the dam for recreation use. Nutrient enrichment by human activities, such as sewage discharge and surface run-off, can stimulate phytoplankton blooms which 'cloud' the water as well as promoting excessive growth of 'nuisance' algae. In extreme cases, algal blooms will shade the light required for water plants.</p> <p>Contaminants (e.g. pesticides), pathogenic substances (e.g. faecal bacteria) and litter result in a decline of water (and sediment) quality. The risk of oil pollution due to accidental oil spills in the area is significant on the weekends. The resultant changes in water quality can in turn reduce the potential range of uses for the dam.</p> <p>The PWCNT undertakes a water quality monitoring program based on the current Australian Guidelines for Recreational Use of Water, published by the National Health and Medical Research Council (NHMRC). Selected sites at Manton Dam are sampled on a quarterly</p>

	basis to determine the characteristics and quality of the water and to assess any health risk to recreational users.		
Existing and Potential use/s and/or pressure/s	Use/s	Pressure/s	
	Water skiing, jet skiing, swimming, canoeing, fishing	<u>Current pressures:</u> Accidental fuel and oils spills from boats, littering, runoff after fires <u>Potential pressures:</u> Nutrient and pathogen inputs	
Current major pressure/s	None		
Management Objective/s	<ol style="list-style-type: none"> To ensure that visitor use of the Manton Dam and any developments proposed for the Recreation Area are compliant with the foremost need to maintain the water quality within the dam and catchment in accordance with the standard required by PAWA. To ensure that water quality within the dam is maintained in accordance with the Australian Guidelines for Recreational Use of Water. 		
Management Actions	<ol style="list-style-type: none"> Maintain the water quality monitoring program (PWCNT). (H) Establish and maintain a water quality database for the Area (PWCNT). (M) If necessary restrict or prohibit recreational use of the Area for a specific time to meet water quality standards (PWCNT). (M) Take appropriate action to apprehend or control anyone or anything causing a threat to water quality (PWCNT). (M) Dispose of all rubbish and waste products outside the water catchment area (PWCNT). (H) Monitor the effects of controlled burning and feral animals within the catchment on water quality (PWCNT). (H) 		
Performance Measure/s	Measure/s	Desired Trends	Monitoring
	<ol style="list-style-type: none"> Concentrations of coliforms, faecal coliforms and presence of <i>Naegleria fowleri</i> Fuel and oil concentrations along the skiing beach 	Compliance with NHMRC Guidelines Negative	Water quality
Short-term target/s	That water quality is maintained in accordance with the NHMRC Australian Guidelines for Recreational Use of Water.		
Long-term target/s	That water quality is maintained in accordance with the NHMRC Australian Guidelines for Recreational Use of Water.		

4.1.2 Flora and Fauna

Value	Flora and Fauna	
Background	<p>The protective management of the catchment in the past has resulted in the area being largely undisturbed, notwithstanding the original river impoundment. Its designation as a recreation Area provides an opportunity to maintain a relatively high level of managed protection of both the terrestrial and aquatic environments.</p> <p>Although the dam is an artificial entity, the Recreation Area contains a diversity of terrestrial and aquatic flora and fauna. Vegetation of significance includes the tall palm <i>Livistona rigida</i> in upland drainage channels, <i>Grevillea longicuspis</i> and the rare herb, <i>Tyiophora erecta</i>, in woodland areas, stands of <i>Melaleuca spp.</i> in low lying areas and aquatic plants including <i>Nymphaea gigantea</i> on the dam surface.</p> <p>The PWCNT has undertaken surveys of noxious weeds in the Recreation Area and seven species of weed have been identified. These are: Mimosa (<i>Mimosa pigra</i>), Olive Hymanachne (<i>Hymenachne amplexicaulis</i>), Hyptis (<i>Hyptis suaveolens</i>), Khaki weed (<i>Alternanthera pungens</i>), Flannel weed (<i>Sida cordifolia</i>) and Paddy's lucerne (<i>Sida rhombifolia</i>). The Department of Primary Industry and Fisheries has identified <i>Salvinia (Salvinia molesta)</i> as a high risk aquatic weed, but to-date has not been detected within the Dam. None of the weeds found in the area are widespread or considered threatening to the Area's integrity.</p> <p>None of the animals found in the area are considered rare or endangered. However, Manton Dam is a late dry season refuge for water birds such as Magpie Geese.</p> <p>As mentioned above the original river impoundment initially had an impact on some animal species. It is now a closed system. Migrating fish moving upstream following their food or seeking permanent waterholes and breeding areas can't move further when reaching the dam wall. The long-term affect of this is not known.</p> <p>Feral animals, especially pigs, are found within the catchment and can cause erosion and damage to the natural environment, particularly the wetter foreshore areas.</p> <p>The soils of the area are generally stable, although some erosion due to power boat wakes does occur, particularly on the steeper shores, which are not protected by rock outcrops.</p>	
Existing and Potential use/s and/or pressure/s	<p>Use/s</p> <p>Bushwalking</p>	<p>Pressure/s</p> <p><u>Current pressures:</u> Feral pigs, littering, trampling</p> <p><u>Potential pressures:</u> Weeds, intense hot wildfires that kill mature trees and leave areas susceptible to damage from weed invasion and erosion, Cane Toads</p>
Current major pressure/s	None	
Management Objective/s	<ol style="list-style-type: none"> 1. To maintain and protect the aquatic and terrestrial flora and fauna, and habitats. 2. To prevent the introduction of new weed species and contain the spread of existing weeds. 	

Management Actions	<ol style="list-style-type: none"> 1. Rehabilitate disturbed areas (PWCNT, DLPE). (M) 2. Strictly control future construction of developments to ensure that minimal environmental damage is incurred (PWCNT). (H) 3. Employ appropriate stabilisation of dam shores where necessary (PWCNT, DLPE). (H) 4. Eradicate weeds where necessary using the most appropriate techniques. Any herbicides used must be selective and have low persistence. Sources of mulch and seed used in revegetation will be closely scrutinized (PWCNT). (H) 5. Generate awareness amongst boat owners of the importance of keeping the waterbody weed-free (PWCNT). (H) 6. Familiarise park staff with weed identification and use of chemicals and equipment. (M) 7. Maintain boundary fencelines and firebreaks. (PAWA). (M) 8. Ensure pets are not brought into the Area. (PWCNT). (L) 9. Implement a Fire Monitoring Program for the area to help protect the Area's developments, sensitive plant communities, wildlife habitats and neighbouring properties, bearing in mind adverse impacts of burning on water quality (PWCNT). (M) 10. Prohibit weapons and traps from entering in the Area (PWCNT). (M) 11. Update the Feral Animal Control Program on an annual basis (PWCNT). (M) 		
Performance Measure/s	Measure/s	Desired Trends	Monitoring
	<ol style="list-style-type: none"> 1. Area of damaged vegetation 2. Number spp. and abundance of feral animals 3. Coverage and species number of weeds 4. Incidence of wildfires 	<p>Negative Negative Negative Negative</p>	<p>Monitor shores of the dam for erosion, weeds, feral animals and fire.</p>
Short-term target/s	To reduce the extent of weeds and number of feral pigs within the Area by 50% in 5 years		
Long-term target/s	To maintain the Area in a natural state		

4.2 Functional Values

4.2.1 Backup Water Supply for Darwin

Value	Backup Water Supply for Darwin		
Background	Manton Dam was constructed during WWII as a water supply for armed forces stationed in the Darwin Region. For many years after WWII Manton Dam remained the principal water supply for Darwin. With increased population and the rise in demand for water it became necessary to augment Darwin's water supply. In 1972 the Darwin River Dam was completed and took over as the principal water supply source for Darwin. Since then Manton Dam has remained as a supplement to Darwin's water supply for use in the event that water can not for whatever reason be supplied from Darwin River Dam.		
Existing and Potential use/s and/or pressure/s	Use/s	Pressure/s	
	Back-up water supply for Darwin (only used in emergency) Recreational use	<u>Current pressures:</u> Resources to maintain water supply operation <u>Potential pressures:</u> Increased recreational use Pollution of water supply	
Current major pressure/s	None		
Management Objective/s	1. To maintain and manage the water supply function of the Dam (PAWA). 2. To ensure water quality is maintained to a standard for drinking water supply (PAWA, PWCNT)		
Management Actions	1. Maintenance of the stand-by diesel generating set in working order so that water can be supplied to Darwin if necessary (PAWA). (H) 2. Maintain the water quality monitoring program (PWCNT). (H)		
Performance Measure/s	Measure/s	Desired Trends	Monitoring
	1. Pumps and gen sets operational 2. Coliforms, faecal coliforms and <i>Naegleria fowleri</i> concentrations		Monitor structural integrity of Dam as part of PAWA maintenance program
Short-term target/s	Water quality complies with National health and Medical Research Council Guidelines		
Long-term target/s	Water quality complies with National health and Medical Research Council Guidelines		

4.3 Recreational Values

4.3.1 Water Sports

Value	Water Sports (swimming, boating, sailing, windsurfing, canoeing, water skiing and jet skiing)	
Background	<p>Manton Dam has considerable values for water-based recreation and tourism. The size of the water body, its attractive setting, ease of access throughout the year and relative safety makes it very attractive to people wishing to enjoy swimming, water skiing, pleasure boating and other water-based recreational pursuits.</p> <p>At peak periods, several hundred people visit the Area per week. Most visits occur on weekends (particularly Sundays) and on public holidays. There are no marked seasonal variations in visitation. The most popular activities are by far jet boating and water skiing. The number of powered boats using the dam is variable, from nil most weekdays to upwards of 30 on some weekend days. To maintain public safety and minimise conflict between park users, regulations and restrictions relating to these activities have been developed. Surprisingly swimming does not prove to be a very popular activity at Manton Dam, although a swimming area is provided.</p> <p>The Recreation Area is at present a day use area only. It is open from sunrise to sunset. After hours access is by permit only.</p> <p>The presence of freshwater crocodiles in the dam is a matter of concern for some recreationalists. Aquatic plants could limit the movement of boats and be a hazard to swimmers, particularly in the shallower areas of the dam. Two Crocodile traps have been set up by Parks and Wildlife Commission Rangers and are checked for saltwater crocodiles on a regular basis.</p>	
Requirements	<ol style="list-style-type: none"> 1. High water quality (protection of the users from contaminated water) 2. Separation of incompatible recreational activities 	
Existing and Potential use/s and/or pressure/s	<p>Use/s</p> <p>Water Skiing Jet Skiing Windsurfing Sailing Boating Swimming Canoeing</p>	<p>Pressure/s</p> <p><u>Current pressures and problems:</u> Conflicting uses of the dam (water skiing and jet skiing), problems relating to access to facilities on the land (toilets, water), congestion at the ski beach during peak periods, dangerous behaviour by some jet boat/ski operators, inadequate beach area for water sports traffic and vessel mooring, swimming area confined due to weed congestion, inadequate interpretative signage in relation to water sport activities.</p> <p><u>Potential pressures:</u> Increasing numbers of boats and jet skis</p>
Current major pressure/s	Water skiing/jet skiing	

Management Objective/s	<ol style="list-style-type: none"> 1. To encourage the appropriate use, appreciation and enjoyment of the Area by the public. 2. To ensure water sports are managed in a manner that is consistent with maintaining the Area's natural values. 3. To manage recreational activities in a manner that minimises conflict between user groups. 4. To manage recreational use and visitor activities in a manner that promotes visitor safety. 																
Management Actions	<ol style="list-style-type: none"> 1. Determine environmental impacts of all existing water sports in the Area (PWCNT). (L) 2. Adopt new Zoning Scheme to separate jet skiers from other user groups and remove potential for accidents and conflict between user groups (PWCNT). (H) 3. Implement by-laws under the <i>Territory Parks and Wildlife Conservation Act</i> to regulate boating safety, water skiing and other water based activities in the Recreation Area. (PWCNT). (H) 4. Ensure users follow the Zoning Scheme and regulations, which apply to their activities and separate incompatible activities within the Area (PWCNT). (M) 5. Develop new signs displaying the Zoning Scheme, regulations, by-laws and other visitor information (PWCNT). (M) 6. Inform and educate the public of the by-laws and changed regulations (PWCNT). (M) 7. Restrict recreational activities (PWCNT) if they: <ul style="list-style-type: none"> • cause or are likely to cause unacceptable levels of water pollution (H), • cause or are likely to cause unacceptable levels of impacts upon the Area's natural values (H), • endanger other users, or involve unacceptable risks to participants (H), or • create an unacceptable level of nuisance. (H) 8. Provide appropriate facilities and infrastructure to accommodate visitor needs without compromising the conservation values of the Area (PWCNT). (H) 9. Develop and extend the current ski beach (PWCNT, DTW). (H) 10. Provision of markers to separate jet skiers and water skiers (PWCNT). (M) 11. Set up a visitor monitoring program for the Area (PWCNT). (L) 12. Monitor aquatic plants close to the beach and remove if they cause a hazard to swimmers (PWCNT). (M) 13. Maintain the crocodile monitoring program (PWCNT). (M) 14. Maintain the Water Quality Monitoring Program and close the Area to aquatic activities if visitor safety or health risks arise (PWCNT). (H) 15. Transfer all rubbish and waste products outside the water catchment area (PWCNT). (M) 																
Performance Measure/s	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Measure/s</th> <th style="text-align: left;">Desired Trends</th> <th style="text-align: left;">Monitoring</th> </tr> </thead> <tbody> <tr> <td>1. Number of infringement notices for inappropriate behaviour.</td> <td>Negative</td> <td rowspan="5">Crocodiles, aquatic plants, visitor satisfaction, intensity of use, effects of human activities on the environment and the interaction between various user groups</td> </tr> <tr> <td>2. Number of reported complaints from visitors</td> <td>Negative</td> </tr> <tr> <td>3. Visitor satisfaction levels (surveys)</td> <td>Positive</td> </tr> <tr> <td>4. Number of reported accidents within Area</td> <td>Negative</td> </tr> <tr> <td>5. Maintenance of water quality to Australian guidelines</td> <td>Neutral</td> </tr> </tbody> </table>	Measure/s	Desired Trends	Monitoring	1. Number of infringement notices for inappropriate behaviour.	Negative	Crocodiles, aquatic plants, visitor satisfaction, intensity of use, effects of human activities on the environment and the interaction between various user groups	2. Number of reported complaints from visitors	Negative	3. Visitor satisfaction levels (surveys)	Positive	4. Number of reported accidents within Area	Negative	5. Maintenance of water quality to Australian guidelines	Neutral		
Measure/s	Desired Trends	Monitoring															
1. Number of infringement notices for inappropriate behaviour.	Negative	Crocodiles, aquatic plants, visitor satisfaction, intensity of use, effects of human activities on the environment and the interaction between various user groups															
2. Number of reported complaints from visitors	Negative																
3. Visitor satisfaction levels (surveys)	Positive																
4. Number of reported accidents within Area	Negative																
5. Maintenance of water quality to Australian guidelines	Neutral																
Short-term target/s	Implement new zoning scheme and regulations within 6 months of adoption of plan.																
Long-term target/s	No significant conflict between user groups within Area.																

4.3.2 Recreational Fishing

Value	Recreational Fishing	
Background	<p>Fishing is one of the most popular recreational activities in the Top End. Recreational fishing is permitted in all zones except the Conservation Zone and Prohibited Access Zone. The dominant fish species in the dam is Saratoga, which offers good sport fishing and is not considered to be under threat. In the early 1990's the Department of Primary Industry and Fisheries stocked Manton Dam with about 100,000 farm-bred Barramundi fingerlings for the benefit of anglers. Since then 50,000 2cm long Barramundi fingerlings were released into the dam annually by the Department for recreational fishing up until 2000 when 8,000 8cm long fingerlings were introduced. A 100mm net is installed across the spillway at the beginning of each wet season to prevent mature barramundi swimming over the dam wall and plummeting to their death. The net is removed at the commencement of the dry season. The total Barramundi population within the dam is currently unknown.</p> <p>Management of recreational fishing at Manton Dam is currently achieved through possession limits and minimum size limits. Usual Fisheries possession limits apply of five Barramundi per person per day, with a minimum size limit of 55cm.</p> <p>The Recreation Area is at present a day use area only. It is open from sunrise to sunset. After hours access is by permit only.</p>	
Requirements	<ol style="list-style-type: none"> 1. High water quality 2. Maintenance of fish habitat 3. Maintenance of recreational fish stocks at Manton Dam. 	
Existing and Potential use/s and/or pressure/s	Use/s	Pressure/s
	Fishing	<u>Current pressures:</u> Predation <u>Potential pressures:</u> Introduced fish and aquatic plants
Current major pressure/s	None	
Management Objective/s	<ol style="list-style-type: none"> 1. To ensure that recreational fishing at Manton Dam is managed in a manner that is consistent with maintaining the Area's values. 2. Cooperate with DPI&F in maintaining quality recreational fishing opportunities at Manton Dam. 3. Maintain and protect the water quality in accordance with Australian Guidelines. 4. Encourage the appropriate use, appreciation and enjoyment of the Recreation Area by recreational fishers. 	
Management Actions	<ol style="list-style-type: none"> 1. Monitoring of target fish species (DPIF). (M) 2. Formulate performance measures and targets for key recreational species that will maintain the quality of recreational fishing in the dam (DPIF). (M) 3. Monitor recreational fishing catch/effort within the dam (DPIF). (M) 4. Ensure recreational fishers are aware of the Zoning Scheme and of restrictions, which apply to their activities within the dam such as possession and minimum size limits (PWCNT, DPIF). (M) 5. Prevent exotic organisms (including fish) from entering the waterbody (PWCNT, DPIF). (H) 	

Performance Measure/s	Measure/s	Desired Trends	Monitoring
	1. Catch per effort for target species. 2. Catch size for target species.	Increase Increase	Fish stocks, size, numbers and composition. Monitor for introduced plants and animals.
Short-term target/s	To increase the size and number of target fish in the dam by 2005.		
Long-term target/s	To develop a quality recreational fishery within the dam.		

4.3.4 Land Based Recreational Activities

Value	Land Based Recreational Activities		
Background	Manton Dam Recreation Area provides an ideal setting for passive recreation such as picnicking, bird watching and relaxing. The lawned picnic areas are flanked by water from the dam and situated amongst large shade trees. The area provides a tranquil setting and is within a 45 minute drive from Darwin.		
Existing and Potential use/s and/or pressure/s	Use/s	Pressure/s	
	Picnicking Bushwalking Bird watching Photography Relaxing	<u>Current pressures:</u> Nil <u>Potential pressures:</u> Overcrowding, conflicts between user groups	
Current major pressure/s	Nil		
Management Objective/s	1. Encourage the appropriate use, appreciation and enjoyment of the Area by the public. 2. To manage recreational activities in a manner that minimises conflict between user groups.		
Management Actions	1. Continue to maintain the picnicking and barbecue facilities within the Area (PWCNT). (H) 2. Provide educational and interpretive information to park visitors (PWCNT). (H) 3. Develop a system of walking tracks throughout the Area (PWCNT). (L) 4. Improve visitor facilities in the ski beach area including provision of additional toilets and development of a sandy beach (PWCNT, T&W). (H)		
Performance Measure/s	Measure/s	Desired Trends	Monitoring
	1. Survey of visitor satisfaction	Positive	Interaction between users
Short-term target/s	Improved visitor facilities in ski beach area by 2002.		
Long-term target/s	High level of satisfaction by all Area visitors.		

4.4 Cultural Values

4.4.1 Areas of Aboriginal Cultural Significance

Value	Areas of Aboriginal Cultural Significance		
Background	<p>Aboriginal people from Larrakia, Limilngan-Wulna and Koongurrukun claim traditional responsibility for the area. There are two registered sacred sites within the Recreation Area. Registered and recorded sacred sites are protected under the provisions of the <i>Northern Territory Aboriginal Sacred Sites Act</i> whether or not they are recorded. Archaeological places and objects of Aboriginal origin are protected under the <i>Heritage Conservation Act</i> whether or not they are declared heritage places.</p> <p>The Travelling Women are the most significant creator beings in the cosmology of the Wulna and Limilngan people. The Travelling Women came from the east and in the course of their travels bore children to a number of different ancestral beings. Members of the Wulna and Limilngan local descent groups believe they are descended from these female ancestors. The Travelling Women are also believed to have created a number of landforms, which are sites of considerable importance in aboriginal tradition.</p> <p>The Travelling Women also moved along Balarngamang Creek (Manton River) to a site called Jetjerriyn (close to the dam wall). For part of their journey, the Travelling Women carried red ochre, which they deposited in a cave at Jetjerriyn. Apparently the cave was flooded during construction of Manton Dam. The exposed quartz deposits near the turnoff to Manton Dam are believed to be salt water which dripped off an old lady who came from the sea and walked along the Jetjerriyn track.</p>		
Existing and Potential use/s and/or pressure/s	Use/s	Pressure/s	
	Traditional owner use Interpretation of Aboriginal cultural values	<u>Current pressures:</u> None <u>Potential pressures:</u> Inappropriate visitor use, deliberate vandalism	
Current major pressure/s	None		
Management Objective/s	<ol style="list-style-type: none"> To protect areas of Aboriginal cultural significance. To involve traditional custodians of the area in management of the Area. 		
Management Actions	<ol style="list-style-type: none"> Work closely with the traditional custodians of the area to ensure sites of significance are managed in accordance with their wishes (PWCNT). (M) Work closely with the Aboriginal Areas Protection Authority to ensure the protective management of Aboriginal sacred sites in the Area (PWCNT). (M) 		
Performance Measure/s	Measure/s	Desired Trends	Monitoring
	1. Protection of sites of significance (including sacred sites)	Constant	Monitoring of sites of Aboriginal cultural significance in accordance with the wishes of traditional custodians.
Short-term target/s	Aboriginal sites of significance managed in accordance with the wishes of traditional custodians.		
Long-term target/s	Aboriginal sites of significance managed in accordance with the wishes of traditional custodians.		

4.5 Historical Values

4.5.1 Areas of Historical Significance

Value	Areas Of Historical Significance		
Background	<p>The original construction of Manton Dam has strong links with the Royal Australian Navy and World War II. Prior to 1938, Darwin's water supply had been drawn from wells and bores. Under the auspices of the Royal Australian Navy, Manton Dam and the pipeline was completed in 1942. During World War II Manton Dam supplied water to Australian and British naval ships. Two anti-torpedo nets and anti aircraft units were installed to protect the dam from air attacks. In 1945 the pipeline and storage tanks were upgraded primarily as a requirement of the RAN. The system was then handed over to the public in the early post war years.</p> <p>The dam area, including the wall, pump houses, etc., has been included on the "National Trust Register of Significant Places" as acknowledgment of both its historical and natural significance and was included as a key element in the Northern Territory Government War Service Memorial Year in 1992.</p> <p>Numerous military camps were established along the Stuart Highway during WWII. Many were located along what is now the eastern boundary of the Recreation Area. Most notable of these was the headquarters of the North Australian Observer Unit, which was situated within the Recreation Area. The unit has special significance to the Northern Territory, however there are few tangible reminders of its existence. Recent investigations along the new railway corridor have revealed the remains of significant WWII camp sites on the eastern hills adjacent to the Stuart Highway.</p>		
Existing and Potential use/s and/or pressure/s	Use/s The historical significance of Manton Dam, particularly as it relates to WWII may be of interpretive value to park visitors.	Pressure/s <u>Current pressures:</u> None <u>Potential pressures:</u> None	
Current major pressure/s	None		
Management Objective/s	<ol style="list-style-type: none"> 1. Protect areas of historical significance. 2. Enable visitors to appreciate the historical and engineering significance of the dam. 		
Management Actions	<ol style="list-style-type: none"> 1. Develop interpretive information in relation to the historical and engineering significance of the dam (PWCNT, PAWA, DAM). (M) 2. Liaise with Heritage Conservation Services (HCS) regarding the Management of the Recreation Area's historical values (PWCNT, PAWA, HCS). (M) 3. In consultation with Heritage Conservation Services, assess and nominate sites of historical significance for inclusion on the NT Heritage Register (PWCNT, PAWA, HCS). (M) 4. Provide opportunities for the public to inspect the dam wall and learn about its significance (PAWA, PWCNT). (M) 		
Performance Measure/s	Measure/s <ol style="list-style-type: none"> 1. Maintenance of historic integrity of site. 2. Improved visitor understanding and appreciation of the dam 	Desired Trends Constant Positive	Monitoring
Short-term target/s	Improved interpretation of Area's historical values (by 2003).		
Long-term target/s	Improved visitor awareness of dam's historical significance		

4.6 Educational and interpretive values

4.6.1 Educational Values Relating to Manton Dam

Value	Educational Values Relating to Manton Dam		
Background	<p>To adequately manage visitors and help to facilitate safe and enjoyable visitor experiences within the Area, it is essential to provide appropriate, high quality communication and interpretation services. These services should consider the needs of visitors and those of the Agencies responsible for the management of the Area, PAWA and PWCNT.</p> <p>The services should orientate visitors to the Area and provide them with quality information and interpretation about the Area's aesthetic, natural and cultural values. The close proximity of the Area to Darwin and its easy access provides opportunities for community education about the dam, water management and the habitats associated with the Area. Such services can foster greater understanding of the Area's values and encourage visitors to take an active role in their preservation, therefore assisting in the Area's management.</p> <p>The level of public compliance in relation to management controls in the Area will be related to the level of public understanding of the values of the Area and the reasons for regulation of activities. For this reason it is important that recreational users are made aware of the Area's Zoning Scheme and of the regulations governing the use of craft on the waterbody.</p>		
Existing and Potential use/s and/or pressure/s	Use/s	Pressure/s	
	Education, interpretation and communication	<u>Current pressures:</u> None	<u>Potential pressures:</u> None
Current major pressure/s	None		
Management Objective/s	<ol style="list-style-type: none"> To promote better public understanding of Manton Dam and issues associated with its management. To inform visitors of the rules and regulations associated with use of the Area, particularly in relation to water sports. 		
Management Actions	<ol style="list-style-type: none"> Develop and install signs related to the Area's Zoning Scheme, Regulations governing waterskiing and jetskiing and information about the Area's values (PWCNT). (M) Provide support to institutions using the Area for educational purposes (PWCNT). (L) PWCNT will assist PAWA in the development of the interpretation services for visitors to the dam wall, in order that complimentary programs are developed. (L) The opportunity for communication and interpretation of Area values will be considered in the development of visitor facilities and recreational opportunities. (M) 		
Performance Measure/s	Measure/s	Desired Trends	Monitoring
	1. Survey of visitor knowledge regarding the Area's values and regulations associated with its use.	Positive	
Short-term target/s	Increased visitor understanding about new regulations and zoning (by 2002)		
Long-term target/s	Visitors fully aware of Area values and regulations pertaining to its use		

5. PROPOSALS FOR DEVELOPMENT

5.1 Commercial Operations in the Area

The Area has potential for the development of low-key commercial operations such as;

- campground and/or of cabin accommodation,
- kiosk facility,
- canoe/boat hire.

Commercial operations are required to meet the requirements of the Commission's Concessionary Operations Policy and will require approval of both the Parks and Wildlife and the Power and Water Authority. Concessions will be subject to conditions designed to ensure the protection of water quality and the Area's natural and cultural values. The operation of concessions in the Area will be monitored and the information collected will be used to evaluate the application for lease/licence renewal. Concession leases and licences may be subject to fees as determined by the Director of the Parks and Wildlife Commission. Proposals will be subject to provisions of the *Environment Assessment Act*, *Heritage Conservation Act*, *Northern Territory Aboriginal Sacred Sites Act*, *Native Title Act*, *Water Act* and other relevant legislation.

5.2 Development Proposals by PWCNT

A Ski Beach Site Redevelopment Plan has been prepared (Figure 3) and will be implemented, as funds become available. The Plan includes:

- expansion of the ski beach,
- provision of a new toilet block to service the ski beach, located 100m from the water's edge,
- sealing of the trailer parking area behind the ski beach,
- provision of a walking path, reticulated water and other works in the ski beach picnic area,
- development of new signs displaying the Zoning Scheme, regulations and other interpretive site information.

Floating markers will be placed in the water to separate the Power Boat Zone and Jet Ski Zone.

In order to increase the range of recreational opportunities available to visitors to the Area, walking trails may be developed within the Recreation and Facilities Zone.

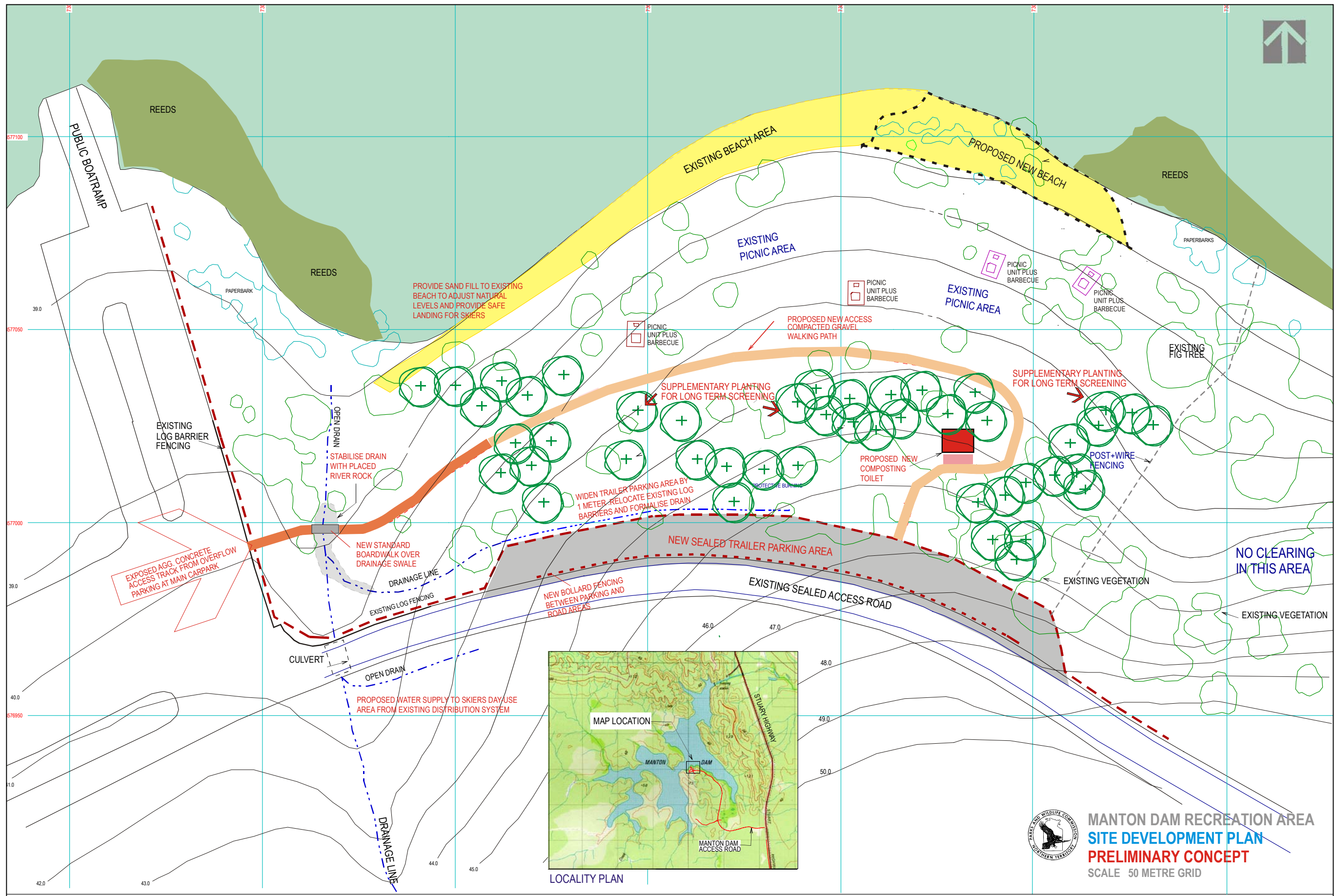
5.3 Development Proposals by PAWA

A Community Based Group (CBG) was formed in 1995 to investigate and recommend appropriate recreational use and catchment management practices associated with the future use of Manton Dam. Amongst its members were representatives of the major recreational users of the area. They produced a report on the 'Future Uses of Manton Dam' and presented a number of recommendations related to future management practices in relation to the dual use of the dam for recreation and town water supply. In response to the CBG recommendations and additional studies conducted by PAWA, PAWA recommended the following actions in relation to future management of the dam and the augmentation of Darwin River Dam water supply.

- Retain Manton Dam solely as a recreational dam and construct a new closed catchment dam (Western Manton Dam) to augment the water supply capacity of Darwin River Dam. Some control is needed for the transfer of the water between the two dams. Of primary concern is the water quality impact on the Darwin River Dam. There is no historical data on the water body in the transfer zone, it is therefore deemed necessary to identify the quality of this water prior to any transfer taking place.
- Construction of a new rockfill dam/diversion wall across the western part of the storage and therefore raising part of the storage while leaving the water skiing areas at the current level.
- Studies by Snowy Mountains Electric Commission show that the water level within Manton Dam will need to be reduced by around 4-5 metres during construction of the Western Manton Dam. This would be done early in the dry season to allow maximum time for construction of the embankment prior to the following wet season. A coffer dam may be built to protect the construction site and allow some refilling of Manton Dam if additional runoff occurs following the lowering of the water level. Complete refilling is anticipated to occur during the following wet season. The Western Manton Dam and its catchment would be closed to public access to assist in maintaining the quality of water for urban consumption.

Access may be restricted in any zone during construction phases of the Western Manton Dam project.

Figure 3: Proposed Ski Beach Site Redevelopment Plan



6. IMPLEMENTATION PROGRAM

VALUE	MANAGEMENT ACTIONS	YEAR										COMPLIANCE		
		1	2	3	4	5	6	7	8	9	10			
Water quality	<ul style="list-style-type: none"> ◆ Maintain water quality monitoring program. ◆ Establish and maintain a water quality database for the Area. ◆ If necessary restrict or prohibit recreational use of the Area for a specific time to meet water quality standards. ◆ Take appropriate action to apprehend or control anyone or anything causing a threat to water quality. ◆ Dispose all rubbish and waste products outside the water catchment area. ◆ Monitor the effects of controlled burning and feral animals in water catchments on water quality. 											▶		
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Flora and fauna	<ul style="list-style-type: none"> ◆ Rehabilitate disturbed areas. ◆ Strictly control future construction of developments to ensure that minimal environmental damage is incurred. ◆ Employ appropriate stabilisation of dam shores where necessary. ◆ Eradicate weeds where necessary using the most appropriate techniques. Any herbicides used must be selective and have low persistence. ◆ Generate awareness amongst boat owners of the importance of keeping the waterbody weed free. ◆ Familiarise Park staff with weed identification and use of chemicals and equipment 			▶										
												▶		
					▶									
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		▶												

Land based recreational activities	<ul style="list-style-type: none"> ◆ Continue to maintain the picnicking and barbecue facilities within the Area. ◆ Provide educational and interpretive information to visitors. ◆ Develop a system of walking tracks throughout the Area. ◆ Improve visitor facilities in the ski beach area. 												
Cultural													
Areas of cultural significance	<ul style="list-style-type: none"> ◆ Work closely with the traditional custodians of the area to ensure sites of significance are managed in accordance with their wishes. ◆ Work closely with the Aboriginal Area Protection Authority to ensure the protective management of Aboriginal sacred sites in the Area. 												
Historical													
Areas of historical significance	<ul style="list-style-type: none"> ◆ Develop interpretive information in relation to the historical and engineering significance of the dam. ◆ Provide opportunities for the public to inspect the dam wall and learn about its significance. 												
Educational													
Community education	<ul style="list-style-type: none"> ◆ Develop and install signs related to the Area's Zoning Scheme, Regulations and other interpretive information. ◆ Provide support to institutions using the Area for educational purposes. ◆ PWCNT to assist PAWA in development of interpretive services for visitors to the dam wall. ◆ Identify opportunities for communication and interpretation in development of visitor facilities. 												

