

Rapid Creek Catchment Advisory Committee



**Report for
2005-2008**

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BACKGROUND

Rapid Creek runs through the northern Darwin suburbs of Rapid Creek, Jingili, Nightcliff, Marrara and Millner, and its catchment extends nearly 30 square kilometres. The Creek and its catchment form the only significant freshwater system in Darwin and this makes it a valuable community asset. Increasing development in the catchment has necessitated closer management to ensure the protection of vegetation and water quality.

In 1994 the Darwin City Council and Greening Australia NT developed the Rapid Creek Management Plan. The plan proposed a range of strategies for implementation. The most fundamental requirement was to set up a management structure to coordinate implementation of the plan.

The Rapid Creek Catchment Advisory Committee was established in 1996 under the *NT Water Act*. The Committee consists of volunteers who represent industry, the community, NT Government, Federal Government and local Council. The Committee makes recommendations on the management of the Creek and the natural resources of the catchment. The Rapid Creek Catchment Advisory Committee advises the Controller of Water Resources who is accountable to the Minister for Natural Resources, Environment, the Arts and Sport.

The Rapid Creek Catchment Advisory Committee inspecting the Creek and surrounds
7 November 2008



From left: Lucy McNicol (Defence), Sharon Hinton (Land Administration, Dept Planning and Infrastructure), John Bailey (Darwin City Council), Lesley Alford (Rapid Creek Landcare Group) and Bev Phelts (Administration/Water Management NRETAS),
7 November 2008

Inspecting the damaged Weir
From left: Lucy McNicol (Defence), Sharon Hinton (Land Administration, Dept Planning and Infrastructure), John Bailey (Darwin City Council), Jill Holdsworth (Darwin International Airport) and Lesley Alford (Rapid Creek Landcare Group)
7 November 2008



MEMBERSHIP

1. Officer Commanding, Defence Northern Region
(Federal Government)
2. The General Manager, Darwin International Airport
(Industry)
3. Darwin City Council
(Local Government)
4. Larrakia Association
(Community)
5. Charles Darwin University
(Industry)
6. Greening Australia NT
(Community)
7. Rapid Creek Landcare Group
(Community)
8. Representative Department of Planning and Infrastructure
(Land Administration Division, NT Government)
9. Member of Legislative Assembly
(Community)
10. Delegate Department of Natural Resources, Environment, the Arts & Sport
(NT Government - Parks and Wildlife)
11. Representative Controller of Water Resources
(NT Government)

The Committee was Chaired by Matthew Bonson from 2003-2008 and is in the process of electing a new Chair.

Administration

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www.nt.gov.au/nreta/natres/landcare/rapidcreek

TERMS OF REFERENCE

1. PROGRESSIVELY REVIEW THE RAPID CREEK MANAGEMENT PLAN
2. THROUGH ADVICE, COORDINATION AND INITIATIVES IMPLEMENT THE MANAGEMENT PLAN MAXIMISING STAKEHOLDER INVOLVEMENT (SEEKING FUNDING AND IMPLEMENTING WORKS)
3. ADVOCATE THE CATCHMENT VALUES TO THE COMMUNITY
4. PROVIDE ADVICE AS APPROPRIATE ON LAND USE IN THE CATCHMENT
5. PROMOTE RESEARCH ON PROCESSES, WHICH AFFECT CATCHMENT VALUES. COLLECT AND REVIEW RELEVANT RESEARCH AND SURVEYS CARRIED OUT OR AFFECTING THE CATCHMENT

MEETINGS

The Committee meets quarterly and communicates regularly between meetings

Committee members also contribute on other Committees and working groups such as the Fire Management Reference Group.

ACTIVITIES WITHIN THE CATCHMENT

Darwin City Council www.darwin.nt.gov.au

Darwin City Council operates a Maintenance Program which covers firebreaks, median strips and corridors and all of our work is co-ordinated with NT Fire Service, Landcare, Larrakia Rangers and Greening Australia. Other areas that the Council looks after include stormwater stabilisation, weed control, the walking tracks, irrigation, lighting, buffers, corridors and cleaning up after flood waters.

A big task for the Council was the draining the Water Gardens Lake for maintenance purposes and to keep toad numbers down. In addition to this, 150 Carpentaria palms were removed from the Water Gardens because of constant seed pollution of the lake. The Carpentaria palms were later replaced with more appropriate plants.

During 2007, the Council presented its revised Environment Management Plan to the public and the Rapid Creek Catchment Advisory Committee. There was high response from the public in regards to our letter box surveys with the public identifying a wide range of issues. As part of the revision, a Rapid Creek flora and fauna study was undertaken by the Council which involved University students and members of the public. The Plan was launched in June 2007. The Plan is easy to read and has created a lot of interest with its catchment and vegetation maps.

Rapid Creek Landcare Group www.greeningaustralia.org.au

Membership of the Rapid Creek Landcare group is made up of local residents and other people interested in the creek's health. Monthly working bees carry out vital weed control, tree plantings and litter collection. Weed management generally focuses on vines smothering regrowth, coffee bush and grass weeds. The group has worked particularly with Greening Australia, the Darwin City Council and the Darwin International Airport to achieve vegetation management outcomes.

The focus of the group's work in recent years has been the creek corridor between McMillans Road and Trower Road, with the 'Red Footbridge' in the water gardens being a regular meeting point. This included work on land handed back for community and environmental use by the Northern Territory Government. The group has greatly appreciated this extension of the creek corridor on the Jingili side, including support given for its rehabilitation, and looks forward to the continuation of the extension on the Millner side of the creek.

The group participates annually in Clean Up Australia Day, collecting large amounts of rubbish along the creek and in the mangroves. Other high profile public events the group participate in include World Environment Day, Rapid Creek Revival Children's Day, World Wetlands Day and Greening Australia Planting Days.

Greening Australia: www.greeningaustralia.org.au

Greening Australia has a long history in vegetation management in the Rapid Creek catchment. In recent years work has predominantly been carried out as contracts for the

Darwin International Airport and the Darwin City Council. Greening Australia's seedbank contains many seeds provenance from the catchment enabling them to provide thousands of appropriate local native plants for large community plantings.

Greening Australia's partnership with Darwin City Council in the catchment goes a long way back to the joint development of the Rapid Creek Management Plan in 1994. Over the last few years work has concentrated on the conservation corridor running between the rural blocks and the creek in Jingili. The corridor was handed back for community use by the Northern Territory Government and funding was provided by them for initial rehabilitation works. Following the widening and fencing of the corridor and earthworks, Greening Australia has worked on weed control and revegetation of the corridor with the Council. Two large community tree planting days have helped to install thousands of trees to strengthen the creek corridor. Ongoing maintenance work on other DCC land also continues.

A long-standing relationship with Darwin International Airport led to a partnership to implement a Conservation Reserve covering fifteen hectares and including an important wildlife corridor joining an area of existing bushland with the Rapid Creek corridor (this followed the development of the airport's Landscape Master Plan by Greening Australia). The extra trees and shrubs planted in the bushland will improve its condition and the thousands of native trees and shrubs planted in the corridor will gradually recreate habit for wildlife. Each of two large community planting days attracted around 100 community volunteers. Ongoing revegetation, weed control and fire management over three years will see the project through to fruition. The icing on the cake was Greening Australia and Darwin International Airport winning the Commercial/industry category of the 2008 Melaleuca Awards for this project. Other work on airport land has included the revegetation of the retention basin and other weed management work.

Parks and Wildlife, Department of Natural Resources, Environment, the Arts and Sport

With the assistance of low risk prisoners, coffee bush from Trower Road to the mouth of Rapid Creek. Some of the works included cut stump of mature plants and a follow up spraying of seedlings and regrowth.

Under the Captive Breeding Program, quoll trapping was undertaken and Parks and Wildlife managed to trap and rehouse two young female quolls.

Defence

During 2005

Defence undertook and completed its annual weed, fire, feral animal management programmes as well as its annual water quality samples.

Weeds – a combination of burns and foliar spray were used, that is, fire first then spraying of regrowth from grass weed clumps. Weed management activities were undertaken on all areas on Defence land that form part the of the creek catchment. Weeds identified and treated in these areas included; *Senna alata*, *Sida cordifolia*, *Hyptis suaveolens*, *Pennisetum polystachion*, *Senna obtusifolia*, *Stachytarpheta jamaicensis*, *Sida acuta*,

Calopogonium mucunoides, *Pennisetum pedicellatum*, *Andropogon gayanus*, *Panicum maximum*, *Hibiscus sabdariffa*, *Setaria sphacelata*, *Leucaena leucocephala*, *Brachiaria mutica* and *Passiflora foetida*.

Fire – All fire breaks were inspected and re-graded where required. Mosaic fuel reduction burns were undertaken at various times throughout the year to protect the remnant vegetation in the upper reaches of the catchment.

Water Quality - all hydrocarbon and petroleum hydrocarbon concentrations were below detection at all sites tested at RAAF Darwin. Copper was detected at one testing location and zinc at another however, they only slightly exceed the ANZECC (2000) Guideline concentrations for protection of aquatic ecosystems. Independent consultants determined that the small exceedance posed little risk to water quality in downstream Rapid Creek. However, these results do flag the need for continued monitoring at these sites. This monitoring will continue as part of Defence's annual investigations. Future plans are for a Contaminated Site Assessment (Phase 2) to commence next financial year and which shall look at impacts to groundwater.

During 2006

Defence undertook and completed its annual weed, fire, feral animal management programmes as well as its annual water quality samples.

Weeds - a combination of burns and foliar spray were used once again this year. Weed management activities were undertaken on all areas on Defence land that form part the of the creek catchment. Weeds identified and treated in these areas included; *Senna alata*, *Sida cordifolia*, *Hyptis suaveolens*, *Pennisetum polystachion*, *Senna obtusifolia*, *Stachytarpheta jamaicensis*, *Sida acuta*, *Calopogonium mucunoides*, *Pennisetum pedicellatum*, *Andropogon gayanus*, *Panicum maximum*, *Hibiscus sabdariffa*, *Setaria sphacelata*, *Leucaena leucocephala*, *Brachiaria mutica* and *Passiflora foetida*.

Fire – All fire breaks were inspected and re-graded where required. Mosaic fuel reduction burns were undertaken at various times throughout the year to protect the remnant vegetation in the upper reaches of the catchment.

Water Quality – Petroleum Hydrocarbon (PAH) and hydrocarbon (TRH) concentrations were below detection at all sites tested at RAAF Darwin, with the exception of a concentration of the hydrocarbon fraction (C₆ – C₉) at one location. An independent consultant determined that this small concentration posed little risk to water quality in downstream Rapid Creek. However, these results do flag the need for continued monitoring at these sites. This monitoring will continue as part of Defence's annual investigations.

During 2007

Defence undertook and completed its annual weed, fire, feral animal management programmes as well as its annual water quality samples.

Weeds – a combination of burns and foliar spray were used once again this year. Weed management activities were undertaken on all areas on Defence land that form part the of the creek catchment. The weeds treated were similar to those addressed in previous years

with reductions in density and size being noted for *Panicum maximum*, *Mimosa pigra* *Hyptis suaveolens* and *Leucaena leucocephala*. Issues with *Andropogon gayanus* and *Pennisetum polystachion* in terms of their quantities and distribution are still on-going and will require more intensive management in forthcoming years.

Fire – All fire breaks were inspected and re-graded where required. Due to unforeseen delays in the fire management programme only areas determined to be of greatest threat and/or risk underwent fuel reduction burns, i.e. along Amy Johnson Drive and the northern boundary of RAAF Darwin.

Water Quality - Most metal concentrations in the surface water at all the sites comply with the trigger values specified in the ANZECC/ARMCANZ (2000) Guidelines for 95% Level of Protection. The diatom communities at RBD are characterised by low diversity. The large number of Eunotia species appears to indicate reasonably good water quality. The higher species evenness in May indicates that the postwet season community is dominated by less abundant species.

Other activities undertaken throughout the year:

- Revegetation undertaken from the weir (Whiterock) through to Henry Wrigley Bridge, approximately 700 trees planted. Unfortunately a fire went through shortly after and many plants were lost.
- As a precautionary measure banks with wings have been installed to firebreaks along the northern boundary to contain possible lead contamination from the adjoining gun club. Water samples were taken and examined by an independent specialist that determined that there were no adverse effects to Rapid Creek as a direct result of the lead from the gun club.
- Cane toad traps have been placed around the base with a holding bin at the front gate (accessible to all civilians) that is regularly emptied by Frog Watch.
- Fuel Farm 1 was demolished and a programme of bioremediation of any contaminated soil located below the farm commenced.

During 2008

Defence's annual land management programmes are currently underway. Other activities being undertaken this year:

- Bioremediation of contaminated soil associated with Fuel Farm 1 continues.
- An AFFF release occurred on base but owing to the location and containment on site this incident will not affect Rapid Creek.
- In July a bushfire crossed Amy Johnson Drive and burnt a large proportion of Marrara Swamp, the fire was pulled up as a result of last years fuel reduction burns in this area.
- In September another bushfire swept across the majority catchment area located on RAAF Darwin. The ignition point is thought to have originated from the vicinity of the Rapid Creek Weir and the Helicopter landing area to the east of Darwin International Airport on public land. An investigation into the impacts of this fire has been commissioned by Defence and results are expected shortly. See extent of the fire at Appendix 2.

During 2005

- Erosion works including rock armouring of access points into Yankee Ponds were carried out.
- A wetland buffer zone was identified on internal planning maps and placed on Master Plan to quarantine sensitive areas from development. This buffer is split into two sections with the immediate area around the creek being part of the environmental reserve and the outer areas defines as the wetland buffer zone. The new wetland bugger zone is now considered in the planning process for Airport expansion in the future.
- A three year rehabilitation plan and land management for the 75 metre buffer on the airport side of the creek commenced.
- Yearly photo-point monitoring of Rapid Creek and habitat Assessment commenced.
- Water quality monitoring program continued.
- Greening Australia was engaged to prepare a landscaping concept plan for the Terminal and adjacent areas. Commenced construction of a linking trail in July 2005 to connect the green corps trail to Henry Wrigley Drive, the Airport resort and viewing platforms and picnic facilities etc.
- Weed and fire work was undertaken in a new environmental reserve in the centre of the airport.
- Weed control and fire fuel load reduction continued.
- The Airport Resort opened.
- The Larrakia Rangers were engaged to manage the creek reserve area.
- A Biological Survey was undertaken to identify if there were any significant animals located on the airport in remnant vegetation. The sites surveyed were within the new environmental reserve and the Rapid Creek riparian zone. Results identified two species of conservation significance; the Black footed tree rat and the Pale Field rat. The results of this study will be taken into account in relevant future development proposals as appropriate with the Environment Reserve and Rapid Creek being set aside for their habitat values.
- Revegetation, regeneration and maintenance program for the Rapid Creek area commenced.



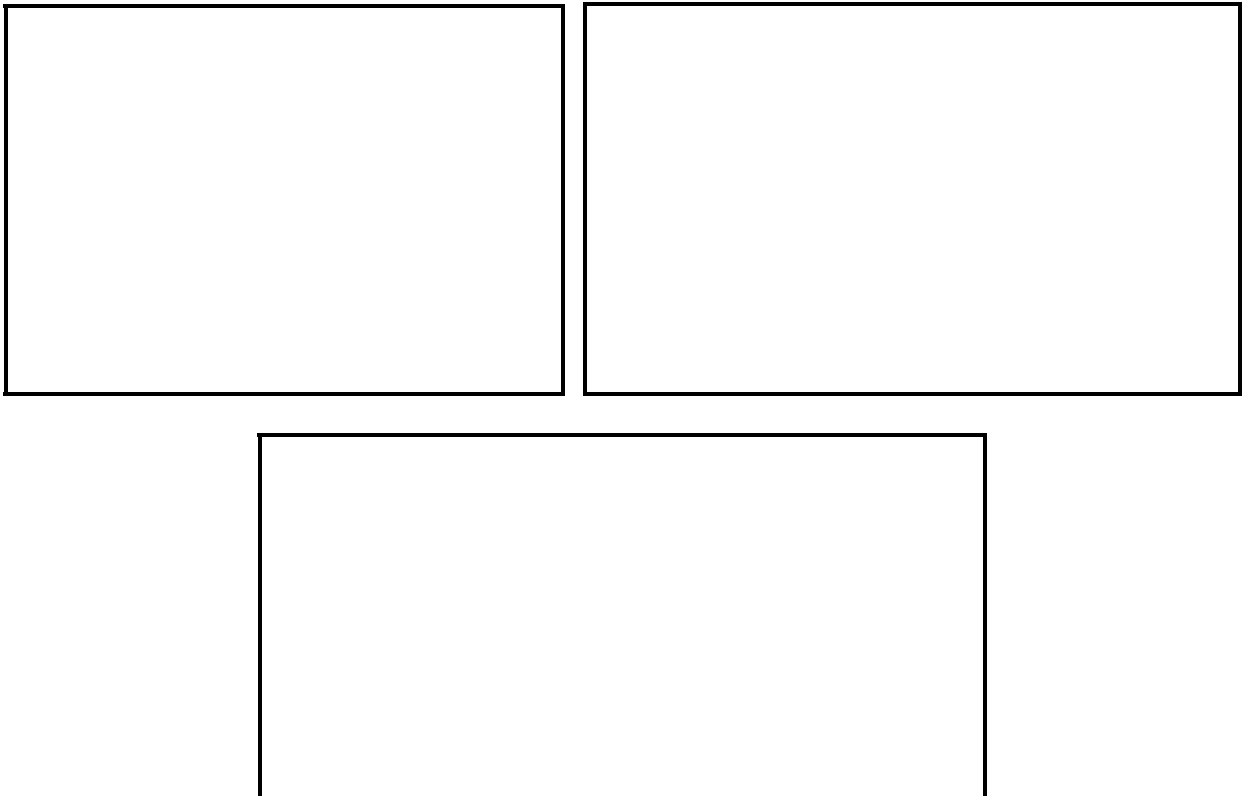
Green Corp members building the wooded walkway on Darwin International Airport land

During 2006

- In February the Darwin International Airport hosted a significant planting and community engagement event. At this event nearly 3000 trees were planted in the

airport's Rapid Creek environment reserve and wetland buffer zone by around 200 community volunteers. Darwin International Airport donated 50cents to Rapid Creek Landcare for every tree that was planted.

- Paths on Darwin International Airport land were upgraded and improved, the paths on Darwin International Airport land were subject to high water flow impacting on them.
- Darwin International Airport provided an environmental grant to the Rapid Creek Landcare Group to enable it to continue its good work in the rehabilitation of areas of Rapid Creek off airport.
- In June, Darwin International Airport received a Highly Commended award at the Power Water Environmental Excellence Awards for its work of the preservation and rehabilitation of Rapid Creek and close working relationship with the community.
- Darwin International Airport has formed an agreement with Greening Australia to conduct and coordinate the rehabilitation of the new bushland park and establishment of the new biological corridor to Rapid Creek.
- Water quality monitoring program continued.
- Working with the Larrakia National for litter collection along Rapid Creek continued.
- Revegetation, regeneration and maintenance program for the Rapid Creek area continued.



Examples of the Interpretative signs installed by Darwin International Airport along the Rapid Creek Path

During 2007

- The Airport is committed to protecting the local environment of Rapid Creek and preserves and manages the Rapid Creek Reserve and in 2007 designated an additional 15 hectare Conservation Reserve on the upper catchment area of the airport. This provides a corridor linking the Reserve to Rapid Creek. Over the past 10 years the airport has implemented weed control, vegetation rehabilitation and a water quality monitoring program to improve the creek habitat. The designation of a Reserve was a joint project between the Airport and Greening Australia. Both organisations are actively involved in its revegetation, weed control and fire management.
- During January over 700 new native tree seedlings were planted on Airport and Defence banks of Rapid creek for the purpose of improving habitat quality in the Rapid Creek Environment Reserve and to stabilise the creek banks against erosion
- Signage and tables were established however due to vandalism and erosion issues on the walking tracks the Darwin International Airport will continue to maintain tracks, replace facilities and signage.
- Wildlife corridor was established and surveyed into the Darwin International Airport Master Plan from the Environment Reserve to the Rapid Creek buffer zone.
- Darwin International Airport ground staff has taken over maintenance of the Rapid Creek precinct along with a weed and fire control contractor.
- Yearly photo-point monitoring of Rapid Creek and habitat Assessment continued
- Weed control and fire fuel load reduction continued
- Revegetation, regeneration & maintenance program for the Rapid Creek area continued.

- Weir Status - Defence contracted SKM to undertake a study into the design, functionality and repair options for the Rapid Creek Flood Mitigation Weir that is on Defence land on the Darwin International Airport Northern boundary. The study found that the Weir was performing as designed in terms of its flood mitigation function; however the structure has been damaged by a series of high flow events since its construction in 1986. As such its condition is deteriorating and the energy dissipation area of the weir is no longer preventing high energy flows from damaging the creek banks further downstream. A number of remedial options have been proposed by the study and remedial works will likely be undertaken by Defence within the next 2 years. The stake holders for the weir are the NT Departments of Planning & Infrastructure (flood control & land management) and Natural Resources, Environment and the Arts (Rapid Creek environment and water quality management), the Darwin City Council (land and environmental management), NT Airports P/L (land and environmental management) and the Department of Defence (site land owner). Defence has considered options for repair (prior to destruction) over the past two years but no decisions have been made. The other stakeholders have not yet been formally involved.

During 2008

- A heavy rainfall event in February produced localised flooding in the Rapid Creek catchment and around the airport. The floods have severely damaged the footpaths and Darwin International Airport are considering reverting the footpaths to bush

tracks. This rainfall event caused additional damage to the weir structure with a significant section being washed out.

- In March Darwin International Airport hosted a successful planting day with over 100 volunteers planting 2500 native plants in the Conservation reserve corridor.
- Another planting day in December resulted in another 2500 plants in the wildlife corridor that links the Conservation Reserve to the Rapid Creek buffer zone.
- Landscaping at the airport was featured on the ABC TV show “Gardening Australia” in June. The feature story covered the established landscaping throughout the airport precinct that exclusively features native plants. The landscaping at the airport showcases the plants of the Top End and Rapid Creek is an inspirational source.
- A 6 story hotel - the Airport Inn was opened in September
- Graffiti on the Airport grounds has been an issue especially on the generator plant, Rapid Creek walk signage, public seating and on the actual trees in Yankee Ponds and where possible, the Airport takes immediate action to eliminate it.
- Water quality monitoring program continued
- Weed control and fire fuel load reduction continued
- A flora and fauna survey was conducted in the Rapid Creek precinct and Conservation Reserve to monitor the habitat in these areas.
- Darwin International Airport and Greening Australia were awarded first place in the Commercial/Industry Category of the 2008 Power and Water Melaleuca Awards for the development of the Conservation Reserve. These awards recognise outstanding achievement in environmental excellence in the Northern Territory
- Darwin International Airport is committed to protecting the Rapid Creek Catchment and a new Airport Environment Strategy is being developed with community consultation. The new Strategy will be endorsed by the Federal Minister for Transport and Regional Services and be implemented in 2009. Among other things, the Strategy outlines the Airport’s management of potential impacts resulting from the operation and expansion of the Airport.



December Community Planting Day

Department Planning and Infrastructure

The Land Administration Division provides ongoing management of vacant Crown land in the Rapid Creek Catchment. Management includes, but is not limited to, firebreaks, ground maintenance, weed control managing dumping and other illegal uses of Crown

land and providing leases and licences for approved use of Crown land. Blocks that are predominantly bushland are largely left in their natural state.

Once Section 5249, Hundred of Bagot, the buffer between Rapid Creek and the new Netball Complex in Abala Road, is transferred to Darwin City Council, Land Administration will no longer manage any land directly adjoining Rapid Creek. It will, however, continue to manage vacant Crown land within the catchment boundary.

Water Quality and Aquatic Health

Department of Natural Resources, Environment, the Arts and Sport (NRETAS)

Between 2005 and 2008 the Aquatic Health Unit has undertaken a range of monitoring activities at Rapid Creek. Besides the collection of water quality data, monitoring focussed on aquatic life in Rapid Creek as a measure of the ecological health of the system. Unlike the infrequent collection of water samples, which provides information for a single point in time only, this type of biological monitoring reflects the water quality conditions over a longer period.

Monitoring water bugs

Macroinvertebrate (water bug) monitoring follows the national AUSRIVAS protocols for the assessment of stream health. Sites are compared to an unimpacted reference condition and receive a score that reflects how much they differ from this condition.

Between 2005 and 2007 three sites were monitored annually for macroinvertebrate diversity. Since 2005, their condition has improved from C, "severely impaired" to B, "significantly impaired", which is an intermediate score. The annual sampling was repeated in June 2008 and results will be available on the RCCAC website in the near future.

Fish Monitoring

The Aquatic Health Unit conducts fish surveys in the freshwater reaches of Rapid Creek on an annual basis using 'electro-fishing', a very effective technique that involves passing an electric current through the water to temporarily stun the fish without harming them permanently.

Fish surveys were undertaken at three sites in August 2006 and two sites in July 2007. A total of nine native fish species were recorded, seven of which were found in 2006 and eight in 2007.

Water Quality Monitoring

In 2005 intensive weekly monitoring of nutrients and physico-chemical field measurements was conducted by NRETAS during the dry season (March – October). Between 2006 and 2008 NRETAS have conducted annual water quality monitoring at three sites. Table 1 provides an overview of parameters that are regularly monitored in Darwin Region streams and their significance for the ecosystem.

In general, the water quality measured in Rapid Creek is good when considered in the context of a highly modified urban catchment. Water quality is generally best in the early to

middle part of the dry season but becomes poorer late in the dry season and during the wet season.

Data suggest that there are elevated concentrations of some heavy metals, (e.g. aluminium, iron, copper, cadmium, lead and zinc) which in some cases exceed guidelines for ecosystem protection (ANZECC 2000). It is likely that levels of some of these metals (e.g. aluminium and iron) are naturally high, since they are present in the lateritic soils that characterise the Darwin region.

Detailed results of water quality monitoring are available on the RCCAC website

Water quality monitoring is also carried out by Darwin International Airport, the Department of Defence and community groups at other sites along Rapid Creek.

Charles Darwin University www.cdu.edu.au

Charles Darwin University grounds staff performed weed spraying and litter collection along the cycle path adjacent to University Drive, South. This path meanders through the bottom of the campus and delivers users to and from the coastal reserve at the mouth of Rapid Creek. Our mowing contractors mow the full length of the path on a regular basis. Several different tree service contractors have been employed to maintain safe walking and cycling conditions there. Hazardous trees have been removed, and remaining trees pruned for ease of travel along the path. Contractors were employed to repair the decking on a couple of the small bridges along this path. Parks and Wildlife staff performed weed spraying of coffee bush along this same area.

At the mangrove fringes adjacent to the sports fields on Lakeside Drive, grounds staff spot sprayed for weeds. Our contractors continue to mow these open spaces regularly. Parks and Wildlife staff with Larrakia Rangers performed extensive removal of coffee bush and established a revegetation site behind Alawa Community Hall. A student body is driving forward the concept of establishing a Community Garden between Lakeside Drive and the mangrove fringes. We are currently undertaking soil testing of the site to establish whether the salinity level is likely to be problematic.

Table 1. Water quality parameters monitored in the Darwin region

Water Quality Parameter	Importance
Nitrogen	An important plant nutrient. Too much nitrogen in the form of oxidised nitrogen (nitrate and nitrite) and ammonia can lead to excessive plant growth. Total nitrogen is the sum of nitrite, nitrate and Total Kjeldhal Nitrogen, which is mainly organically bound nitrogen.
Phosphorus	An important plant nutrient. Too much phosphorus in soluble can lead to excessive plant growth.
Chlorophyll a	The green component of plants used in photosynthesis. Is used as an index of the amount (biomass) of algae.
Dissolved oxygen	Essential for all plant and animal processes. Prolonged periods of oxygen depletion can result in death of fish and other animals, and too much oxygen is a sign of increased plant/algal biomass due to nutrient enrichment.
Metals	Some are required at trace levels by organisms, but can be toxic at high levels. The concentration of metals may vary with local geology or anthropogenic sources (pollution).
Total suspended sediments	This is a measure of the amount of all material suspended in the water. This measure is sensitive to catchment erosion or disturbance of bottom sediments.
pH	The concentration of hydrogen ions, i.e. the acidity or alkalinity of water. A fundamental measure that determines metal solubility and toxicity, and affects an organisms ability to absorb minerals and nutrients.
Turbidity	A measure of the light scattering property of water as a result of material suspended in the water. Turbidity is correlated with suspended solids. It affects the amount of light available for photosynthesis by plants.
Conductivity	A measure of the amount of ionic materials (salts).

Honours research project

In 2006 the department supported an Honours student's research project on the freshwater and estuarine sections of Rapid Creek. Soil, water and macroinvertebrate samples were collected at six sites along Rapid Creek every second month for one year. Preliminary analysis suggests that results are similar to previous monitoring work. The report is expected to be completed in 2008.

Website

The department hosted the website of the Rapid Creek Catchment Advisory Committee which is at www.nt.gov.au/nreta/natres/landcare/rapidcreek/index.html

The website was established in 2007 and contains information on the activities of the committee, the Rapid Creek Catchment Management Plan and ecosystem monitoring

activities by a range of organisations. The website is maintained by the department and is regularly updated when new monitoring results become available.

Reference

Aquatic Health Unit (2006). Monitoring for Ecosystem Protection in Rapid Creek. Report 19/2006D. Department of Natural Resources, Environment, The Arts and Sport.

CATCHMENT ISSUES

Toad Busting

In 2005 cane toads reached Rapid Creek. Graeme Sawyer, the then Frog Watch Coordinator gave a presentation to the Committee on how to tackle the situation. Frog Watch identified several potential problem areas in the upper areas of the creek. There was initial concern that the cane toad would soon occupy habitat and consume resources to the detriment of native fauna. One of the immediate responses was a Christmas “toad muster” which attracted a lot of interest.

The “toad muster” was organised by the Green Corp team which already had the experience to help solve the cane toad problem. During the past couple of years, Green Corp had been making and placing cane toad traps in the rural area and in the Botanical Gardens. Green Corps Botanical Gardens “toad muster” attracted 130-140 people.

In 2007, Graeme Sawyer followed results up with the Committee on the progress of cane toads. Research had shown that outside of the Darwin Urban area, quolls, panoptes, mertens and mitchells monitors had been severely impacted by cane toads but trapping had shown a 74% decline of toads. At the end of the year, a “toad muster” was held at Rapid Creek and 60 people participated. Volunteers were so keen that they worked in the pouring rain.

The main control strategies implemented were individuals clearing their own backyards, trapping and arranging “toad busts”.

Wet season and Dry season strategies:

- Traps including permanent traps in major wetlands;
- Toad musters;
- Holding major toad busting events.

Wet season:

- Manage cane toad impacts;
- Trapping and musters
- Catching toads in residential yards;
- Destroying tadpoles.

Dry Season

- Remove toads from areas, especially after they congregate
- Peak time for setting traps
- Increase “toad musters” because they become easier and more effective.

Other proposals were the erection of a shade cloth barrier fence on the existing Amy Johnson fence and setting traps throughout the catchment. Toads cannot get through the fence and therefore move along the fence until they get to a trap.

Illegal Dumping and Littering

In 2005, a Working Group which included representatives from the Department of Planning and Infrastructure, Local Government, the NT Tourist Bureau, Correctional Services, Keep Australia Beautiful and the Chamber of Commerce was formed to address unsecured loads. The focus was on education rather than enforcement with the slogan "Secure your load and keep it off the road". The Working Group ran advertisements and a display at the Botanical Gardens Garden Spectacular. Drawing attention to unsecured loads succeeded in reducing the amount of rubbish deposited from moving vehicles.

Correctional Services provided prisoner labour to help clean up rubbish on Crown Land and in particular, areas that are hotspots for dumping. It was a huge effort and much appreciated by the Committee. During the 2006 Clean Up Australia Day for instance, Correctional Services teams managed to collect 4 tonnes of rubbish.

The Netball Court Complex

During the past couple of years, the Committee has been involved with the planning of a Netball Court Complex on Abala Rd. The development backs on to Rapid Creek and the Committee was concerned about the narrow 50 metre riverine buffer and the narrow 75 metre conservation buffer on the opposite side of Rapid Creek (Lot 5249, Hundred of Bagot) The Committee approached the Development Consent Authority and requested that the 50 metre buffer be widened on the western end to 75 metres and that it be consolidated with the adjoining Darwin City Council Section 4295. The outcome was the increase of the buffer to 56 metres at one end and reduction to 47 metres at the other end. Responsibility for the buffer will eventually be transferred to the Darwin City Council. In the meantime, the Land Administration Section of Department Planning and Infrastructure continues to manage it under its weed control and environment plan. The buffer is predominantly flat bushland and will be maintained as such. A benefit is that flat bushland requires minimal slashing, mowing and tree care. As yet, the plans for the Netball Court complex have not been given full approval as more work needs to be done on the proposed carpark.



The Netball court complex under construction
Rapid Creek is directly behind the complex, 27 November 2008

Rapid Creek Weir

The weir is located on Rapid Creek on Defence land upstream from McMillans Road.

This structure has been deteriorating over recent wet seasons but was almost destroyed during the 2007/2008 wet season and is basically non-functional. It is believed that the weir was constructed around 1986 by the then Department of Transport and Works to attenuate flood flows in Rapid Creek. At the time, McMillans Road at the bridge over Rapid Creek had been frequently closed due to flooding. It was intended to duplicate the bridge in conjunction with the duplication of McMillans Road. Options considered were a new bridge built at a higher level or the flood flows in Rapid Creek be attenuated to reduce flood frequencies. The latter option was taken which included the construction of the weir. The stake holders for the weir are the NT Departments of Planning & Infrastructure (flood control & land management) and Natural Resources, Environment, the Arts and Sport (Rapid Creek environment and water quality management), the Darwin City Council (land and environmental management), Darwin International Airport (land and environmental management) and the Department of Defence (site land owner). Defence has considered options for repair (prior to destruction) over the past two years but no decisions have been made.



The damaged weir, 7 November 2008

In November 2008 letters were sent to The Honorary Delia Lawrie MLA, Minister for Planning and Lands, Minister for Infrastructure and Transport; The Honorary Alison Anderson, Minister for Natural Resources, Environment and Heritage; Mr Ian Kew, CEO, Darwin International Airport; Mr Graeme Sawyer, Darwin Lord Mayor and Base Commander, RAAF Base Darwin requesting a joint approach to repairing the weir or replacing it.

Oil spill in Rapid Creek

In 2007 an oil spill in Rapid Creek was reported to the Committee and an environmental officer from the Department of Natural Resources, Environment, the Arts and Sport was asked investigate the contamination. The Minister for Natural Resources, Environment, the Arts and Sport was also kept informed of the investigation. The Committee was relieved to discover that the “oil spill” was a natural occurrence. It was the result of leaf litter build up that had been washed into the stormwater drains and entered the creek.

APPENDIX 1

Aerial Photograph Rapid Creek Catchment boundaries are outlined in red



APPENDIX 2

Aerial Photograph RAAF Base Darwin Showing fire extent and intensity September 2008

