

Darwin International Airport



***Final Environment Strategy
2004***





Darwin International Airport

Final Environment Strategy 2004

This Final Environment Strategy was prepared by Northern Territory Airports PL as part of a strategic planning process and in accordance with the provisions of the *Airports Act 1996* (the Act) and the Regulations made under that Act and should be read in that context only.

This Final Environment Strategy is a revision of the previous Environment Strategy that was approved by the Minister in February 1999.

Strategies and scenarios in this Environment Strategy are based on certain assumptions and forecasts which have been prepared by us to assist in the strategic planning processes, and to discharge our obligations under the Act. Therefore, the assumptions and forecasts should not be used or relied upon by any person or entity for any other purpose.

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Written by Northern Territory Airports PL.

Darwin International Airport Final Environment Strategy
December 2004



Foreword

This Environment Strategy examines the success of Darwin International Airport's environment program over the past five years and outlines a series of initiatives to be implemented over the next five years. We have maintained our program of continuous improvement in environmental management, and we have complied with all relevant legislative requirements.

Northern Territory Airports PL believes that it is important to be a good neighbour and is conscious of the impacts of the operation of the Airport on Darwin city residents. Northern Territory Airports PL acknowledges and offers thanks for the assistance provided by those persons and organisations that have made contributions to the consultation process. Northern Territory Airports PL remains committed to working closely with key airport stakeholders and the general public.

This Environment Strategy has been developed in consultation with a variety of stakeholders, including government agencies, other airport operators and airport employees, to ensure that all relevant environmental issues are addressed. Darwin International Airport is very active within its community and has made it a priority to encourage positive involvement with the local communities. Darwin International Airport continues to support local groups through board memberships and sponsorships of local events, charities, environmental and conservation groups and to provide training and employment opportunities for local indigenous people. The ties with the community will continue to form a very important cornerstone for the Airport.

In the development of this Environment Strategy, we have reflected on the performance and learning's of the past and used this knowledge to develop an effective and accountable program for future environmental works. We will continue to operate Darwin International Airport responsibly and in the interest of all our stakeholders.

The Act and Regulations require a very high standard of environmental management and performance, generally above the standards applied in the Northern Territory.

I have pleasure in presenting to you Darwin International Airport's 2004 Draft Environment Strategy.

Ian Kew
Chief Executive Officer
Northern Territory Airports PL



Foreword	3	3. Northern Territory Airports PL Environmental Management System	22	7. Water (surface, ground, storm, waste)	32
		3.1 Overview of the EMS	22	7.1 Objective	32
				7.2 Overview	32
				7.3 Achievements	33
				7.4 Five Year Action Plan	35
1. Overview	6	4. Commitment to Environmental Management	23	8. Soil (erosion, sedimentation and dust)	36
1.1 Management of Darwin International Airport	6	4.1 Environmental Policy	23	8.1 Objective	36
1.1.1 Company Structure	6	4.2 Organisational Structure and Responsibilities	23	8.2 Overview	36
1.1.2 Shareholders, Directors and Management	7	4.3 Training, Awareness and Competence	25	8.3 Achievements	36
1.1.3 Mission, Scope and Performance of NT Airports Operations	7			8.4 Five Year Action Plan	37
1.2 Commitment to Environmental Management	8	5. Components of the Northern Territory Airports PL EMS	26		
1.3 Environmental Management Strategy and Past Initiatives	8	5.1 Legal and Other Requirements	26	9. Wildlife Hazard Management System	38
1.4 The Commonwealth Government's Requirements for Environmental Management	8	5.2 Environmental Aspects and Impacts	26	9.1 Objective	38
1.4.1 Required Contents of an Environment Strategy	9	5.2.1 Policy	26	9.2 Overview	38
1.5 Summary of Consultations	9	5.2.2 Risk Assessment	26	9.3 Achievements	39
15.1 Submission to Minister	9	5.3 Environmental Objectives, Targets and Management Plan	26	9.4 Five Year Action Plan	39
1.6 Community Consultation	9	5.3.1 Environmental Management Plan (EMP)	27		
1.7 Dissemination of the Airport Environment Strategy	9	5.4 Operational Control	27	10. Land Management	40
		5.4.1 Emergency Preparedness and Response	27	10.1 Objective	40
		5.5 Monitoring and Measurements	27	10.2 Overview	40
		5.6 Non-conformances and Corrective and Preventive Action	28	10.3 Achievements	42
		5.7 Internal Audit	28	10.4 Five Year Action Plan	42
		5.8 Management Review	28		
		5.9 Document and Data Control	28	11. Native Flora and Fauna	44
		5.10 Records Management	29	11.1 Objective	44
		5.11 Communication	29	11.2 Overview	44
				11.3 Achievements	46
				11.4 Five Year Action Plan	46
2. Description of Existing Airport Environment and Operations	12	6. Environmental Aspects	30		
2.1 Environment	12	6.1 Introduction	30		
2.1.1 Location	12	6.2 Evaluating Prior Achievements	30		
2.1.2 Physical Environment	14	6.3 Five Year Action Plan	30		
2.1.3 Biological Environment	14	6.4 Time Frames and Priorities	31		
2.2 Airport Operations	16	6.5 Sections	31		
2.3 Surrounding Land Use and Tenure	16				
2.4 Tenants	16				
2.5 Environmentally Significant Areas	18				
2.5.1 Rapid Creek	18				
2.5.2 Significant Flora Species	18				
2.5.3 Significant Fauna Species	20				
2.5.4 Indigenous Sites	20				
2.5.5 Heritage Sites	20				
2.5.6 The Environmental Site Register	20				
2.5.7 Review of EPBC Compliance	21				



12. Air Quality, Greenhouse and Ozone Depleting Substances	47
12.1 Objective	47
12.2 Overview	47
12.3 Achievements	48
12.4 Five Year Action Plan	48

13. Hazardous Materials	49
13.1 Objective	49
13.2 Overview	49
13.3 Achievements	50
13.4 Five Year Action Plan	50

14. Resource Use	51
14.1 Objective	51
14.2 Overview	51
14.3 Achievements	52
14.4 Five Year Action Plan	52

15. Waste, Recycling and Litter	53
15.1 Objective	53
15.2 Overview	53
15.3 Achievements	53
15.4 Five Year Action Plan	54

16. Noise	55
16.1 Objective	55
16.2 Overview	55
16.3 Achievements	55
16.4 Five Year Action Plan	55

17. Contaminated Sites	57
17.1 Objective	57
17.2 Overview	57
17.3 Achievements	58
17.4 Five Year Action Plan	58

18. Indigenous and Heritage	59
18.1 Objective	59
18.2 Overview	59
18.3 Achievements	59
18.4 Five Year Action Plan	59

19. Social and Community	61
19.1 Objective	61
19.2 Overview	61
19.3 Achievements	61
19.4 Five Year Action Plan	61

Abbreviations and Appendix	63
Abbreviations	63
References	63
Appendix 1	64

Figures

Figure 1 Airport Development Group Company Structure	7
Figure 2 Airport Development Group PL Shareholdings	7
Figure 3 Northern Territory Airports PL Environmental Management Structure	7
Figure 4 Location of Darwin International Airport	13
Figure 5 Mean Daily Temperatures – Darwin International Airport	12
Figure 6 Average Monthly Rainfall – Darwin International Airport	12
Figure 7 Catchment Boundaries of Darwin International Airport	15
Figure 8 Layout and Infrastructure of Darwin International Airport	17
Figure 9 Sites of Significance on Darwin International Airport	19
Figure 10 Interaction between sections of Northern Territory Airports PL Environment Management System	22
Figure 11 Northern Territory Airports PL Current Organisational Chart	24
Figure 12 Continuity between environmental aspects of the 2002 AES Minor Variation and the 2004 AES	31
Figure 13 Map of the Water Quality Monitoring sites in Darwin International Airport	34
Figure 14 Map of the Land Management on Darwin International Airport	41

Tables

Table 1 Summary of Environmental Initiatives	10
Table 2 Declared weeds known to exist on Darwin International Airport	14
Table 3 List of Plant Species of Conservation Significance	20
Table 4 Bird species present at the Darwin International Airport listed under the EPBC Act	20
Table 5 Environmental Training at Northern Territory Airports PL	25
Table 6 An extract from the Darwin International Airport EMP	27
Table 7 Currently Established Monitoring Programs on Darwin International Airport	28
Table 8 Environmental Aspects and how they relate to the Regulations	31



1. Overview

This Airport Environment Strategy (AES) is a plan for managing the operations at Darwin International Airport in a manner that minimises the impact upon the environment and promotes best practice environmental management by all airport users.

On 20 September 1999 the Minister of Transport and Regional Services (the Minister) approved the first Darwin International Airport Master Plan and AES developed by SKM consultants for Northern Territory Airports PL. Under the *Airports (Environment Protection) Regulations 1997* (the Regulations) the AES is expected to span a 5 year period.

The 2004 AES follows on from the 1999 AES. It is a legally binding document under the *Airports Act 1996* (the Act) for management of all operations on AES from the date of approval by the Minister, until development of the next AES in 2009.

This AES covers the management of all operations on airport, including both aviation and non aviation related activities. The AES has been developed in conjunction with the Darwin International Airport Master Plan, which provides the direction and overall plan for development of the Airport site. This AES does not cover air emissions or noise generated by aircraft movements, as these are regulated separately by AirServices Australia and the Commonwealth under the *Air Navigation (Aircraft Engine Emissions) Regulations 1984* and the *Air Navigation (Aircraft Noise) Regulations*.

Northern Territory Airports PL is committed to the evolving process of environmental management on airport and has ensured that this AES builds on the management practices developed in the original 1999 AES and the Minor Variation to the AES, approved by the Minister and published in 2002.

The AES has been produced in accordance with the terms of the lease and with Section 6 of the Act. The Final AES has been developed entirely in compliance with the Act and the Regulations.

1.1 Management of Darwin International Airport

1.1.1 Company Structure

The Airport Development Group PL (ADG) through its subsidiaries acquired a lease for the three Northern Territory airports comprising Darwin International Airport, Alice Springs Airport and Tennant Creek Airport, from the Commonwealth Government with a commencement date of 10 June 1998 and total consideration of \$108.3 million.

ADG is the ultimate parent of the group (Figure 1). ADG owns 100% of Northern Territory Airports PL which in turn owns 100% of Darwin International Airport and Alice Springs Airport PL who are respectively the holders of a 50 year lease over Darwin International Airport and Alice Springs Airport with free options to renew for a further 49 years. ADG also owns 100% of Tennant Creek Airport PL who are the holders of a 50 year lease over Tennant Creek Airport with free option for a further 49 years.

1. Overview



1.1.2 Shareholders, Directors and Management

ADG is majority Australian owned and has five shareholders comprising:

- Development Australia Fund Management Ltd (managed by Hastings Funds Management Ltd)
- Australian Infrastructure Fund (managed by Hastings Funds Management Ltd)
- Perpetual Investments Ltd
- National Asset Management Ltd (trust units beneficially owned by Development Australia Fund Management Ltd)
- BAA Australia Pty Ltd

1.1.3 Mission, Scope and Performance of NT Airports Operations

The Mission Statement of NT Airports Pty Ltd is:

In the interests of all stakeholders, operate an airport business that is world class in financial and environmental performance, customer service and safety and security, and is recognised as a key contributor and participant in the economic growth of the Northern Territory.

Vision

Airport Development Group's vision is to be a world class Airport business.

That is, we aspire to achieve the following:

- Standards of efficiency and safety that equal world's best practice
- Compliance with all operational, regulatory and environmental standards
- Customer satisfaction with facilities, commensurate with the scale of our airports
- Staff and management excellence
- Appropriate returns to shareholders on invested capital that reflect the underlying risk
- All commercial opportunities are fully investigated, and where appropriate developed and implemented

Values

We will demonstrate our values by action and we will:

- Deliver on our commitments to customers, shareholders and other stakeholders
- Act with honesty and integrity in all our dealings with employees and customers
- Demonstrate our professionalism and credibility in all areas of our operations
- Respond in a timely and appropriate manner to stakeholder needs

- Reward staff for their endeavours on a fair and equitable basis
- Accept the responsibility and accountability that goes with the challenge of delivering objectives and plans
- Respect all people who we work and have contact with
- Excel in providing the highest quality service and support to our stakeholders

Air travel is essential to Australia's economic and social well being. This is particularly true of the Northern Territory with its vast distances and geographically isolated major centres. Air travel plays an important role in connecting the people of the NT to the rest of Australia as well as to the key South East Asian centres of trade and commerce, including Singapore, Denpasar and Brunei. Through it's ownership of Darwin International Airport and Alice Springs Airport's, Northern Territory Airports PL plays an important role in the development of the Northern Territory business and community.

Darwin International Airport has a total of 39 staff providing services to the company, tenants and public including financial, commercial, airfield safety, maintenance, customer service, environmental and management services.

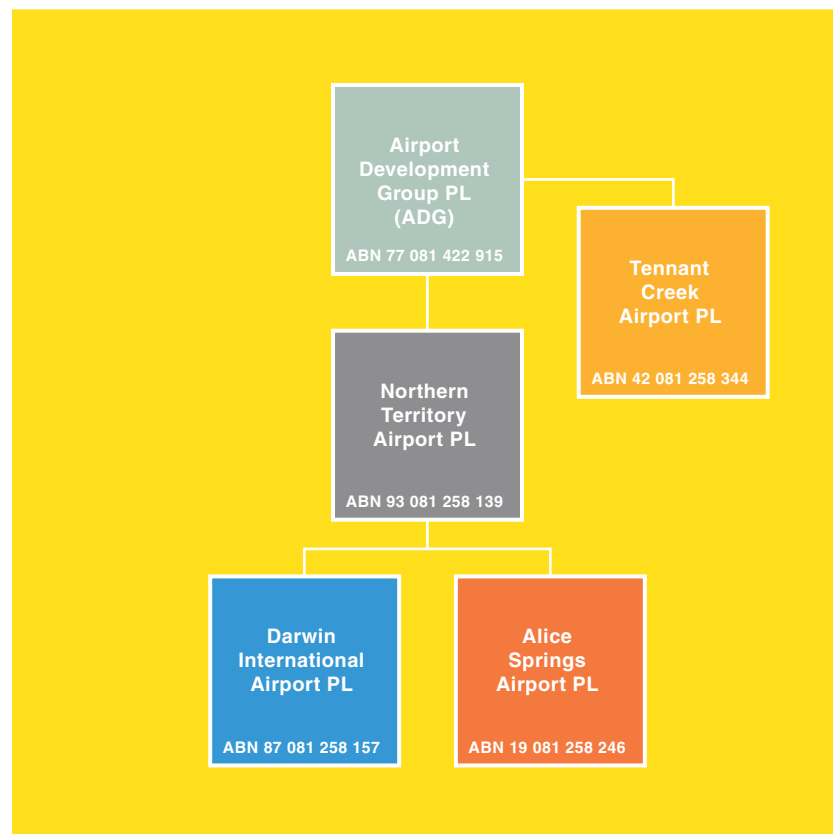


Figure 1 Airport Development Group Company Structure

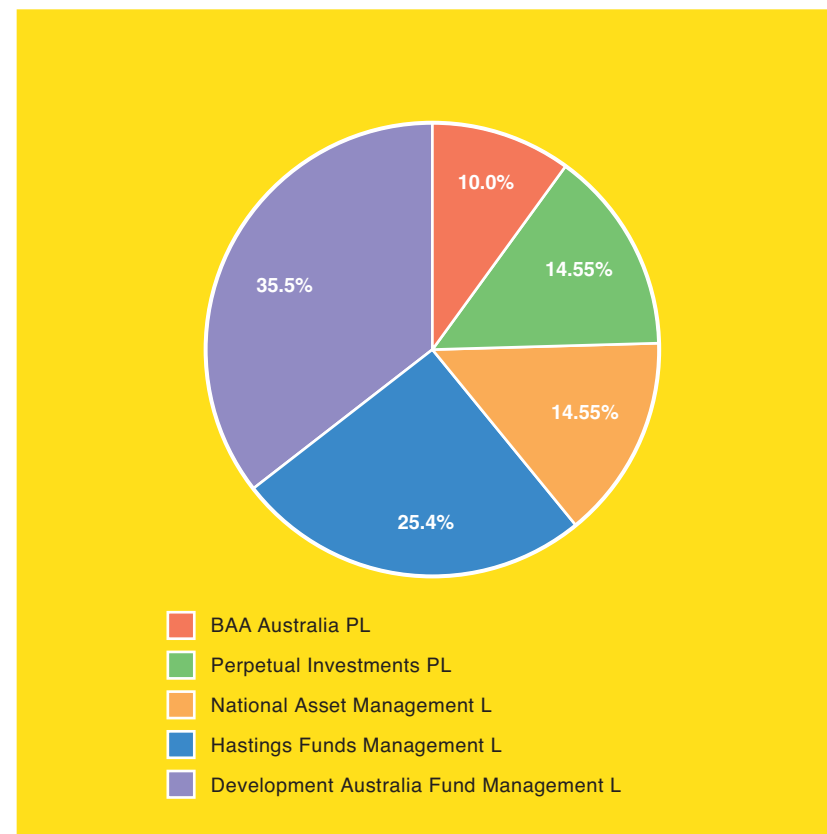


Figure 2 Airport Development Group PL Shareholdings



Figure 3 Northern Territory Airports PL Environmental Management Structure



1.2 Commitment to Environmental Management

The Environment portfolio for Darwin International Airport is represented at the management level of the Airport Development Group by the Environment Coordinator (Figure 3). Having environmental representation at this level of management demonstrates the commitment of the organisation to the management of environmental issues at its airports and ensures environmental consideration in all aspects of the operation. The Environment Coordinator holds the responsibility as part of the management team for ensuring consistency and improvement in environmental management.

1.3 Environmental Management Strategy – Past Initiatives

During the past five years Darwin International Airport has progressively implemented a range of environment management initiatives including:

- 1 The development and commencement of the staged implementation of an Environmental Management System in line with the ISO 14001 Standard.
- 2 A risk management review of environmental issues on Darwin International Airport and from the review implemented and approved a Minor Variation to the 1999 AES. The Minor Variation provided an improved framework for environmental management at Darwin International Airport.
- 3 The establishment of an Environmental Geographic Information System (GIS) which involves the continual updating of data on threaten species, contaminated sites, monitoring sites as well as biophysical data such as drainage information, soils and vegetation communities etc.
- 4 The installation of a three part system for the management of stormwater run off from the RPT apron comprising of scheduled pump outs of flame traps, installation of three Hume hydrocarbon separators and placement of hydrocarbon booms across major drains.
- 5 The development and implementation of a Standard Operating Procedure for all spills on airport including a “report all spills” and “explain all spills” policy.
- 6 The installation of “state of the art” Baldwin hydrocarbon separators on the northern and southern GA Aprons.
- 7 The connection of all General Aviation (GA) wash-down areas to sewer via hydrocarbon separators.
- 8 The placement of high technology spill clean-up materials available to all operators on the RPT and GA aprons.
- 9 The delivery of several training sessions to all operators in relation to spill prevention and cleanup.

- 10 The review and expansion of the water quality monitoring program to include macro-invertebrate monitoring, habitat assessment, implementation of greater quality control and risk assessment.
- 11 The removal of all unused soil stockpiles and building rubble.
- 12 The development of erosion and sediment guidelines for the ‘Contractors Site Rules’ document.
- 13 The implementation of an extensive open drain capital works program to control erosion.
- 14 The development and implementation of an erosion monitoring program across Darwin International Airport.
- 15 The successful implementation of an extensive weed and fire program.
- 16 The extensive mapping of weeds and the development of a five year Weed and Fire Strategy.
- 17 The near eradication of Gamba grass from the Darwin International Airport land adjoining the Rapid Creek corridor.
- 18 The establishment of over 15 hectares of native vegetation to be used as an environmental reserve.
- 19 Conducting extensive fauna surveys in all proposed development areas, the Rapid Creek Corridor, Marrara Swamp and the new Environmental Reserve.
- 20 Conducting extensive flora surveys in all proposed development areas, the Rapid Creek Corridor, the new Environmental Reserve and wetland areas.
- 21 Implementing a revegetation program on the Rapid Creek Corridor buffer zone using local native species.
- 22 The participation in the Commonwealth Greenhouse Challenge.
- 23 The application for a trade waste agreement with the NT Power & Water Authority.
- 24 The auditing and establishment of maintenance schedules for grease traps out-falling to sewer.
- 25 The installation of a mag-flow meter to monitor trade waste quantities.
- 26 The management and remediation of five contaminated sites.
- 27 The establishment of a close working relationship with the Larrakia Nation including contracts for litter and vegetation works, employing three Larrakia people as ground staff and the establishment of “Karawa Park” on Darwin International Airport land.
- 28 The continued active involvement with the Rapid Creek Catchment Advisory Committee (RCCAC).
- 29 The design and establishment of native gardens both landside and airside.
- 30 The design and implementation of a Wildlife Hazard Management System (WHMS) to improve control of bird hazards and other animals on airport and reduce the impact of airport operations on local bird populations.
- 31 The implementation of a feral species eradication program including the successful removal of all feral pigeons from Darwin International Airport.

1.4 The Commonwealth Government’s Requirements for Environmental Management

The Act and the Regulations were enacted to provide a regulatory framework for operation and development of federal airports in Australia leased to non-government enterprises.

Specific to the AES is Part 6 of the Act – Environmental Management, which directs how the Airport Lessee Company (ALC) should manage the environmental issues arising on the airport. The following is a simplified outline of Part 6 of the Act:

- For each airport, there is to be a Final Environment Strategy.
- A Final Environment Strategy is a draft environment strategy that has been approved by the Minister.
- A Draft Environment Strategy is prepared by an airport-lessee company after taking into account public comments.
- It is an offence to cause environmental harm at an airport site.
- The regulations may deal with environmental standards at airport sites.

Under the Act, an Airport Environment Officer (AEO) is appointed by the Department of Transport and Regional Services (DoTaRS), who administers the Act and the Regulations on Darwin International Airport and oversees adherence with the final AES.

The Act and the Regulations set standards and impose requirements in order to prevent or minimise:

- Environmental pollution (including air, water or soil pollution) generated at airport sites
- Impacts on biota and habitats
- Interference of sites of heritage value
- Interference of sites of significance to Aboriginal or Torres Strait Islander people
- Emission of noise generated at airport sites
- The storage and disposal of wastes at airport sites

The Regulations do not apply to:

- Aircraft noise generated during flight, landing, taking off or taxiing. The responsibility for such noise is with AirServices Australia and is regulated under the *Air Navigation (Aircraft Noise) Regulations (1984)*
- Air pollution caused by aircraft engines. This is regulated by the Commonwealth under the *Air Navigation (Aircraft Engine Emissions) Regulations*.



The Act also requires that each airport have an Airport Master Plan. The Master Plan describes the overall development plan and vision for Darwin International Airport. Like the AES the Master Plan is reviewed every 5 years although the overall development plan must address the medium term future to 2024. A summary of environmental management requirements for potential developments on Darwin International Airport is also included in the Darwin International Airport Master Plan.

The development foreshadowed in the Darwin International Airport Master Plan does not constitute a development proposal. The Act sets out a process for the consideration and approval of "Major Development Plans" (MDP's) for specific developments. The triggers for an MDP are outlined under Part 5, Division 4, Section 89 of Act. Specific developments likely to require an MDP include:

- Runways or taxiways
- Terminals
- Major road works
- Developments costing in excess of \$10 million (Aus)
- Developments that substantially add to an airport's capacity
- Developments that may have an environmentally significant impact or that may impact upon an area of environmental significance listed in the Environmental Strategy

Individual MDP's are assessed by DoTaRS and require a separate environmental assessment, independent of the AES.

The Regulations do not cover the entirety of environmental regulation on airport. Territory law must also be considered for any environmental standards not specified in the Regulations. In this case State and Territory regulations can be used to develop a local standard. Some Territory laws which apply to Darwin International Airport include:

- *NT Motor Vehicles Amendment Act 2003*
- *Work Health Act 2004*
- *Ozone Protection Act 1996*
- *Waste Management and Pollution Control 2003*
- *Dangerous Goods Act 1996*

Commonwealth law, other than those matters specified in the Regulations, is also relevant to Environmental Management on airport sites. Relevant legislation includes the *Australian Heritage Council Act 2003*, the *Environmental Protection and Biodiversity Conservation Act 1998* and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. State/Territory laws that cover biota, habitat, heritage and sites of indigenous

significance have an effect on airport provided they are not inconsistent with Commonwealth laws dealing with the subject.

The management of off-airport site impacts needs to address the relevant Northern Territory legislation including the *Water Act 2000*, the *Soil Conservation and Land Utilisation Act 2001*, the *Heritage Conservation Act 2000*, the *Territory Parks and Wildlife Conservation Act 2001*, the *Crown Lands Act 2000* and the *Waste Management and Pollution Control Act 1998*.

1.4.1 Required Contents of an Environment Strategy

In accordance with the Act, the AES must specify all of the following:

- Northern Territory Airports PL objectives for the environmental management at Darwin International Airport
- Areas within the Airport site which Northern Territory Airports PL, in consultation with State or Territory and Federal conservation bodies, identifies as environmentally significant
- Sources of environmental impact associated with Airport operations
- Studies, reviews and monitoring to be carried out in connection with the environmental impact associated with Airport operations
- Time frames for completion of those studies and reviews and for reporting on that monitoring
- Specific measures to be carried for the purposes of preventing, controlling or reducing the environmental impact associated with Airport operations and time frames for completion of those measures
- Timeframes for completion of specific measures
- Details and outcomes of the consultations undertaken in preparing the Strategy
- Any other matters (if any) as are specified in the Regulations

1.5 Summary of Consultations

1.5.1 Submission to Minister

Section 125(2) of the Act requires that the Draft AES be submitted to the Commonwealth Minister for the Department of Transport and Regional Services for approval. The Draft Strategy should also include:

- A summary of consultations with stakeholders and the general public and views expressed in those consultations;
- A list of names of all persons who were consulted and members of the public who provided written comment;
- A statement demonstrating that Darwin International Airport has taken full account of comments by stakeholders and the public in developing the draft AES; and
- Any other information required by the Regulations with regard to stakeholder and public comment for Transport and Regional Services

This AES will become a legally binding document under the Act for management of all operations at Darwin International Airport on its approval by the Minister. Until that time, the 1999 AES will remain in force.

1.6 Community Consultation

This AES was produced as a result of consultation with airport lessees, the AEO, NT Government Agencies and community groups.

The Preliminary Draft AES was subject to a 90 day public exhibition period prior to submission to the Minister for Transport and Regional Services.

The Preliminary Draft AES was amended as required and was submitted with a summary of the public comments and consultation outcomes to the Minister for approval on 15 September 2004.

1.7 Dissemination of the Airport Environment Strategy

Northern Territory Airports PL will disseminate copies of the Final Darwin International Airport AES to all airport tenants, the AEO, the Airport Building Controller (ABC), Darwin community representatives, NT Government representatives, Rapid Creek Catchment Advisory Committee (RCCAC), Australian Defence Force and other relevant stakeholders. The AES will also be made available to the general public.

The following table summarises some of the major environmental commitments identified and the differences between the 1999 AES, the 2002 Minor Variation and the 2004 Draft AES.

following **Table 1** Summary of Environmental Initiatives

1. Overview



Environment Aspect	1999 AES	2002 Minor Variation	2004 AES
Water (ground, waste and storm)	No water monitoring program identified.	Quarterly water monitoring program implemented for drains and sites in Rapid Creek. Program expanded to incorporate habitat evaluation and biological monitoring. Physical tests conducted every month.	Darwin International Airport will complete trade waste agreement with PowerWater including scheduled maintenance of all separators and interceptors.
	Development of "report all spills" policy.	Installation of hydrocarbon separators on stormwater drains from RPT and GA aprons. All stormwater from airport aprons is now treated through separators.	Darwin International Airport will expand water monitoring program to include Yankee Pools.
		New SOP implemented for all water monitoring.	
Soil (erosion, sedimentation and dust)	Monitored sediment in open drains.	Developed a sediment monitoring program for main open drains.	Work with stakeholders to provide erosion works for the banks of Yankee Pools (Rapid Creek).
		Commissioned report on erosion issues for open drains. Implemented erosion works in many drains as per priorities outlined in the URS report.	Continue capital works project to refurbish open drains.
Wildlife Hazard Management	Continued to monitor bird numbers and bird strike and undertake bird harassment and control.	Commissioned and implemented recommendations from Bird Hazard Study	Focus on WHMS will be on land management to decrease wildlife attraction on the airfield.
		New Wildlife Hazard Management System (WHMS) developed including the convening of a Steering Committee representing stakeholders.	Will continue targeted training for Safety Officers and tenants.
		Wildlife Hazard Training conducted by Northern Territory Airports PL for Airport Safety Officers.	Will implement new wildlife hazard database and provide data to relevant authorities and WHMS Steering Committee.
Land Management (weeds, fire and ferals)	Investigated eradication of weeds or other control measures.	Successful implementation of weed and fire program.	Darwin International Airport will implement the 5 year weed and fire strategy and progressively expand the program to incorporate airside areas.
	Cleaned up and disposed of any illegally disposed product that existed on sited.	Erected signage prohibiting dumping.	Work cooperatively with RCCAC on issues of weed control and fire fuel loads in Rapid Creek Corridor.
	Implemented program to stop illegal dumping.	Assisted Parks and Wildlife to eradicate feral pigeons on airport.	Work with Parks and Wildlife and Larrakia Nation in regards to management and control of cane toads.
Native Flora and Fauna	Developed strategy to protect and mitigate any impact on any rare and endangered species identified.	Conducted further surveys for fauna and flora and identified species of conservation significance.	Darwin International Airport will commission study for a Plan of Management for Rapid Creek Corridor.
	Initial flora and fauna baseline survey conducted by SKM.	Commissioned study into wildlife habitat and vegetation conservation and drafted concepts for environmental reserve.	Darwin International Airport will commission a plan for new Environmental Reserve.
	Commitment to retain a buffer zone of 75 metres from the centreline of Rapid Creek.	Studies supported the move of existing "bushland park" to new environment reserve airside.	Develop and implement revegetation program for wildlife corridors as well as Rapid Creek Corridor.
		Developed and implement plans for new tracks, board walks and visitor areas along Rapid Creek Corridor	Rapid Creek Corridor has been identified as Environmentally Significant under the Act.
Air Quality and Ozone depleting substances	Carried out audit on ozone depleting substances.	Implemented controlled burning program to reduce incident of hot dry season burns.	Darwin International Airport will develop education materials in regards to fire control on landside areas.
		Established agreement with AirServices Australia in regards to black smoke emissions.	Darwin International Airport will continue to implement and report against Greenhouse Challenge commitments.
		Joined the Commonwealth Greenhouse Challenge Program and implemented recommendations.	Darwin International Airport will review Black Smoke agreement with AirServices.

Table 1 Summary of Environmental Initiatives *continued overleaf*

1. Overview



Environment Aspect	1999 AES	2002 Minor Variation	2004 AES
Hazardous Materials	Updated asbestos register.	Asbestos management plan developed for old buildings.	Darwin International Airport will investigate implementing a self-audit program for all tenants which will identify hazardous products.
	Developed and implemented a report all spills policy.	Implemented an "explain all spills policy." Installed new spill clean up materials on RPT and GA aprons. Conducted several spill training courses for Darwin International Airport staff and tenants.	Darwin International Airport will conduct further spill training courses for staff and tenants. Continue spill reporting at the Ground Safety and Environment Committee meetings.
	Conducted energy audit and implemented recommendations.	Joined the Greenhouse Challenge Program. Commissioned energy consumption and systems review by Johnson Controls and Honeywell.	Planned replacement of Terminal chillers will be more energy efficient. Revise water usage on airport and implement practical measures to reduce usage. Revise schedule for load balancing work on power factor correction equipment.
Noise	Commissioned and finalised ground running management plan. Acted on any noise complaints received.	Included noise monitoring for construction in Darwin International Airport site rules for contractors.	Investigate individual noise complaints and respond appropriately.
	Encouraged tenants to remove waste oil off site for recycling.	Conducted waste audit for the terminal areas.	Investigate options for a staged recycling program commencing with terminal areas. Consider design options and implementation of a new waste transfer station for the RPT area.
Contaminated Sites	Update and maintain contaminated sites register. Performed risk assessment of all contaminated sites.	Project managed the clean up of several contaminated sites and monitored to ensure contaminants no longer triggered Regulations.	
	Performed risk assessment of all contaminated sites.	Updated contaminated sites register to incorporate into the Environmental GIS. Anecdotal records of historical dump contents have been collected.	Investigate options and feasibility for ground water monitoring of cyclone Tracey dump sites. Continue to monitor remediated sites.
	Implemented policy of stop work if culturally significant artefacts are found.	Included stop work policy in contractors sites rules. Investigated NT and Commonwealth registers for any historical or indigenous sites – no records found. Commissioned AAPA to liaise with custodians in regards to any sacred sites. Developed several joint projects and contracts with Larrakia Nation on airport and specifically in Rapid Creek area.	Darwin International Airport will protect any sacred sites identified by AAPA. Darwin International Airport will continue to work with and build on existing relationship with Larrakia Nation. Darwin International Airport will review heritage requirements under the amended EPBC Act.
Social and Community	No specific commitments	Continued to liaise with major tenants through the Ground Safety and Environment Committee meetings. Partner agency for Commonwealth Greencorps program. Projects focus is for visitor access and facilities in the Rapid Creek Corridor.	Darwin International Airport will continue to build on existing relationships with local Landcare, residents and community groups. Continue to be an active member of RCCAC. Implement tracks, trails, infrastructure and visitor facilities for the Rapid Creek Corridor.

Table 1 Summary of Environmental Initiatives



2. Description of Existing Airport Environment and Operations

2.1 Environment

2.1.1 Location

Darwin International Airport is located thirteen kilometres north-east of the Darwin city centre. The Airport is located between the city to the south west and the district centre of Casuarina to the north. The Airport is bounded by:

- Stuart Highway and Winnellie Industrial Area to the south,
- McMillans Road and Marrara sporting fields to the north,
- Bagot Road and residential and industrial areas to the west, and
- Amy Johnson Avenue and Marrara wetlands to the east.

see **Figure 4** Location of Darwin International Airport

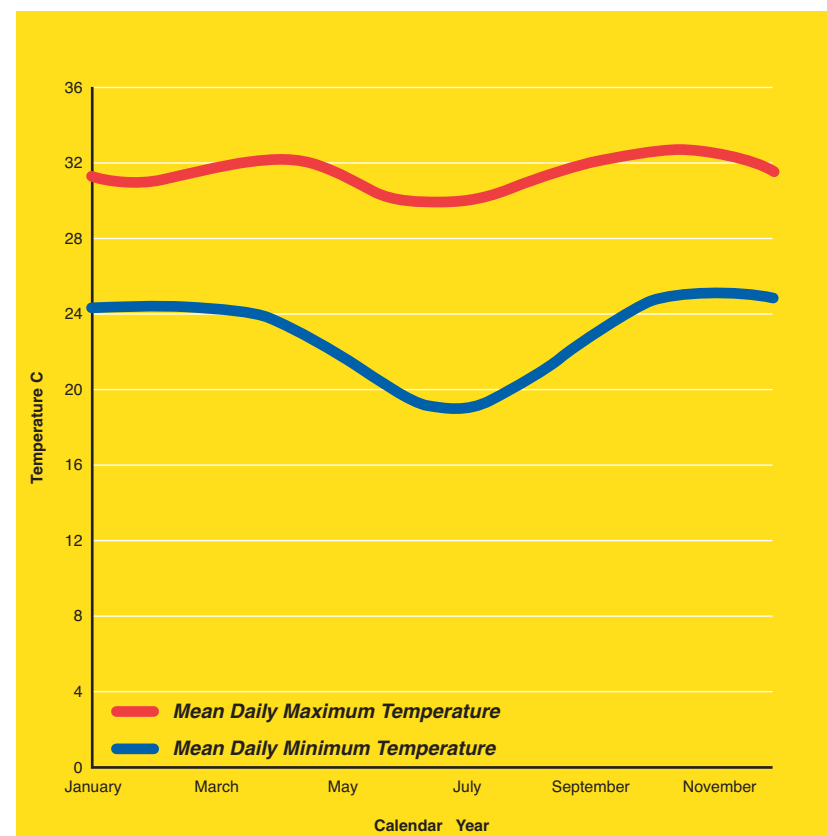


Figure 5 Mean Daily Temperatures – Darwin International Airport

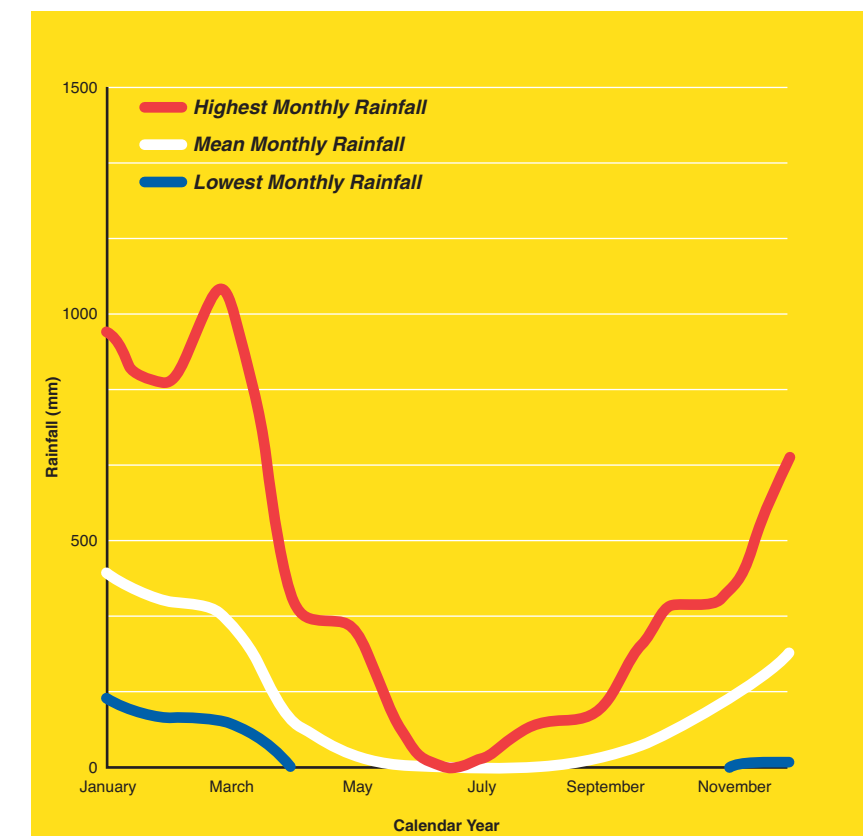


Figure 6 Average Monthly Rainfall – Darwin International Airport

2. Description of Existing Airport Environment and Operations



Figure 4 Location of Darwin International Airport

2. Description of Existing Airport Environment and Operations



2.1.2 Physical Environment

Climate

Darwin International Airport is located within the wet/dry tropics which is dominated by intense high rainfall for approximately 4–6 months per annum (wet season), followed by extended periods of little to no rainfall for the remainder of the year. This extreme climate provides it own unique environmental management issues including flood and high levels of erosion and sedimentation in the wet season followed by near drought and high fire danger in the dry season. Minimum and maximum temperatures are relatively constant throughout the year.

Darwin has a monsoonal climate with a marked wet season from November to March as demonstrated in Figure 6.

Geology and Soils

The soils consist of gravelly red or yellow earths underlain by a layer of weathering laterite over Lower Cretaceous Sedimentary rock. In the wetland and wetter areas soils are mostly acid peats and clays or sandy and gleyed podsolics with limited occurrence of leached brown soils and humic gleys at the wetter extremes. Siliceous and earthy sands are deposited in drains and on lower slopes as a result of erosion by water.

Hydrology

The Airport site is within the Rapid Creek Catchment with the exception of the North West section which is part of the Ludmilla Creek catchment. Rapid Creek is less than 10 kilometres long and drains a catchment area approximately 28km².

see **Figure 7** Catchment Boundaries for Darwin International Airport

Hydrogeology

Owing to the monsoon conditions, the water table fluctuates widely between the wet and dry seasons. During the wet season the water table rapidly rises to surface sheet flows up to 1.5m deep and lowers to several metres below ground level during the dry season.

2.1.3 Biological Environment

Habitats

Darwin International Airport is comprised of cleared grassland associated with the terminal runway system, some fragments of the original Eucalypt woodland and part of the Rapid Creek riparian corridor. The neighbouring RAAF base has similar vegetation structure, but also includes extensive Marrara Swamp wetlands associated with the headwaters of Rapid Creek. Apart from a remnant of woodland on the western boundary, in the Ludmilla Creek Catchment, Darwin International Airport land is wholly situated in the Rapid Creek catchment. Most vegetation has been disturbed by either historical activities, cyclones or fire. However vegetation in the wet/dry tropics quickly re-establishes and many pockets of woodland vegetation and regenerating riparian and melaleuca swampland provide valuable habitat.

Flora surveys have provided Darwin International Airport with a good understanding of flora species on the Airport site.

Species of conservation significance or concern include:

<i>Drosera dilatato-petiolaris</i>	species of concern
<i>Polymeria pusilla</i>	species of concern
<i>Utricularia hamiltonii</i>	species of significance
<i>Cycas armstrongii</i>	species of significance

Species that are considered endemic to the NT are as follows:

<i>Acacia mimula</i>
<i>Brachychiton megaphyllus</i>
<i>Carpentaria acuminata</i>
<i>Clerodendrum tatei</i>
<i>Cycas armstrongii</i>
<i>Hibbertia D6730 Darwin</i>
<i>Hibbertia tasmanica</i>
<i>Kailarsenia suffruticosa</i> (Previously <i>Gardenia suffruticosa</i>)
<i>Livistonia humilis</i>
<i>Sauropus paucifolius</i>
<i>Spermacoce leptoloba</i>
<i>Terminalia pterocarya</i>
<i>Utricularia hamiltonii</i>

(Section 2.5 has further information regarding species of conservation significance)

Weeds

Scientific Name	Common Name	Classification under NT listing
<i>Hyptis suaveolens</i>	Hyptis	B, C
<i>Pennisetum pedicellatum</i>	Deenanth Grass	B, C
<i>Pennisetum polystachion</i>	Mission Grass	B, C
<i>Senna obtusifolia</i>	Sicklepod	B, C
<i>Sida acuta</i>	Spiny Head Sida	B, C
<i>Sida cordifolia</i>	Flannel Weed	B, C
<i>Stachytarpheta jamaicensis</i>	Snakeweed	B (outside town areas), C
<i>Stachytarpheta australis</i>	Snakeweed	B (outside town areas), C

Table 2 Declared weeds known to exist on Darwin International Airport

Some other introduced species on Darwin International Airport are:

<i>Azadirachta indica</i> *	Neem Tree
<i>Delonix regia</i> *	Poinciana
<i>Khaya senegalensis</i>	African mahogany
<i>Caryota mitis</i> *	Clumping fish tail Palm

These species have been historically introduced to Darwin International Airport for the purpose of landscaping.

* indicates environmental weeds of concern

Fauna

Vertebrate surveys have been conducted on Darwin International Airport for mammals, reptiles, birds, amphibians, bats and fish. In surveys conducted in 2003 and 2004 a total of 12 mammal species, 50 bird species 16 reptile species, 6 frog species and 7 fish species were recorded.

Common native reptile, amphibian and fish species on airport include:

Reptiles

Frilled Lizard	<i>Chlamydosaurus kingii</i>
Northern Water Dragon	<i>Lophognathus temporalis</i>
Yellow Spot Monitor	<i>Varanus panoptes</i>
Gould's Goanna	<i>Varanus gouldii</i>
Striped Rainbow Skink	<i>Carlia munda</i>
Douglas' Skink	<i>Glaphyromorphus douglasi</i>

2. Description of Existing Airport Environment and Operations



Figure 7 Catchment Boundaries for Darwin International Airport

2. Description of Existing Airport Environment and Operations



Amphibians

Northern Dwarf Tree-frog	<i>Litoria bicolour</i>
Green Tree-frog	<i>Litoria caerulea</i>
Floodplain Toadlet	<i>Uperolia inundata</i>

Fish

Spangled Grunter	<i>Leiopotherapon unicolor</i>
Chequered rainbowfish	<i>Melanotaenia splendida inornata</i>
Black-banded rainbowfish	<i>Melanotaenia nigrans</i>
Purple Spotted Gudgeon	<i>Mogurnda mogurnda</i>
Hyrtl's Catfish	<i>Neosilurus hyrtlii</i>

No species of reptile, amphibian or fish of conservation significance was recorded during surveys.

Birds

Birds are the most diverse class of vertebrates found on Darwin International Airport and many species require regular control or harassment programs in airside areas to reduce the bird strike hazard.

Some common species include:

Masked Lapwing	<i>Vanellus miles</i>
Whistling Kite	<i>Haliastur sphenurus</i>
Australian Pratincole (Seasonal)	<i>Stiltia isabella</i>
Little Corella (Seasonal)	<i>Cacatua sanguinea</i>
Little Curlew (Seasonal)	<i>Numenius minutus</i>
Pacific Golden Plovers	<i>Pluvialis fulva</i>
Bush Stone-Curlew	<i>Burhinus grallarius</i>
Magpie Lark	<i>Grallina cyanoleuca</i>
Australian Pipit	<i>Anthus novaeseelandiae</i>
Black Kite	<i>Milvus migrans</i>

The majority of bird species recorded in surveys are widespread in the Northern Territory, however there are several species of birds that are listed in international migratory bird agreements, Federal Government or Northern Territory Government Acts (see section 2.5).

Mammals

Native mammals at Darwin International Airport include:

Northern Brown Bandicoot	<i>Isodon macrourus</i>
Grassland Melomys	<i>Melomys burtoni</i>
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>
Pale Field Rat	<i>Rattus tunneyi</i>
Black Flying fox	<i>Pteropus alecto</i>

Black-footed Tree-rat and Pale Field Rat are listed as Near Threatened under NT Government legislation.

Micro Bats

recorded include:

Northern Pipistrelle	<i>Pipistrellus westralis</i>
Common Bent-wing Bat	<i>Miniopterus schreibersii</i>
Little Broad-nosed Bat	<i>Scotorepens greyii</i>
Northern Broad-nosed Bat	<i>Scotorepens sanborni</i>
Hoary Wattled Bat	<i>Chalinolobus nigrogriseus</i>
Little Northern Freetail Bat	<i>Mormopterus "loriae"</i>

Feral or pest animals:

Feral Cat	<i>Felis catus</i>
Feral Dog	<i>Canis familiaris</i>
Black Rat	<i>Rattus rattus</i>
Feral Pigeon	<i>Columba livia</i> (eradicated)

Feral animal control is concentrated on airside as feral animals are also a hazard to aircraft.

2.2 Airport Operations

see **Figure 8** Layout and Infrastructure of Darwin International Airport

In the 2002/03 financial year, the Airport accommodated approximately 875,000 domestic passengers and 210,000 international passengers.

Facilities at Darwin International Airport include:

- two runways with a main runway of 3,354 metres capable of handling all existing and planned aircraft types including the A380 Airbus, and a secondary runway of 1,524 metres together with associated aprons and taxiways;
- two level, 16000 square metre integrated terminal building completed in 1991, which handles all international and domestic passenger movements. The ground level provides check-in and baggage reclaim facilities, and the first floor contains gate lounges and retail areas;
- ten aircraft parking stands on the main apron, three of which are serviced by aerobridges (which can handle Boeing 747 aircraft);
- a GA area consisting of an apron with parking for approximately 100 aircraft and a number of aircraft maintenance hangars;
- air freight facilities which are located to the east of the terminal; and
- refuelling and other aeronautical service related facilities.

The principal business activities undertaken by Darwin International Airport include:

- Airport operations including:
 - The development, provision and maintenance of core aeronautical infrastructure in conjunction with the RAAF;
 - The provision, operation and maintenance of the combined domestic and international terminal; and;
 - provision of safety and security services;
- Car parking;
- Retail and trading and
- Property management and development.

Currently there are 39 full time staff employed by Darwin International Airport. This includes management, administration, technical, Airport Safety Officers (ASO's) and maintenance personnel.

2.3 Surrounding Land Use and Tenure

The predominant land uses in the immediate surround of Darwin International Airport are:

- Residential on the northern boundary comprising of the suburbs Coconut Grove, Millner, Jingili, Moil, Anula, Malak and Karama, with some open space;
- Open space and light industrial along the southern boundary in the suburb of Winnellie, the residential areas of the Narrows and the RAAF operations; and
- Open space and organised recreation (Marrara Sports Complex) caravan park, golf course and other sporting venues along the eastern boundary through the Marrara wetland.

2.4 Tenants

There are 76 property tenants holding leases with Darwin International Airport (excluding car park leases). These leases vary in term from a few months to 45 years. The nature of tenant activities carried out at the Airport varies widely but most relate to airport functions such as freight handling, car rental, aircraft maintenance, charters and retail concessionaires.

The Larrakia Nation have taken over the lease of the old Aero Club buildings and have established their main office in 'Karawa Park' which also has a plant nursery, area for ceremonies and dancing, art and craft facilities and a retail outlet for art works.

Contractors working within the Airport are required to comply with Northern Territory Airports PL Environment Policy. Contractors performing major

2. Description of Existing Airport Environment and Operations



Figure 8 Layout and Infrastructure of Darwin International Airport

2. Description of Existing Airport Environment and Operations



works or works with the potential to cause environmental harm may be required to prepare a construction Environmental Management Plan (EMP) for their works. This is at the discretion of the Northern Territory Airports PL Management Team.

2.5 Environmentally Significant Areas

1999 AES

In the previous AES, environmentally significant sites were difficult to determine due to the lack of detailed on-site survey work. The 1999 AES made note of the Rapid Creek and Ludmilla Creek Catchments as containing “a number of important remnant vegetation communities”. These vegetation communities are well represented at a regional level, however do have local significance due to the Airports location within the northern suburbs of Darwin. According to the 1999 AES, the importance of the woodland to north-western boundary of the site “lies not in its value as a viable habitat for resident species but in its functional contribution at the landscape scale”. Further studies conducted in 2003-2004 have found that wildlife habitat is better served in the new environmental reserve which will have wildlife corridors connecting to Rapid Creek. Some existing vegetation in the north western corner will be maintained for aesthetic purposes and contribute to landscaping features within the proposed business precinct.

Determination of Significance

The Regulations do not contain a definition or description of what is considered ‘environmentally significant’, or a methodology for determining such significance. Therefore Northern Territory Airports PL takes into consideration many aspects and has conducted several surveys in order to accurately determine Environmentally Significant Sites. Extensive flora and fauna surveys have been conducted during the past AES period as well as extensive consultation with community and Larrakia people.

Other agreements and legislation that have been taken into account include: International Agreements

- Species or communities listed under international conventions, for example, Japan and Australia Migratory Bird Agreement (JAMBA), China and Australia Migratory Bird Agreement (CAMBA) and the Bonn Convention (Bonn).

Commonwealth Legislation

- *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Torres Strait Islander Heritage Protection Act 1984*
- *Commonwealth Register of National Estate*

Northern Territory Legislation

- *Territory Parks and Wildlife Conservation Act 2000*
- *NT Heritage Conservation Act 2000*
- *NT Sacred Sites Act 1989*

Species considered to be of conservation significance in this AES are those listed on the Threatened Species List under the *Territory Parks and Wildlife Conservation Act 2000* and / or listed under the EPBC Act as:

- NT – near threatened/threatened
- EN – endangered
- VU – vulnerable

Plants listed as ‘data deficient’ (DD) or ‘not evaluated’ (NE) on the Threatened Species List under the *Territory Parks and Wildlife Conservation Act 2000* are also considered to be of some concern, as there is the possibility that they could include rare or restricted species.

In addition to legislation, Northern Territory Airports PL takes into consideration the local significance of certain habitat, for example, Rapid Creek. As stated in the 1999 AES, NTAPL intends to “support the objectives of the *Rapid Creek Management Plan*.” This commitment is to continue for this Strategy period.

No environmentally significant Commonwealth or State listed areas are currently recorded on the Environmental Site Register for Darwin International Airport.

see **Figure 9** Site of Significance on Darwin International Airport

Significant Areas

2.5.1 Rapid Creek

Description of area

Most of the Airport land is within the Rapid Creek Catchment. The Rapid Creek catchment contains a number of important remnant vegetation communities on airport including, savannah woodland, riverine monsoon forest, grassland and paperback swamps.

Rapid Creek is bordered landward by the Marrara Wetland at the eastern end of the catchment. This wetland can extend up to an area of 15 hectares in the wet season.

While acting as a water retention feature during flood events, the wetland overflows and feeds the north and south arms of Rapid Creek. The confluence of these watercourses occurs about two kilometres upstream from McMillans Road on Defence land. At this junction the flow of groundwater is retarded in a groundwater basin which acts as a water reserve for the lower Rapid Creek during the dry season.

Rapid Creek becomes a single, well-defined channel at the flood mitigation wall and flows through Defence land beyond ‘Yankee Pools’ where it flows through Darwin International Airport property before entering Darwin City Council freehold land at Henry Wrigley Drive. Darwin International Airport land to the west drains towards the creek channel by overland sheet flow.

The southern arm of Rapid Creek passes near the main 11/29 runway of the Airport. Parts of the southern arm has a reasonably well-defined channel, at least for low flows, and drainage from the southern part of the catchment enters this reach. During high flows however, the watercourse is less apparent with the existing channel and vegetation providing a flood retarding effect.

Previous work conducted

A buffer zone of 75 metres from the Rapid Creek centre line has been maintained and managed by Darwin International Airport for the past five years. Works conducted in the previous AES period include intensive weed control along the buffer zone as well as conducting fire fuel load reduction burns. Programmed burns are conducted in the early dry season in order to reduce fuel and allow time for vegetation to re-establish prior to the “build-up” rain storms. Extensive revegetation programs have also been conducted to re-establish local species in degraded areas. Vegetation management and litter control programs have been implemented in conjunction with Larrakia Nation.

Future commitments

The Darwin International Airport is committed to retaining and improving on a 75 metre buffer zone from the centre line of Rapid Creek. It is anticipated that a Plan of Management will be completed in the next AES period which will be developed in conjunction with stakeholder input from RCCAC and the community. Northern Territory Airports PL is committed to providing further visitor facilities for the Rapid Creek Corridor and are currently a partner agent for the Commonwealth Program Greencorps who are in the process of designing and building tracks, visitor facilities and interpretation signs to enhance visitor enjoyment of the Rapid Creek Corridor.

2.5.2 Significant Flora Species

Four identified plant species on airport, *Cycas armstrongii*, *Polymeria pusilla*, *Drosera dilatato-petiolaris* and *Utricularia hamiltonii* are listed as

2. Description of Existing Airport Environment and Operations



environmentally significant or of concern in the Northern Territory. These species were recorded in a vegetation survey carried out in 2004. 13 species have been identified as endemic to the Northern Territory. Darwin International Airport will protect the four species of conservation significance or concern and their locations have been recorded. NT Government does not prohibit the clearance of endemic species.

Family	Genus, Species	Categories		
		1	2	3
ARECACEAE	<i>Carpentaria acuminata</i>	✓		
ARECACEAE	<i>Livistonia humilis</i>	✓		
COMBRETACEAE	<i>Terminalia pterocarya</i>	✓		
CONVOLVULACEAE	<i>Polymeria pusilla</i>			DD
CYCADACEAE	<i>Cycas armstrongii</i>	✓		
DROSERACEAE	<i>Drosera dilatato-petiolaris</i>			NE
DILLENACEAE	<i>Hibbertia D6730 Darwin</i>	✓		VU
DILLENACEAE	<i>Hibbertia tasmanica</i>	✓		
EUPHORBIACEAE	<i>Sauropus paucifolius</i>	✓		
LENTIBULARIACEAE	<i>Utricularia hamiltonii</i>	✓		NT
MIMOSACEAE	<i>Acacia mimula</i>	✓		
RUBIACEAE	<i>Kailarsenia suffruticosa</i> (Previously <i>Gardenia suffruticosa</i>)	✓		
RUBIACEAE	<i>Spermacoce leptoloba</i>	✓		
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	✓		
VERBENACEAE	<i>Clerodendrum tatei</i>	✓		

Categories: 1 Northern Territory Endemics
2 Threatened Species Listing under the *Territory Parks and Wildlife Conservation Act 2000*.
3 Threatened Species Listing under the under the *Commonwealth EPBC Act 1999*.

Table 3 List of Plant Species of Conservation Significance

2.5.3 Significant Fauna Species

Mammals

Of the 12 mammal species recorded at Darwin International Airport, only 2 are considered to be of conservation significance. Both the Black-footed Tree-rat and the Pale Field Rat are listed as Near Threatened by the Department of Infrastructure, Planning and Environment (DIPE). A taxon is designated Near Threatened when it has been evaluated against the IUCN selection criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable at

present, but is close to qualifying for, or is likely to qualify for a threatened category in the near future.

Birds

There are several species of birds recorded on Darwin International Airport that are listed under international migratory bird agreements, Federal Government and Northern Territory Government Acts.

Common Name	Scientific Name
Black Kite	<i>Milvus migrans</i>
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>
Black-winged Stilt	<i>Himantopus himantopus</i>
Brahminy Kite	<i>Haliastur indus</i>
Brown Songlark	<i>Cinchoramphus cruralis</i>
Common Greenshank	<i>Tringa nebularia</i>
Golden-headed Cisticola	<i>Cisticola exilis</i>
Grey Goshawk	<i>Accipiter novaehollandiae</i>
Latham's Snipe	<i>Gallinago harkwickii</i>
Little Curlew	<i>Numenius minutus</i>
Masked Lapwing	<i>Vanellus miles</i>
Nankeen Kestrel	<i>Falco cenchroides</i>
Oriental Pratincole	<i>Glareola maldivarum</i>
Pacific Golden Plover	<i>Pluvialis fulva</i>
Radjah Shelduck	<i>Tadorna radjah</i>
Rainbow Bee-eater	<i>Merops ornatus</i>
Red-tailed Black Cockatoo	<i>Calyptorhynchus banksii</i>
Spotted Harrier	<i>Circus assimilis</i>
Square-tailed Kite	<i>Lophoictinia isura</i>
Wedge-tailed Eagle	<i>Accipiter audax</i>
Whistling Kite	<i>Haliastur sphenurus</i>
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>
Wood Sandpiper	<i>Tringa glareola</i>

Table 4 Bird species present at the Darwin International Airport listed under the EPBC Act

"It is important to note that most of the bird species covered by these migratory agreements such as the Rainbow Bee-eater occur commonly in the Top End, as does the Glossy Ibis and Oriental Pratincole and the habitats that the study areas provide for these species are well represented in both the local and the regional area" (Indicus Biological Consultants 2004)

2.5.4 Indigenous Sites

Northern Territory Airports PL has been advised by the Aboriginal Areas Protection Authority (AAPA) that no "recorded" Aboriginal Sacred Sites appear on their register managed under the *Aboriginal Sacred Sites Act 1989*.

Northern Territory Airports PL has sent a formal request to the AAPA to conduct an investigation into the potential for any sacred sites on Darwin International Airport, within the zones of potential development. This investigation will include meetings with Traditional Owners and Custodians from the Larrakia People. Once the investigation is complete, and in the event that no sites are found, the AAPA will issue an Authority Certificate indemnifying Northern Territory Airports PL from prosecution under the *Aboriginal Sacred Sites Act 1989*. If sites are identified within the Darwin International Airport lease area, Northern Territory Airports PL will act in accordance with the management provisions of the *Aboriginal Sacred Sites Act, 1989*.

2.5.5 Heritage Sites

Darwin International Airport's lease was extracted from Defence land in April 1989 when it was placed under management control of the Federal Airport Corporation. The land on which Darwin International Airport is located has had an interesting history. The site was bombed during World War II and the majority of infrastructure was devastated during Cyclone Tracey in December 1974. The majority of old buildings relating to the historical use of the Darwin Airport are located within the RAAF lease. No significant heritage sites have been identified within the Darwin International Airport lease area.

2.5.6 The Environmental Site Register

In accordance with the Regulations, Northern Territory Airports PL has developed and maintained an Environmental Site Register. This Register is divided into three sections including:

1 Pollution Monitoring and Contaminated Sites

All water and soil monitoring locations, contaminated sites and fuel storage tanks have been digitally mapped using GIS. Each monitoring location on the map is linked to a database containing the results of soil and water quality testing for those sites. Historical and current contaminated sites on the map are linked to information on remedial plans, pollution control equipment installed to prevent further contamination and any additional requirements stipulated by the AEO for those sites.

2 Sites of Significance

Sites of significance including the Rapid Creek Corridor have been mapped. Other areas including Cyclone Tracey dump sites, underground storage tanks, new environmental reserve and proposed corridors have been overlaid on the current Darwin International Airport Land Use Map.

see **Figure 9** Site of Significance on Darwin International Airport

2. Description of Existing Airport Environment and Operations



3 Land Management

The entire Darwin International Airport lease has been divided up into management areas. Each management area has its own unique name and data has been collected in regards to weeds present, type of treatments including chemical applications etc. Each site also has a history of fire and the recommended fire regime. Other data included in this Register are records of plant and fauna transects and species lists.

2.5.7 Review of EPBC Compliance

As Darwin International Airport is situated on Federal Government land; it is essential that operations comply with the EPBC Act particularly in relation to potential impacts on environmentally significant flora, fauna and vegetation communities. Only the bird species indicated in section 2.5.3 trigger the EPBC Act. Northern Territory Airports PL will comply with all legislative requirements under the EPBC Act.



3. Northern Territory Airports PL Environmental Management System

3.1 Overview

Northern Territory Airports PL remains committed to the development of an Environmental Management System “in accordance with ISO 14001 series” as stated in the previous Environment Strategy 1999. In accordance to this commitment Northern Territory Airports PL has developed an EMS and is currently in the process of implementing this System into all aspects of operations.

All activities at Northern Territory Airports PL that have the potential to have an impact on the environment are analysed and managed in the EMS. The EMS is being implemented to enable Northern Territory Airports PL to formulate policy and objectives taking into account legislative requirements and information about significant environmental impacts. The EMS applies to those environmental aspects that the organisation can control and over which it can be expected to have an influence. The EMS takes account of pertinent Regulations, Codes of Practice and Standards which relate to its operational activities.

The Northern Territory Airports PL EMS is structured on the requirements of AS/NZS ISO 14001:1996 Environmental management systems – Specifications with guidance for use. Whilst it is the intention of Northern Territory Airports PL to maintain the EMS to ISO 14001, it is expected that accreditation of the Standard will not be sought at this stage. The following figure shows the various aspects of Northern Territory Airports PL’s EMS.

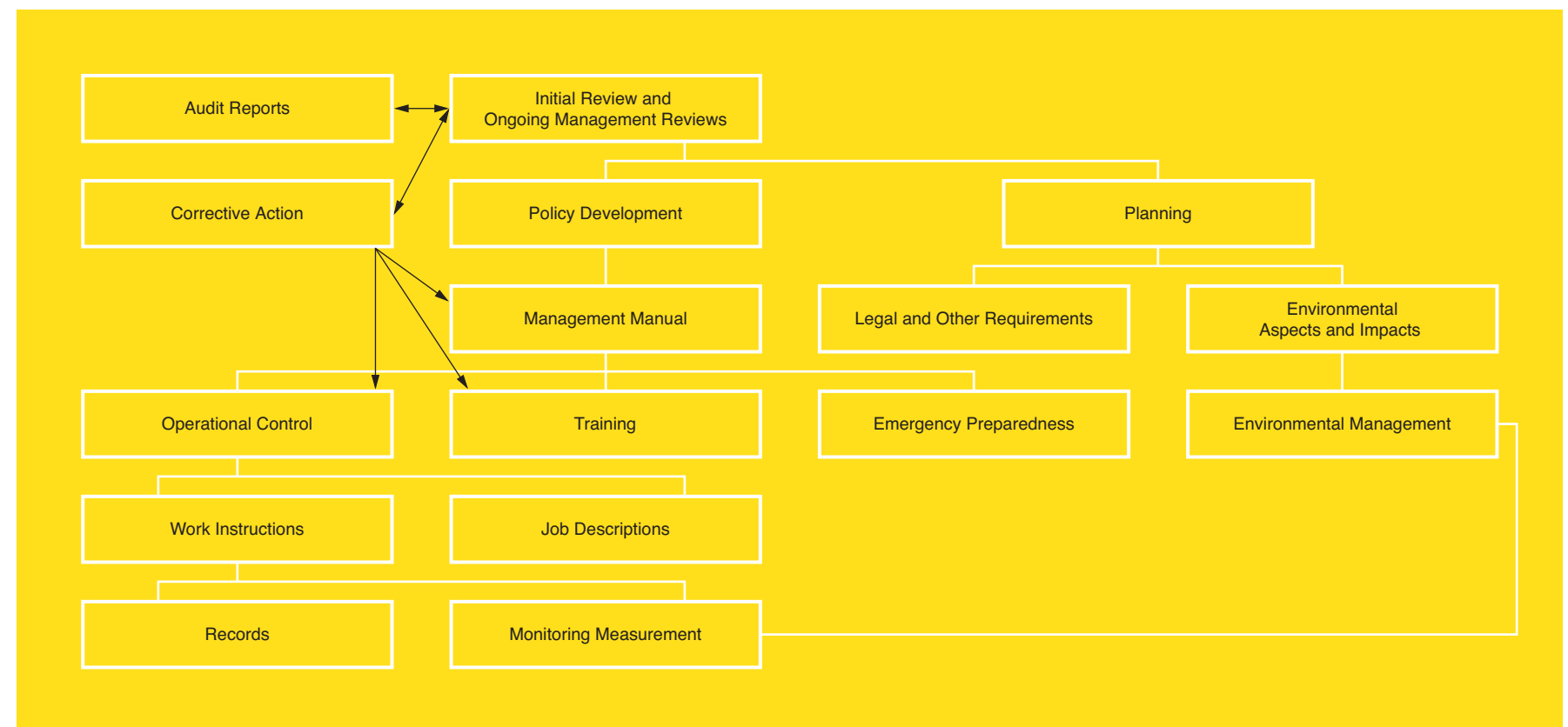


Figure 10 Interaction between sections of Northern Territory Airports PL Environment Management Structure



4. Commitment to Environmental Management

4.1 Environmental Policy

Airport Development Group recognises the importance of maintaining and enhancing the quality of the environment for the benefit of all Australians, present and future.

In developing and managing Darwin International Airport, Alice Springs Airport and Tennant Creek Airport we will establish and maintain a system to:

- Identify and manage the significant environmental impacts on our airports;
- Comply with relevant environmental legislation and regulations;
- Set, in consultation with relevant authorities and the community, specific environmental objectives and targets to minimise environmental impact and prevent pollution;
- Continually measure, monitor, report and improve upon the environmental performance defined by our objectives and targets; and
- Promote the company's commitment to the environment, to our employees, tenant's customers and neighbours.

Reviews of the Environmental Policy are conducted periodically by the Environmental Management Review Committee and also upon appointment of a new Chief Executive Officer (CEO). The Environmental Policy was last changed in January 2002 upon appointment of the current CEO. The Environmental Policy is communicated, implemented and maintained at all levels within the organisation and is prominently displayed so as to be available to the public.

This policy emphasises continual improvement and is consistent with other management policies and programs. The Environmental Policy is used when setting and reviewing objectives and targets for Northern Territory Airports PL. All Northern Territory Airports PL employees and agents are responsible for compliance with the Environmental Policy.

4.2 Organisational Structure and Responsibilities

ADG Board and Risk and Audit Committee

The ADG Board is responsible for the overall environmental performance and compliance of Northern Territory Airports PL and the appropriate allocation of funds and resources to discharge Northern Territory Airports PL's environmental obligations.

4. Commitment to Environmental Management



The Risk and Audit Committee (a subcommittee of the ADG Board) primarily deals with areas of significant risk including environmental risk and Northern Territory Airports PL 's progress in relation to environmental objectives and targets.

Management Team

The CEO is responsible for the provision of resources that are needed to implement and control the EMS. These resources include human resources and specialised skills, technology and financial resources.

Environmental Management Review Committee

The Environmental Management Review Committee membership consists of the Chief Executive Officer, Environment Coordinator (Management Representative and Secretary), General Manager Finance, General Manager Operations, Technical Asset Manager, Operations Manager – Darwin and Operations Manager – Alice Springs.

Other staff are seconded if required or if particular issues need to be addressed.

EMS Environment Representative

Under the EMS, the Environment Coordinator is appointed as the

Management Representative whose responsibilities are outlined in the Northern Territory Airports PL EMS Management Manual and includes:

- Ensuring that EMS requirements are established, implemented and maintained
- Reporting on the performance of the EMS to senior management for review and as a basis for improvement
- Acting as Secretary to the Environmental Management Review Committee

Environment Department

The Northern Territory Airports PL Environment Department is responsible for:

- Ensuring compliance with the Regulations
- Preparing the AES and monitoring its implementation
- Assessing the Environmental Management Plans
- The Department head is part of the Northern Territory Airports PL Management Team and is the EMS Environment Representative
- Providing advice to Northern Territory Airports PL staff on environmental issues
- Assisting all staff to discharge their environmental responsibilities;
- Primary contact for DoTaRS and the AEO
- The production of the Annual Environment Report

Employees

To ensure successful implementation of the EMS, it is essential that responsibilities for environmental management are clearly allocated to individual managers and staff. Employees at all levels within the organisation have responsibilities under the EMS, and are responsible for management of environmental issues associated with their day to day duties.

Contractors

Contractors are engaged by Darwin International Airport to provide a wide range of services at the Airport, including land management, maintenance and construction. Darwin International Airport ensures that contractors operate to the same high level of environmental management and performance that has been adopted by Darwin International Airport. Darwin International Airport makes every effort to ensure that contractors adopt sound environmental practices by:

- Providing contractors with clear work instructions covering standards of environmental management of the proposed operation;
- Advising contractors of sensitive environmental features of the site and informing them of necessary emergency action procedures should these features be threatened;
- Requiring significant contractors providing ongoing services to Darwin International Airport to prepare an EMP each year in relation to their operations; and
- Requiring contractors involved in major construction projects to prepare an Environmental Management Plan in relation to construction works.

Northern Territory Airports PL ensures that environmental management and performance obligations are included in any new agreements and otherwise as our commercial agreements with our various tenants, operators and other stakeholders allow. This includes requiring significant operators to prepare an EMP each year indicating how they intend to manage environmental issues in their operations.

Tenants

Environmental Management Plans

Northern Territory Airports PL assists with the environmental performance of all operators of undertakings through liaison and awareness raising, on-site visits and advice, provision of training and audits.

Northern Territory Airports PL have a policy that all development considered by the Environment Department to have a considerable impact is required to develop and commit to the outcomes of a Construction EMP. Some tenants have submitted operational EMPs.

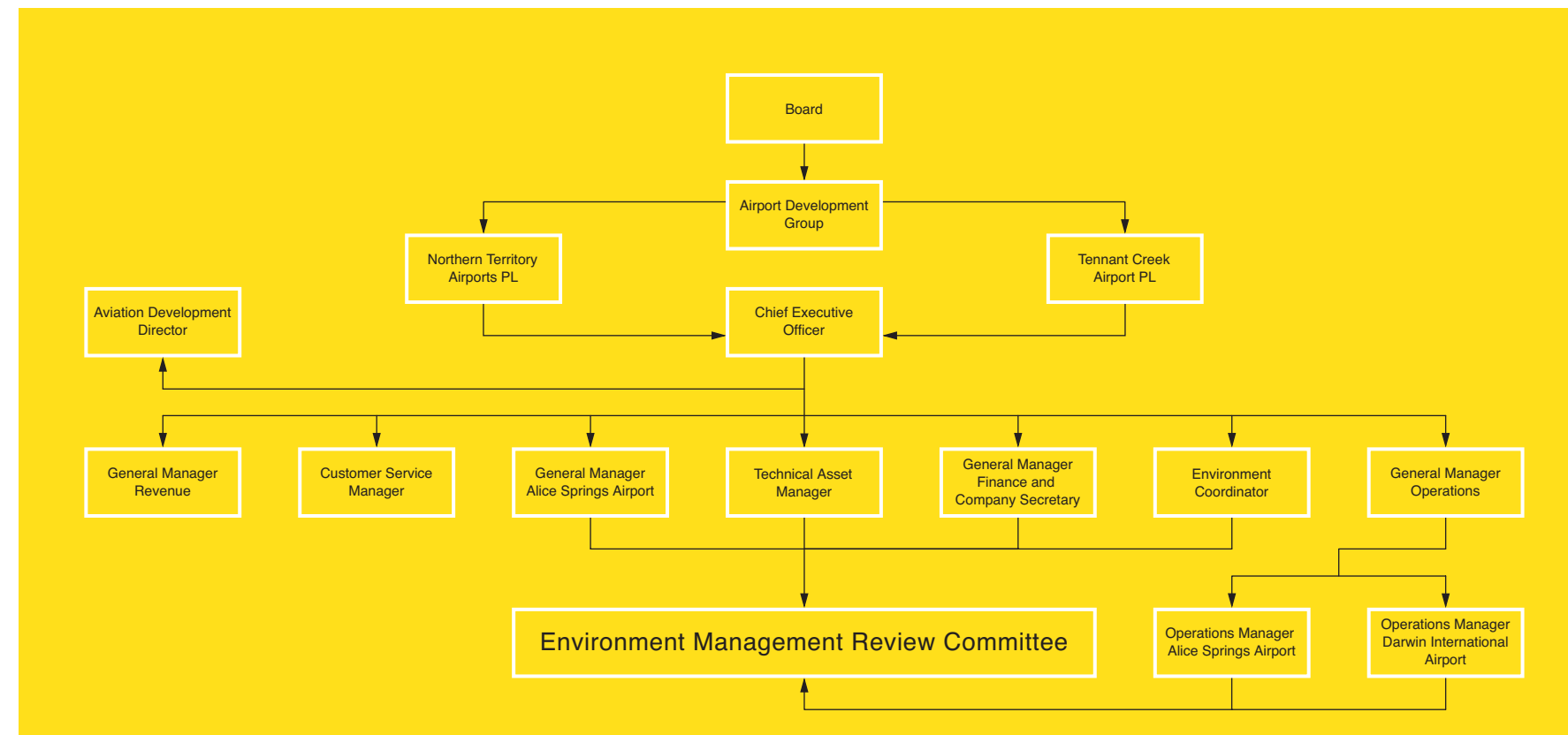


Figure 11 Northern Territory Airports PL Current Organisational Chart

4. Commitment to Environmental Management



A future focus for Northern Territory Airports PL will be the staged implementation for facilitating further development of Tenant operational EMPs. All Tenants will be categorised by Northern Territory Airports PL dependant on the nature and scale of activities that are undertaken at the Airport. This process will require extensive consultation and education of tenants and will be implemented gradually focussing foremost on those tenants who undertake activities that are considered to be of highest potential environmental impact.

Ground Safety and Environment Committee

The Ground Safety and Environment Committee membership consists of all major Tenants at Darwin International Airport including major airlines, maintenance facilities, AirServices Australia and Fuel Farm operators. The Committee meets every quarter and discusses issues such as waste, spills and other environmental issues arising.

4.3 Training, Awareness and Competence

Northern Territory Airports PL has established and shall continue to maintain documented procedures to ensure that all personnel, whose work has a risk of creating a significant impact on the environment, have received adequate training. In particular personnel need to be aware of:

- The importance of compliance with the Environmental Policy and objectives and with the requirements of the EMS;
- The significant environmental effects of their work, whether actual or potential;
- The environmental and economical benefits of improved performance;
- Their roles and responsibilities in achieving compliance with the Environmental Policy and objectives including emergency procedures;
- The potential consequences of deviating from acceptable procedures; and
- Specific training that personnel are required to go through is outlined in the following Table 5. Some of the training is conducted by outside organisations and others conducted by the Airport Managers in house.

Training	Type of Training
Airport Induction	In house
Spill Response and Management	Certificate and In house
Wildlife Hazard Management	In house
Chemical Hazard Management	Certificate
Fire Fighting and Clean Up	Certificate

Table 5 Environmental Training at Darwin International Airport



5. Components of the Northern Territory Airports PL EMS

PLANNING

5.1 Legal and Other Requirements

Northern Territory Airports PL has established and maintains documented procedures to identify and have access to all legislative, regulatory and other applicable policy requirements and codes. The primary regulatory obligations for Northern Territory Airports PL in respect to environmental matters stem from the Act and Regulations.

5.2 Environmental Aspects and Impacts

5.2.1 Policy

Northern Territory Airports PL have established and maintains a procedure for identifying, examining and evaluating those aspects of its activities that it can control and over which it can be expected to influence, in order to determine those which have, or potentially have, significant impact on the environment. Northern Territory Airports PL categorises and ranks its activities, aspects and associated significant impacts according to their environmental risk.

Northern Territory Airports PL ensures that the aspects relative to significant impacts are considered in setting its environmental objectives and that this information is kept up to date. Consideration of environmental aspects is an element of the Management Review.

All environmental impacts or potential impacts were analysed considering the following:

- Likelihood of the impact occurring
- Impact description including areas affected
- The potential consequences
- Whether it is a past, future or ongoing impact
- Normal or abnormal conditions
- Potential regulatory and legal exposure
- Interested parties and extent of concern
- Any data available

5.2.2 Risk Assessment

All aspects and impacts were assessed using an Environmental Risk Analysis Tool modelled on the AS/NZ 4360:1999 Risk Management Standard.

The response to the Risk Assessment provides the following categories:

Low	Manage by routine procedures
Moderate	Specific management needed
High	Senior Management attention: possible increases to management activities needed.
Extreme	Immediate Action. Likely additional management activities needed.

The Management Representative is responsible for the analysis which is done together with operations managers and other personnel twice yearly prior to Management Reviews.

The identification of specific aspects and impacts is discussed further in section 6.

5.3 Environmental Objectives, Targets and Management Plan

Northern Territory Airports PL has established and maintains documented objectives and targets throughout the organisation. When establishing and reviewing its objectives and targets, Northern Territory Airports PL considers legal and other requirements, its significant environmental impacts, its

5. Components of the Northern Territory Airports PL EMS



technological options and its financial, operational and business requirements together with a consideration of the views of interested parties.

The objectives and targets are consistent with the Environmental Policy, and include a commitment to continual improvement and the prevention of pollution.

Environmental targets are outlined in the 5 year action programs found in the Environmental Aspects (sections 7-19). All targets will be reviewed annually by the Environmental Management Review process outlined in section 5.8.

The objectives of Northern Territory Airports PL in relation to environmental management at Darwin International Airport are as follows:

- Maintain an EMS that is consistent with the ISO 14001 series (Environmental Management);
- Continue to commit to continual improvement in minimising environmental consequences of activities at Darwin International Airport.
- Continue to define clear environmental objectives and targets for all airport operations; for all environmental aspects and impacts including matters of natural indigenous or heritage value.
- Continue to define clear responsibilities and conduct training for staff and contractors in upholding the objectives of the EMS as well as ensuring that appropriate authority and resources are provided to effectively meet environmental targets;
- Inform all new and existing staff and contractors working within the Airport environs of their environmental responsibilities;
- Maintain systems that will identify legal and other requirements that apply to environmental management and will keep informed on new legislation and regulations;
- Continue to establish procedures for the control, reduction or prevention of pollution caused by airport activities;
- Continue to provide programs for monitoring and reporting of pollution within the Airport;
- Continue to maintain systems to ensure compliance with all requirements of the Act, Regulations and the EMS.
- Clearly define contingency plans for dealing with accidents and emergencies and to ensure adequate training of staff;
- Ensure non-conformances are detected, investigated and documented and that corrective and preventative action procedures are adopted;
- Continue a system of ongoing auditing of the EMS to ascertain compliance with the objectives;
- Ensure periodic review of the EMS to ensure its continuing suitability, adequacy and effectiveness.

- Involve the local community and stakeholders in the development of all future AES.
- Disseminate Northern Territory Airports PL Environment Policy and AES to all Operators of undertakings, sublessees, licensees, other stakeholders, NT Government and the local community.

Objectives that are specific to identified aspects are noted in sections 7-19.

5.3.1 Environmental Management Plan (EMP)

All Darwin International Airport 1999 EMP commitments including the 2002 Minor Variation have been completed. See Appendix 1 for all previous EMP commitments taken from the 1999 AES and 2002 Minor Variation.

Development and implementation of EMP's are the primary mechanism for achieving Northern Territory Airports PL's environmental objectives and targets. Individual EMP's have been prepared for Darwin International Airport.

The EMP for Darwin International Airport is a dynamic document and is updated in the light of new information or changed circumstances. The EMP includes objectives and targets for each environmental aspect along with designation of responsibility and a target date for completions. An example extracted from the Darwin International Airport EMP is provided below.

Impact Number	40
Risk	Low
Objective – overall goal	Ensure mulch and green waste material does not enter stormwater
Target – performance measure	Regular checks of green waste stockpile – move stockpiles to bins in Groundstaff compound
Responsibility	Environment Coordinator and Groundstaff supervisor
Resources Required	Time (clean up of current bins) Fees for dumping of old materials
Target Date	September 2004
Date Closed Out	

Table 6 An extract from the Darwin International Airport EMP

EMP's are reviewed every quarter in conjunction with the AEO and they are also discussed as part of Management Review of the EMS.

OPERATIONS

5.4 Operational Control

Northern Territory Airports PL has identified operations and activities that are associated with the identified significant environmental aspects in line with its policy, objectives and targets. In order to plan these operations and activities particular attention has been given to:

- Establishing and maintaining Standard Operating Procedures to cover situations where their absence could lead to deviations for the environmental policy and the objectives and targets;
- Stipulating operating criteria in the procedures;
- Establishing and maintaining procedures related to the identifiable significant environmental aspects of the operation; and
- Communicating relevant policies, procedures and requirements to suppliers and contractors.

5.4.1 Emergency Preparedness and Response

Northern Territory Airports PL has in place an Airport Emergency Plan particular to Darwin International Airport. The emergency plans detail how the company will respond to emergency situations and includes measures to prevent and mitigate environmental impacts that may be associated with them.

An emergency response exercise is conducted as a desk top annually and full exercise every two years. The Northern Territory Airports PL Environment Department are involved in all emergency testing and resulting debriefs.

Northern Territory Airports PL also has established a comprehensive notification and reporting system to address environmental incidents. Incidents are reported by staff in the field and then entered into an electronic database for follow up. With significant incidents, the responsible company is required to provide a comprehensive report on the incident and detail the implementation of preventative measures.

CHECKING AND CORRECTIVE ACTION

5.5 Monitoring and Measurements

Monitoring and measurement processes provide information to management and stakeholders in relation to environmental performance. Northern Territory Airports PL monitoring addresses the following areas:

5. Components of the Northern Territory Airports PL EMS



- Environmental objectives and targets;
- Operations and activities that can have significant environmental impact;
- Compliance with applicable environmental legislation and regulations;
- Operators of undertakings in order to verify that appropriate measures are in place.

All data is collected and analysed under the supervision of an environmental scientist. Data from monitoring programs is reviewed annually to evaluate the appropriateness and frequency of the monitoring program. All data is entered in databases connected to the Environment GIS.

Future monitoring is identified under the 5 year plans in sections 7-19.

Aspect	Type of Monitoring	Frequency
Water	Chemical analysis of Water Quality (Storm Water & Rapid Creek)	Quarterly
Water	Physical analysis of water quality	Monthly
Water	Macro-invertebrate sampling	Bi-annual
Ecology/Water	Habitat Assessment	Annual
Ecology/Water	Photo point monitoring	Annual
Ecology/Water	Site Assessment	Annual
Soil	Soil/Sediment Erosion & Sedimentation	Monthly (Wet season) from Sept-April
WHMS	Bird Strike Counts	Weekly
Ecology	Flora & Fauna surveys	Every two years
Contaminated Sites	Ground Water	TBD

Table 7 Currently Established Monitoring Programs on Darwin International Airport

5.6 Non-conformances and Corrective and Preventive Action

Northern Territory Airports PL has established and maintained procedures for defining responsibility and authority for handling and investigating non-conformance, taking action to mitigate any impacts caused and completing corrective and preventive action.

The corrective and preventive action taken to eliminate the cause of actual and potential non-conformances is appropriate to the magnitude of the problem and commensurate with the environmental impact encountered. Northern Territory Airports PL implements and records any changes in the documented procedures resulting from corrective and preventive action.

Instances of non-conformance may be identified by the following processes:

- Incidents, accidents or complaints
- Internal audits
- Monitoring of EMS and the physical environment
- Management Reviews
- Direction from regulatory agencies eg Airport Environment Officer
- Staff meetings / communication
- Communication forms

All non-conformances are dealt with using a Corrective Action Request (CAR). The decision to raise a CAR is the responsibility of the Management Representative who in the case of Northern Territory Airports PL is the Environment Coordinator. CAR's are not closed out until the action taken can be verified for effectiveness in preventing recurrence of the problem or maintaining continual improvement.

5.7 Internal Audit

Northern Territory Airports PL has established procedures and maintains a program for periodic EMS audits which are to be carried out in order to determine whether or not the EMS,

- Conforms to planned arrangements for environmental management and in line with ISO 14001;
- Has been properly implemented and maintained; and
- Provides information on the results of audits to management.

Northern Territory Airports PL audit program, including any schedule, is based on the environmental importance of the activity concerned and the results of previous audits. Audit procedures outline the audit scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting results.

All elements of the Northern Territory Airports PL EMS will be internally audited every twelve months against the ISO 14001. Most, if not all, sections of the EMS will be audited every 6 months internally.

Audit checklists are drawn up to ensure that procedures, SOP's and management plans are being complied with. All non-conformances are recorded on the audit checklist and a CAR is raised for each non-conformance.

Internal audits of the EMS are carried out by suitably trained Northern Territory Airports PL staff not directly responsible for the work area or function being audited.

5.8 Management Review

The Environmental Management Review Committee will review the Northern Territory Airports PL EMS at least annually to ensure its continuing suitability, adequacy and effectiveness. The Management Review process ensures that the necessary information is collected to allow management to carry out its evaluation. The Management Review is documented in the form of minutes and includes recommendations. The Management Review addresses the possible need for changes to policy, objectives and other elements of the EMS, in the light of the results of the internal audit, previous external audits, changing circumstances and commitment to continual improvement.

Management Reviews consider:

- Results from audits
- Corrective action requests issued since the previous review
- The extent to which objectives and targets have been met
- The continuing suitability of the EMS in relation to changing conditions and information
- Concerns amongst relevant interested parties

DOCUMENTATION AND COMMUNICATION

5.9 Document and Data Control

A document control system has been established to ensure that the EMS manual, policies and procedures essential to the function of the EMS are current and up-to-date. This system ensures that all obsolete and superseded documentation is no longer accessible and retained for record keeping purposes. All controlled documents are listed on a register, which shows the title and issue status.

The Environmental Management System has been documented in two parts:

- 1 The EMS Manual which explains the core elements and the application of the EMS with respect to Darwin International Airport policies and objectives in the consideration of legislative and other requirements; and
- 2 Detailed EMS procedures which outline implementation of the core elements of the EMS including other related documents such as Standard Operating Procedures and policies on specific environmental issues, standards, guidelines and codes of practice are listed in the EMS document register.

5. Components of the Northern Territory Airports PL EMS



5.10 Records Management

Northern Territory Airports PL has established and maintains procedures for the identification, maintenance and deposition of environmental records.

These records include training records as well as the results of audits and monitoring. Records are stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Their retention times are established and recorded.

5.11 Communication

Northern Territory Airports PL has established and maintains documented procedures for receiving, documenting and responding to relevant information and requests. These procedures also address necessary communications with public authorities regarding emergency planning and consultations with airport stakeholders. Environmental communications consists of input from External Sources such as:

- Complaints from the public
- Correspondence from Commonwealth and NT Government Agencies (including AEO)
- Information/correspondence from Airport operators
- Information from other industry associations
- Media articles.

Internal communications from:

- Correspondence in regards to corrective action requests
- Monitoring programs
- Audit Reports
- Management Reviews

All incoming environmental communications are directed to the Management Representative and are listed on a Correspondence Register.

Northern Territory Airports PL submits a regulatory Annual Environmental Report (AER) to DoTaRS detailing progress in relation to commitments listed in the AES, new additions to the Environmental Site Register and an update on the previous years monitoring and auditing results.

AEO

The Commonwealth Department of Transport and Regional Services (DoTaRS) has appointed an Airport Environment Officer (AEO) to manage the administration of environmental legislation on Darwin International Airport and to oversee adherence to the final AES. A review in regards to Northern Territory Airports PL's progression of the AES is conducted with the AEO on a

quarterly basis with Northern Territory Airports PL's Environment Coordinator. Northern Territory Airports PL maintains regular weekly contact with the AEO and all monitoring results are passed onto the AEO for feedback.



6. Environmental Aspects

6.1 Introduction

Identifying the sources of potential environmental impact on airports requires a comprehensive review of all airport operations. Prior management practices, the current situation, projected changes within the coming five year period and beyond, all require evaluation before development of an effective AES.

In compiling the following sections of this AES, Northern Territory Airports PL has reviewed various aspects of environmental management at Darwin International Airport, including:

- Environmental management practices that occurred on airport prior to Northern Territory Airports PL acquiring the lease from the Federal Government in 1998 and prior to implementation of the initial Master Plan and AES in October 1999

- Progress in environmental management on airport within the last AES period
- Review of changes to relevant legislative requirements and standards within the last management period and of new legislation that has been developed
- Sources of potential and real environmental impact given priority within the last AES period
- Current significant sources of impact and sources of potential environmental impacts that may become prominent in the future
- Identifying and prioritising realistic goals for the coming AES period within the constraints of available resources, projected expansion of the Airport (in terms of development and air traffic volume), general climatic, geographic and environmental conditions
- Identifying current best management practices, technologies and techniques for achieving the goals of the new AES

6.2 Evaluating Prior Achievements

The first AES for Darwin International Airport came into force in 1999. Over the next two years of operation it became evident that some issues and the time frames set for some of the goals of the AES were unnecessary unrealistic or no longer relevant due to changes in the local environment and the global aviation industry.

In light of these changes, Northern Territory Airports PL decided to re-evaluate its Environmental Management goals, developing a new table of Environmental Priorities and Actions using a risk assessment approach. This table was submitted to DoTaRS as a Minor Variation to the AES and approved by the Minister in February 2002. The connection between the original AES, the 2002 Minor Variation and the current AES is essential to understanding the continuity and evolving process of environmental management on Darwin International Airport.

Specific achievements in environmental management within the last five years are described in this AES and are evaluated primarily against (but are not limited to) the goals and time frames specified in the 2002 Minor Variation. The 1999 Environmental Management Plan commitments including the 2002 minor variation have all been completed. See appendix 1 for all previous EMP commitments taken from the 2002 Minor Variation.

6.3 Five Year Action Plan

From the previous AES it is evident that unforeseen circumstances can significantly alter environmental management priorities and sources of

6. Environmental Aspects



potential environmental impact can change dramatically within a short period of time. Northern Territory Airports PL recognises this and has adapted its future action plan accordingly.

Over the next five years Northern Territory Airports PL aims to build strongly on experience gained within the first AES period. New initiatives are to be introduced placing a greater focus on the preservation of heritage values, auditing, conservation of natural ecosystems and the strengthening of links with the local community. Through the evolving EMS, Northern Territory Airports PL will continue to enhance environmental management practices on Darwin International Airport.

Progress with these objectives will be described in the Annual Environmental Report submitted to DoTaRS and evaluated against the time frames specified in the AES and EMP. Progress with achieving the goals of the AES will be reviewed on a quarterly basis by the AEO.

6.4 Time Frames and Priorities

Goals of this AES were developed and prioritised based on a risk assessment approach using the Northern Territory Airports PL EMS Risk Management Matrix based on the AS/NZS 4360:1999. The Matrix was used to classify objectives as having a high or lower priority. High priority objectives will generally be completed within the first two years of the AES period before December 2007. Lower priority objectives will be completed before the end of this AES period before 2009. Ongoing actions, such as soil and water quality monitoring will be given priority each year.

Where possible the EMP timeframes for objectives have been spread out over the coming four years to avoid creating unrealistic workloads at any one time that could otherwise hamper achieving goals on schedule.

6.5 Sections

The 2002 Minor Variation to the 1999 Environmental Strategy identified 15 source areas (or aspects) requiring environmental management. Figure 12 describes how those areas fit into the 13 environmental aspect sections of the 2004 AES.

Section Reference	Requirement	Relevant Aspect/Section
3.03	Specify an area within the airport site that the ALC has identified as being a site of indigenous significance, following consultation with relevant indigenous communities and organisations and relevant federal or Territory bodies.	18. Indigenous and Heritage
3.06 (d)	ALC objectives for environmental management must address identification, and conservation, by the airport-lessee company and other operators of undertakings at the airport, of objects and matters at the airport that have natural, indigenous or heritage value.	18. Indigenous and Heritage
3.07 (a)	In specifying environmentally significant areas on airport the ALC must address any relevant recommendation of the Australian Heritage Commission.	9. Wildlife Hazard Management System. 10. Land Management 11. Native Flora and Fauna
3.07 (b)	In specifying environmental significant areas on airport he ALC must address any relevant recommendation of the Department of the Environment, Sport and Territories regarding biota, habitat, heritage or kindred matters.	9. Wildlife Hazard Management System. 10. Land Management 11. Native Flora and Fauna
3.06 (e)	ALC objectives for environmental management must address involvement of the local community and airport users in development of any future strategy.	19. Social and Community
3.08 (a)	In specifying sources of environmental impact, the ALC as the case requires must address that quality of air at the airport site, and in so much of the regional airshed as is reasonably likely to be affected by airport activities.	12. Air Quality, Greenhouse and ozone depleting substances.
3.08 (b)	In specifying sources of environmental impact, the ALC as the case requires must address water quality, including potentially affected groundwater, estuarine waters and marine waters.	7. Water (surface, ground, storm and waste)
3.08 (c)	In specifying sources of environmental impact, the ALC as the case requires must address soil quality, including that of land known to be already contaminated.	8. Soil (erosion, sedimentation and dust) 17. Contaminated Sites
3.08 (d)	In specifying sources of environmental impact, the ALC as the case requires must address release, into the air, of substances that deplete stratospheric ozone.	12. Air Quality, Greenhouse and ozone depleting substances.
3.08 (e)	In specifying sources of environmental impact, the ALC as the case requires must address generation, and handling, of hazardous waste and any other kind of waste.	13. Hazardous Materials 15. Waste, Recycling and Litter.
3.08 (f)	In specifying sources of environmental impact, the ALC as the case requires must address usage of natural resources (whether renewable or non-renewable).	14. Resource Use
3.08 (g)	In specifying sources of environmental impact, the ALC as the case requires must address usage of energy the production of which generates emissions of gases known as 'greenhouse gases'.	12. Air Quality, Greenhouse and ozone depleting substances.
3.08 (h)	In specifying sources of environmental impact, the ALC as the case requires must address generation of noise.	16. Noise

Table 8 Environmental Aspects and how they relate to the Regulations

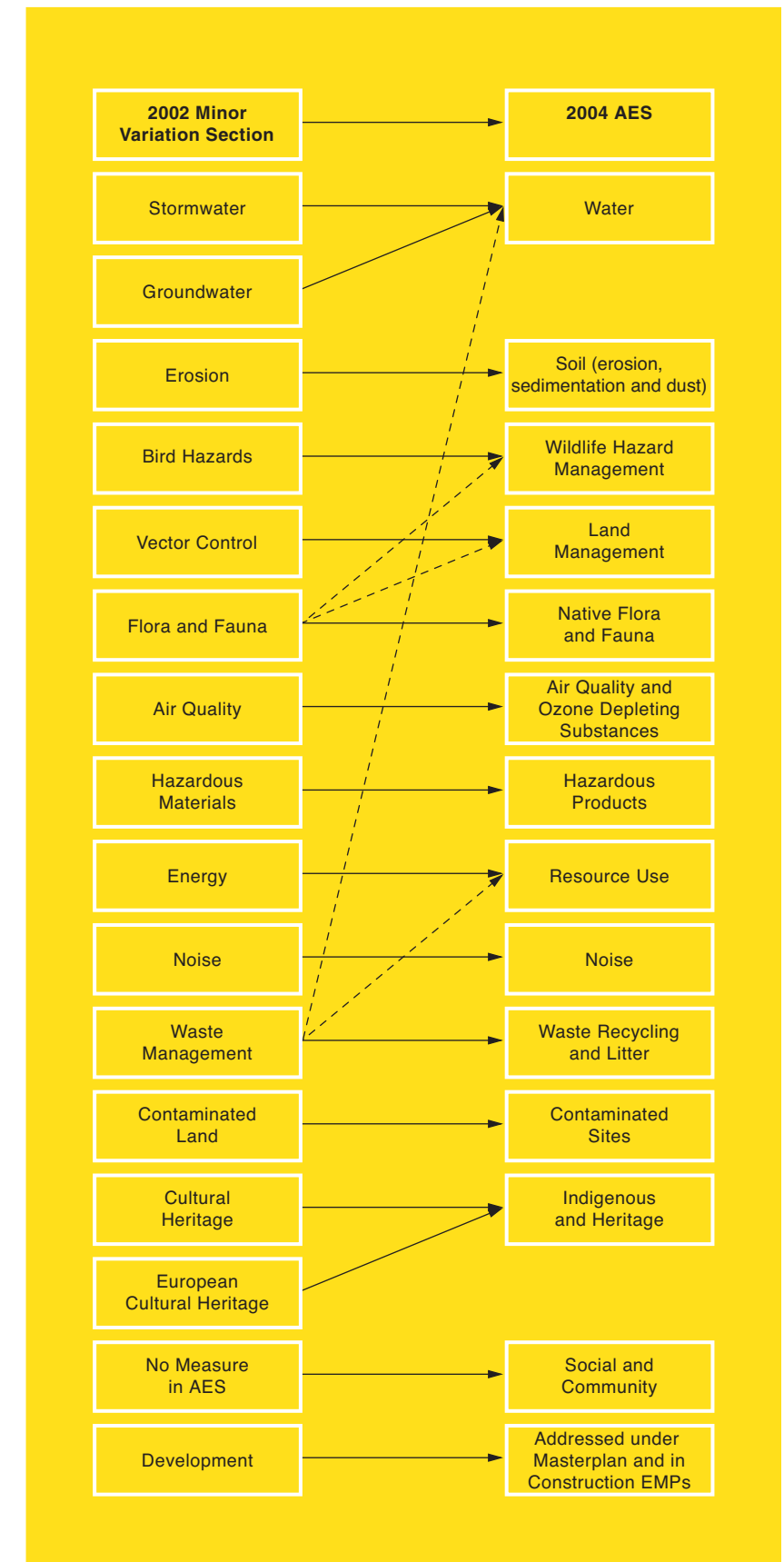


Figure 12 Continuity between environmental aspects of the 2002 AES Minor Variation and the 2004 AES



7. Water (surface, ground, storm, waste)

7.1 Objective

Northern Territory Airports PL objective is to prevent or minimise water pollution at all times and comply with legislative standards.

7.2 Overview

The Regulations define water pollution to have occurred if a substance or organisms causes or is likely to cause:

- 1 The physical, chemical or biological condition of the waters to be adversely affected.
- 2 An adverse effect on beneficial use of the water, including public health, safety, aesthetic enjoyment or other benefits.

Water pollution can include substances dissolved in the water, held in suspension, as particulate matter, as material floating on the water surface or it may exist as sediment. At Darwin International Airport bodies of water covered by the Regulations include, natural watercourses, water in channels, drains or pipes and other artificial holding facilities (excluding sewage pipes

and wastewater treatment facilities), groundwater and any other pond or free standing water body.

Potential Sources of Environmental Impact:

Potential water contamination sources within the Airport generally relate to a number of distinct areas including:

- 1 Leakage from above or below ground fuel storage tanks (AST's and UST's).
- 2 Spillage of toxic or hazardous substances, for example fuel spills.
- 3 Aircraft and vehicle wash down or maintenance in areas without appropriate pollution containment measures.
- 4 Waste water that passes through inappropriate or poorly maintained water treatment systems.
- 5 The use of chemicals such as pesticides and herbicides.
- 6 Historical activities such as land-filling.
- 7 Excessive fertiliser use or sewage spills creating nutrification.

These potential water pollution hazards are mitigated or managed on Darwin International Airport using the methods outlined below:

- 1 Five operators still use UST's including JAFS, QANTAS, Darwin Refuelling Services, ARFF and RAAF. All sites have inbuilt tank integrity systems and

regular monitoring programs to check for leaks. AST's are regularly monitored by visual inspection and must comply with the relevant regulatory standards for bunding and roofing. All AST's on airport conform to the relevant NT regulatory standard and are well maintained.

- 2 Spillage of toxic or hazardous materials is monitored through a "report all spills" policy and "explain all spills" policy implemented at Darwin International Airport. The main cause of large fuel spills is overflow during refuelling of large aircraft. Darwin International Airport groundstaff are responsible for all spill clean ups on the RPT apron. Darwin International Airport 's spill procedure and clean up methods have been audited by an independent body and are considered to be 'best practice'.
- 3 Northern Territory Airports PL and the AEO continually monitor GA operations to ensure that inappropriate washdownwash down or maintenance procedures are not carried out in uncontained areas. Only superficial wash down of light aircraft is allowed to occur on the Airport aprons, outside of the hangers. A new wash down bay has been installed on the Northern GA which can now accommodate larger aircraft. All wash water is collected and treated through two hydrocarbon separators.
- 4 Northern Territory Airports PL conducts a comprehensive water quality monitoring program at 9 sites from landside storm water drains and Rapid Creek (see figure 14) to ensure that all interceptor systems discharging to the

7. Water (surface, ground, storm, waste)



drains are functioning properly and are able to remove contaminants from produced waste water. The water quality monitoring program conducts monthly physical data collection, quarterly chemical water quality lab analysis (by a NATA accredited laboratory), bi-annual macro-invertebrate monitoring and annual site, habitat and photo-point monitoring.

- 5 The herbicide's currently in use on airport are Glyphosate (Round Up), Brush Off, Amicide and Access. These are used predominantly in the maintenance of landscape gardens and for clearing around taxiway lights and markers. There are no operations on Darwin International Airport that use large amounts of pesticide or herbicide that are likely to pose a risk to human or environmental health.
- 6 The Cyclone Tracey dumps that have been identified on Darwin International Airport are unlikely to contain materials likely to pose a risk to water quality. Further investigations on these dumps will be conducted within this Strategy.
- 7 Occasional sewage spills occur on the RPT apron during unloading from aircraft and are the only known potential source that could produce water eutrophication on Darwin International Airport. All of these spills are reported and cleaned up using procedures identified in the Spills Procedure.

see **Figure 13**

Map of the Water Quality Monitoring sites in Darwin International Airport

Wastewater

Wastewater includes both sewage effluent and runoff water from airport operations including paint stripping, fire training exercises, aircraft and vehicle wash down and a variety of other cleaning processes. The majority of Darwin International Airport's program has been directed at the appropriate disposal of wastewater which has the highest potential to carry pollutants to the sensitive receiving waters of Rapid Creek.

Septic

Darwin International Airport is connected to the Darwin town sewer managed by the NT Power & Water Authority NT. Only 2 septic systems remain on airport, one at Karawa Park and the other at the Groundstaff maintenance shed. Options for the decommissioning of the septic systems and connection to reticulated town sewer will be considered within this Strategy period.

Tradewaste

Darwin International Airport has applied for a license under the NT Power Water tradewaste agreement. All grease traps and hydrocarbon interceptors have been audited and a maintenance schedule has been developed for the cleaning of all traps connected to sewer and interceptors. Samples taken from Power Water of sewerage from Darwin International Airport have met their guidelines.

In order to further understand the quantities of all sewerage being discharged from the airport, Darwin International Airport has installed a 'mag-flow' meter which is monitored on a weekly basis. The information gained from the mag-flow meter will help us to understand the quantities of outflow through the sewer and if any stormwater is entering the sewerage system. This project is conducted in cooperation with staff from the Power Water Authority.

Interceptors

All washdown wash down waters from the General Aviation aprons are intercepted by two "state of the art" hydrocarbon separators. All waste water discharged from the separators are then out-felled to sewer.

Waste water is also collected in the RPT flame traps. In the event of any major spills on the RPT apron, the resulting wash water is collected in the flame traps and pumped immediately by a contractor and disposed of at an appropriate facility off site. All flame traps and interceptors on the RPT have a regular maintenance schedule for pumping out and removing all waste water and hydrocarbons.

ARFF Training Ground

AirServices Australia has built a new training ground outside of the Darwin International Airport lease area (within RAAF) in 2002. The existing fire training ground within the Darwin International Airport lease area uses only gas fuels and all waste waters are intercepted in a retention pond and then pumped through a hydrocarbon separator before out-falling to stormwater. This facility is not used very often since the new facility was built in 2002.

Stormwater and Surface Water

Due to the torrential rain experienced during the wet season (up to 1.8 metres in 4 months), it has become the major priority for Darwin International Airport to manage any pollutants that may enter Rapid Creek. Darwin International Airport has tackled this issue using a staged system and has undergone an extensive capital works program in the past 5 years to implement state of the art separators on both the RPT and the GA aprons.

RPT Aprons

Darwin International Airport has implemented a 3 stage system to prevent any pollutants entering Rapid Creek from the RPT apron.

Stage 1: Is the collection of all waste water from wash down of spills on the RPT apron from the Flame Traps. The flame traps and all other interceptors collecting waste water are pumped out on a regular maintenance schedule by a specialised operator.

Stage 2: All rainwater and any remaining wash water is directed through 3 Hume interceptors that are built into the stormwater drains that run off the RPT.

Stage 3: All stormwater drains that enter Rapid Creek have been installed with hydrocarbon booms which have been specially designed and built for Darwin International Airport. These booms are installed with floats and can skim any residual hydrocarbons from the surface of the water.

GA Areas

As mentioned in the previous section all waste waters draining from the GA apron are collected in a pit and pumped through a hydrocarbon separator and then out-felled to sewer.

Darwin International Airport has also installed a secondary stage to prevent any hydrocarbons entering Rapid Creek from the GA apron. In the event that any hydrocarbons bypass the separators, they are picked up by floating hydrocarbon booms installed in all drains receiving storm water from the GA apron. These booms are specially built and are checked and maintained every fortnight in the wet season and every month in the dry season.

7.3 Achievements

Previous AES objectives, as outlined by the 2002 Minor Variation, are noted by a '*'. All specified water quality objectives have been achieved within the appropriate time frame.

Northern Territory Airports PL achievements in water quality management since 1999 include:

- Implemented a "Report All Spills" policy and "Explain all Spills" policy for all airport operators to accurately identify the sources, type and size of spills on the Airport as part of the new SOP on spill response procedures.
- Documented spill response procedures and provided specialised training for all staff.*
- Encouraged tenants to install and maintain interceptors/separators in all hangars where maintenance and wash down takes place by written notification.*
- Encouraged airlines to follow good practice when handling sewage and to maintain equipment in good working order.*
- Checked that sewage spill response procedures are documented, spill response kits are stocked and maintained and staff are appropriately trained.*
- Ensured contractors are suitably trained and licensed to handle the chemicals they use on site through the introduction of "Site Rules", a compulsory list of requirements for all personnel working temporarily on airport.*
- Development of a database on spill occurrence and related response which is updated by the Operations Department.
- The installation of "state of the art" Baldwin hydrocarbon separators on the GA Aprons north and south. *

7. Water (surface, ground, storm, waste)



Figure 13 Map of the Water Quality Monitoring sites in Darwin International Airport

7. Water (surface, ground, storm, waste)



- The connection of all General Aviation wash-down areas to hydrocarbon separators which outfall to sewer. *
- The installation of high technology spill clean-up materials available to all operators on the RPT and GA areas. *
- The provision of several training sessions available to all operators in the area of spill prevention and cleanup.
- The extensive review and implementation of all water monitoring including the addition of macro-invertebrate monitoring, habitat assessment, implementation of greater quality control and risk assessment.
- Conducted an audit of all UST's and AST's against the relevant regulatory standards.
- Installed a new wash down area on the Northern GA Apron.
- Audited all car hire wash down areas.

7.4 Five Year Action Plan

Waste Water

High Priority Actions

- Darwin International Airport will review major tenants' interceptors/ separators in regard to functionality.
- Darwin International Airport will review existing septic systems with the view to connect to sewer.
- Darwin International Airport will review the existing paint interceptor at the Groundstaff workshop and consider options for an improved system.
- Darwin International Airport will implement a policy that no new hydrocarbon separators are to outfall to stormwater and they are to be connected to sewer as far as practical and in compliance with the Trade Waste Agreement.

Lower Priority Actions

- Revision of the Trade Waste Agreement and schedules for maintenance of grease traps.
- Investigate options for the incorporation of a new wash down bay in the Northern GA if further GA expansion commences.

Storm Water

High Priority Actions

- Darwin International Airport will expand water monitoring program to incorporate Yankee Pools.
- Darwin International Airport will work with the AEO and a contracted scientist to develop more meaningful limits of reporting for water quality based on tropical background levels.
- Darwin International Airport will consider options and feasibility for testing bacteriological samples on site.

Groundwater

High Priority Actions

- Develop a policy to minimise the installation Underground Storage Tanks wherever practical.
- Investigate the options and feasibility to monitor ground water for Cyclone Tracey dump sites north of the GA.

Ongoing Actions

- Continue to maintain the 3-phase hydrocarbon interception system on the RPT apron including the scheduled maintenance of flame traps and interceptors.
- Check that fuel and oil storage facilities meet relevant NT Regulatory Standards.
- Check that fuel spill response procedures are documented and staff and tenants are appropriately trained.
- Check that appropriate emergency response and clean-up kits are sufficiently stocked and maintained.
- Work with RAAF, RCCAC and Waterwatch in regards to common issues relating to water quality in Rapid Creek.
- Ensure new developments incorporate appropriate waste water management systems into the building design through the development approvals process.
- Continue awareness raising to encourage tenants to manage waste water appropriately, with emphasis upon the ways and means of doing so.
- Ensure all tenants are meeting their schedule maintenance for interceptors and grease traps as agreed under the Trade Waste Agreement.

Monitoring and Measurement

Current

- Continue quarterly water quality monitoring at all sites currently tested using the Water Quality Monitoring Standard Operating Procedure.
- Continue monthly physical parameter water quality testing.
- Continue bi-annual macro invertebrate testing in Rapid Creek
- Continue yearly photo point monitoring of Rapid Creek and habitat assessment.
- Continue to monitor the condition and effectiveness of the hydrocarbon booms in the storm water drains.
- Continue to enter all water quality monitoring data into the water quality database.

Future

- Monitor the integrity of the Airport sewage system and monitoring of the tradewaste mag-flow meter.
- Monitor sewerage outfall to ensure compliance with the Power & Water Trade Waste Agreement.
- Any new sites established are to be assessed as per the Water Quality SOP and data entered into the water quality data