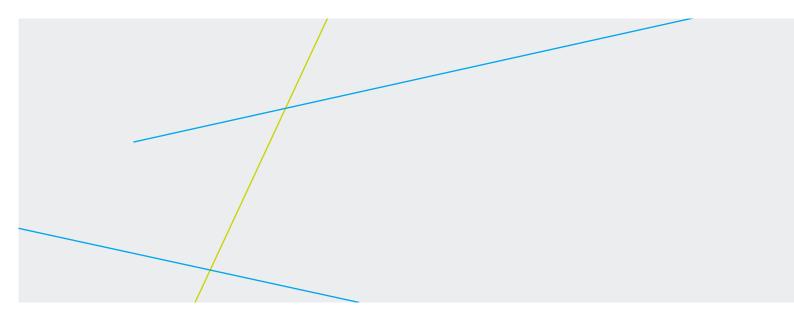
RE-NEW MANAGEMENT PLAN CANBERRA AIRPORT, JUNE 2011 LEADING THE WAY FOR NATURAL RESOURCE REDUCTION









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CHAPTER ONE INTRODUCTION



Canberra Airport is a leader in environmental performance and strives to inform and promote the reduction of environmental impacts to all stakeholders including employees, tenants, adjacent landholders and the community at large. A snap shot of achievements include:

First 5 Star Green Star commercial office building in Australia;

- First waterless urinals in Canberra;
- First to convert flush urinals to waterless in Canberra;
- First Tri-generation plants in Canberra;
- First commercial property water recycling plants in Canberra.

Canberra Airport is a member the Green Building Council of Australia and is committed to developing green infrastructure and to operate facilities in ways that conserve energy, water and other natural resources.

The Airport's philosophy and practice is to research and implement new technologies and methods that have a positive impact on the whole environment instead of just one aspect of the environment.

The Re-NEW principle has been progressively and continuously adopted by the Airport since privatisation in 1998 as set out below.

- Re REUSE, REDUCE AND RECYCLE
- N Natural Resources
- E Energy
- W Water and Waste

The Airport's Ground Transport Policy is also incorporated in this management plan and encourages alternative ground transport options for Airport patrons and employee community.

The Airport also works with Airservices Australia, the Airlines and the aviation industry to improve aviation infrastructure and aircraft arrival and departure procedures to reduce taxiing times, fuel burn, aviation noise and greenhouse gas emissions.

CHAPTER TWO POLICY



Canberra Airport's Board has adopted the Re-NEW Policy as the expanding base principles of the Airport's Environmental policy and strategy principles.

This Re-NEW Management Plan expands on the work already undertaken by the Airport for additional Reuse, Reduce and Recycle of natural resources associated with Airport operations and ongoing development.

The Airport Board has established and adopted the following Re-NEW Policy framework:

In the first instance, Reuse, Reduce and Recycle wherever possible;

- Promote and provide wherever possible, a range of transport options for Airport users and tenants;
- Investigate new technologies to ensure continual improvement of environmental performance;
- Monitor and review consumption to identify opportunities to ensure optimum efficiency;
- Integrate the Re-NEW polices within Airport Operation Plans and precinct development and maintenance plans;

- Ensure compliance with relevant Federal, NSW and ACT regulations within the Airport's Environment Strategy framework;
- Respond and exceed the environmental aspirations of the Aviation White Paper;
- Incorporate natural, indigenous and cultural heritage in environmental planning and development;
- Promote the Airport's Re-NEW policies to major stakeholders, government agencies and the community including providing updates on the Canberra Airport website; and
- Educate and promote the Airport's Re-NEW Policies to Canberra Airport staff and encourage input and innovative ideas to further evolve continuous improvement in environmental performance.

CHAPTER THREE RESEARCH AND DEVELOPMENT



At Canberra Airport, infrastructure is designed and built in a team environment. A core team lead by Airport staff, of architects, engineers, builders and as required interior designers, has worked on each successive project.

The benefits of having an experienced and committed team include improvements in technology and methods from one building to the next, leading to innovations in design, maintenance, construction and lifecycle that reduces demand on natural resources.

This increasing body of knowledge and experience has resulted in a cycle of continuous improvement as set out in Figure 1. It also ensures environmental performance far exceeds best practice benchmarks and regulations.

The result is that the Airport is firmly established as a leader in economic viable development and management that reduces the impact on the environment and provides an outstanding social dividend.

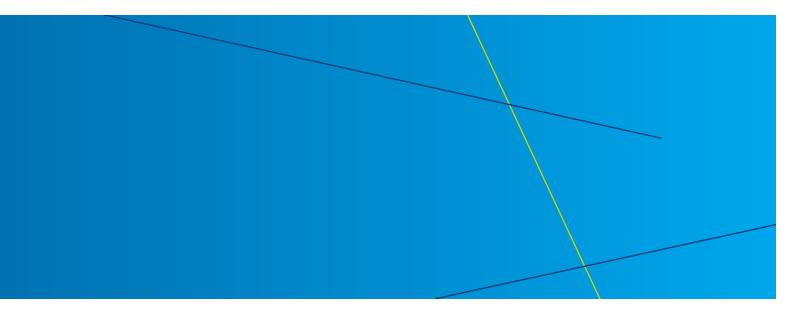
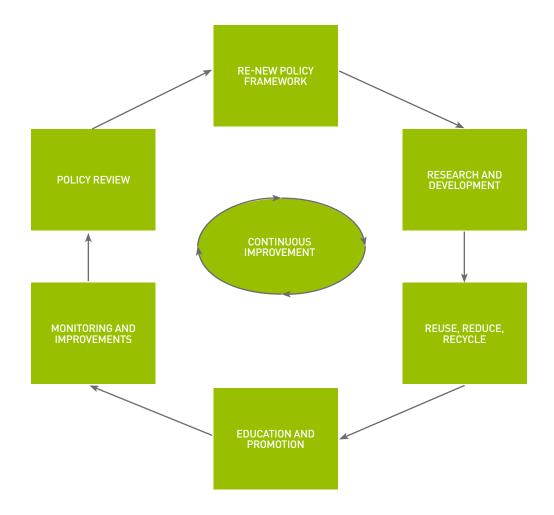


FIGURE 1 Cycle of Continuous Improvement



CHAPTER FOUR N - NATURAL RESOURCES



Through innovative planning and regular monitoring Canberra Airport is able to reuse, reduce and recycle natural resources during the construction, demolition and ongoing operation of Airport infrastructure.

This continues to be achieved in a number of ways, from renovating existing buildings at Fairbairn, relocating and reusing fuel and water tanks and recycling of base material such as bitumen that is then recovered and reused to reinforce Airside roads.

Other initiatives to reduce the consumption of natural resources are to provide common user facilities for Airport tenants in campus style business parks and common user Airline Terminal.

This reduces the need for duplication therefore reducing demand for construction materials.

Table 1, Natural resource reduction flowchart, provides an overview of the major initiatives that have been undertaken at the Airport and the outcomes it has achieved.

Canberra Airport will further develop and implement initiatives to Reuse, Reduce and Recycle our precious natural resources. irst "5 Star" accredited green commercial building – 8 Brindabella Circuit

"It will provide a leading example of a commercially viable "green" office building - Combining low environmental impacts with first class facilities and a high quality work environment for staff. The building is expected to raise the benchmark for ecologically sustainable esign and environmental performance of commercial buildings in Australia."

Department of the Environment and Heritage, September 2004

TABLE 1 Natural Resource reduction flowchart

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			SOURCE		
	ADAPTIVE REUSE		RECYCLED MATERIALS		NATURAL RESOURCES
			REUSE, REDUCE AND RECYCLE		
•	15 Buildings at Fairbairn have been renovated and adapted for reuse where possible. For example, Hangars 46-48	•	Disused taxiway base materials recovered and recycled to form new or to consolidate existing Airside roads	•	Public meeting rooms and theatrettes, reducing tenancy space requirements
•	Materials from former Apron blast fence reused in to a new Runway end blast fence	•	Steel, concrete and other building products from demolished buildings re- used or recycled	•	Large open plates, free of services and cores, allowing long term flexibility including easy retrofit
•	Fuel tanks relocated to other sites off and on Airport	•	Buildings are constructed with a high percentage of recycled materials, including post-consumer concrete, fly ash, steel and timber	•	Application of bitumen rejuvenation treatment to increase the lifecycle of asphalt roads, runways and taxiways
•	An old hanger was relocated off Airport to be used as a shed	•	Crushed concrete re-used to stabilise construction entrances in lieu of quarry grave	•	Initial installation of additional conduits to cater for growth in demand and to minimise future disturbance and excavation
•	Water tanks (including a 1 million litre tank) relocated and reused off Airport	•	Reuse of fill sourced from excavation of local construction sites	•	On grade or self ventilating basement car parking, to minimise ongoing requirements for mechanical ventilation
•	Relocation and reuse of demountable buildings			٠	Low-VOC paint and carpet
			PERFORMANCE OUTCOMES		
•	Reduction in demolition waste and waste to landfill	٠	Increased use of recycled products	٠	Reduction in natural resource use

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Canberra Airport was a member of Greenhouse Challenge Plus until the program ceased in June 2009. The program provided a framework and benchmark for future greenhouse gas reporting.

While the Airport is well below the threshold for National Greenhouse Energy Reporting (NGER) and National Pollution Inventory (NPI) requirements, the Airport continues to monitor greenhouse gas emissions and to identify ways to improve energy efficiency.

Canberra Airport has set its sights on far exceeding the highest National Australian Built Environment Rating System (NABERS) energy standard of 5 Stars.

New generation buildings have been modelled to emit around 32 kg CO2/m2/ year which will exceed the Commonwealth Green Lease requirement of 4.5 Star NABERS energy rating.

Canberra Airport has continued to investigate options for reducing greenhouse gas emissions in older buildings and has received a Green Building Fund grant from the Department of Innovation Industry, Science and Research, AusIndustry. The grant is for the installation of new energy meters for more effective NABERS management of an existing multi-building central services plant.

A Trigeneration plant is currently located

in Majura Office Park and more plants are being installed in the new Airport Terminal and also within Brindabella Business Park.

Table 2, Energy reduction flowchart, provides an overview of the energy reduction initiatives undertaken at the Airport.

Canberra Airport will continue to research and develop further initiatives in light of new age technology and operating practices.

Official Opening of Trigeneration plant at Majura Office Park

"Success here at the Majura Office Park will demonstrate the potential for this technology to be rolled out more widely. The Canberra Airport Group is leading the way in energy efficiency technology and is setting an example for other businesses to follow."

The Hon Martin Ferguson, Minister for Resources and Energy, 2 December 2008

TABLE 2 Energy reduction flowchart

			SOURCE		
	BUILDING DESIGN		ENERGY EFFICIENT MATERIALS		ENERGY SOURCES
			REUSE, REDUCE AND RECYCLE		
•	Green Star accredited professionals Base building designed to minimum 4 Star Green Star Base building modelled to exceed 5 Star NABERS (highest rating)	•	Apply Green Building Council Green Star Principles Double glazed windows for acoustic and thermal qualities Maximum use of thermal mass in buildings Insulated lightweight walls and ceilings	٠	Trigeneration plants – natural gas is used as the input energy source to generate electricity. Fugitive emissions are utilised to heat the building in winter and cool them in summer using state of the art absorption chillers
•	System of continual improvement for architects, engineers, builders and interior designers working together on successive projects	•	Energy efficient lighting and use of digital ballasts to control lighting Perimeter light sensors	•	Central Service Buildings reduce energy usage by better managing multiple building with cooling, heating and supplementary air conditioning
٠	Efficient use of glass and building orientation to maximise natural light	٠	High thermal mass floors	•	Solar hot water systems and/or heat exchanges
٠	High ceiling allowing natural light deep into the building interior	٠	Ambient light detectors to set optimum lighting levels	•	Solar powered aviation hazard navigation aids
•	Prominent stairways resulting in minimised lift usage	٠	Computerised Building Management System	•	Electric powered ground maintenance and aviation ground service equipment
			PERFORMANCE OUTCOMES		
•	Achieving high NABERS and Green Star ratings	•	Energy efficient buildings	•	Reduced reliance on local and grid energy supplies





Canberra Airport has implemented initiatives to reduce water consumption across the Airport as set out in Table 3, Water reduction flowchart. These initiatives were recognised by the ACTEW Corporation on World Water Day 2008 as an organisation making significant water savings.

The Airport's Water Strategy Committee, which includes the Airport's on staff licensed plumber, work together with landscapers, contractors and tenants to ensure that the Airport remains compliant with ACTEW's Stage 4 Water Restrictions, even when only Stage 3 Water Restrictions are in force.

Canberra Airport has developed the 2009 Water Management Plan demonstrating that all reasonable and practicable measures are in place to ensure and improve water quality exiting the Airport. This is achieved in a number of ways including:

- Grassed swale system;
- Stormwater detention basins;
- Gross pollutant traps and separator systems;
- Sediment and erosion control; and
- Incident reporting and clean up procedures.

The Airport has introduced and expanded the use of waterless urinals around the

Airport. Construction dust is mitigated by watering from non-potable water supplies.

A number of Airport tenants and contractors, in response to the Airport's leadership and encouragement, have introduced their own water conservation initiatives.

Avis Australia and Caltex Service Station both have recycled car wash facilities which recycle up to 70% water.

Virgin Blue Airlines have reduced their water consumption by reducing the amount of potable water onboard and have signed up to the NSW Water Initiative.

Norris Cleaning squeegees windows and uses high pressure cleaners to wash down buildings.

Airport Rescue Fire Fighting Services (ARFF) has reduced the size of fires during training to reduce water consumption.

World Water Day - ACTEW Water Wise Achiever

"Canberra International Airport is a world leader in water use and has led a dedicated campaign to not only reduce water use across the Airport, but to also educate other water users across the ACT and Australia in how to better use precious water resources."

ACTEW Corporation, 22 March 2008.

TABLE 3 Water reduction flowchart

			SOURCE		
	NON-POTABLE SUPPLY		BUILDING		LANDSCAPING
			REUSE, REDUCE AND RECYCLE		
٠	Water recycling plants at Brindabella Business Park and Majura Office Park, with the potential to treat 100,000 litres of waste water every day	•	Implementation of water conservation initiatives and devices such as; - 5A reduced flow shower heads - Mixer taps - 4.5/3 litre dual flush toilets - Waterless urinals	•	Implementation of water sensitive urban design and plant species selection Airport grounds irrigated by a cocktail of recycled water, groundwater and rainwater.
۰	Rainwater harvesting and stormwater storage tank capacity of over 2 million litres including a new 600,000 litre tank installed in Stage 1 of the new terminal	•	Water efficient cooling towers in the central service plants, using one fifth of water of a conventional cooling tower	•	In smaller areas, artificial grass is used to replace real grass Lawns are regularly aerated to improve water absorption
٠	Subterranean water from basements and rainwater to be treated and used in terminal building	•	Licensed plumber on staff to promptly repair any leaks which typically account for 25% of water consumption in non- monitored buildings	۰	Garden beds are re-mulched on a regular basis and wetting agents are used to aid water penetration and to minimize water loss
•	Groundwater used for irrigation once rainwater and recycled water supplies have been exhausted	•	Buildings sub-metered for water use and monitored to improve efficiency	٠	Water storage crystals are used in garden beds to utilise rain water and runoff, therefore reducing the need for watering
٠	Groundwater filtration and recharge measures such as grassed swales, detention basins and garden filtration strips, used to improve groundwater quality and penetration and reduce urban runoff	•	Canberra Airport Water Strategy Committee continuously monitors and investigates methods to improve water efficiency Irrigation Management System	•	Garden beds are weeded regularly to reduce competition with landscape plants for water Rubber stabilizers are used on high traffic lawns to reduce ground compaction and requirement for lawn re-establishment
			PERFORMANCE OUTCOMES		
•	Reduced demand on potable water supply	•	Water efficient buildings	•	Exceed ACTEW Water Restrictions

CHAPTER SEVEN W -WASTE



Canberra Airport has adopted the Reuse, Reduce and Recycle principles to minimise the generation of waste and encourage recycling as far as possible.

Canberra Airport works closely with its tenants, contractors, cleaners and waste disposal contractors to monitor and encourage the increase in recycling rates.

In 2002, the Airport implemented a twin bin recycling system in offices across the Airport. Tenants can use other systems if they can demonstrate the same or better recycling results.

Landscaping and construction waste is recycled to reduce waste going to landfill.

Through the implementation of these principles, as set out in Table 4, Waste reduction flowchart, Canberra Airport won the ACT NoWaste Silver Award in 2004 and the Gold Award in 2005.

Specifically designed recycling facilities in the new terminal will encourage tenants and Airlines to recycle waste from their club lounges and onboard aircraft waste.

2005 ACT NOWaste Award Presentation

"What is so outstanding about Canberra International Airport's achievements is the shear quantity of waste that wasn't generated in the first place or to put it another way was simply avoided through careful planning and commitment that revolves around their waste minimisation policy."

Mr John Hargreaves MLA, November 2005.

TABLE 4 Waste reduction flowchart

	SOURCE				
OFFICE	LANDSCAPING	CONSTRUCTION WASTE			
	REUSE, REDUCE AND RECYCLE				
 The twin bin system at each employee's desk and kitchens Mobile phones recycled through Mobil Musters Fluorescent tubes 100% recycled 	 Leaves, grass clippings and dirt swept from Airport roads and aerodrome are composted on site Felled trees are mulched and used on gardens on and off Airport 	 The Airport's Construction Environment Management Plan (CEMP) requires all construction contractors to have construction waste sorted and recycled where possible. 			
Photocopier recycled into Eco-wood	• Pruned materials are taken to green waste sites for use as recycled mulch	• Approximately 80% of construction waste is reused or recycled.			
Recycled water used in toilets	Recycled water used on landscaping	 Purchase products with minimal packaging 			
 Toner cartridges collected by Toner Recycler which donates \$1 for every cartridge to the Breast Cancer Institute 	Landscaping transplanted to other areas not affected by development	 Specific assessment of quantities of materials required to minimise surplus and scrap 			
PERFORMANCE OUTCOMES					
Increase in recycling rates	Organic waste diverted from landfill for reuse	80% of construction waste recycled			

CHAPTER EIGHT TRANSPORT



Canberra Airport works closely with the ACT Government and regional and local bus operators to provide alternative modes of transport to and from the Airport as part of providing an efficient door to door experience for passengers, airport staff and tenants.

The business parks are designed in a campus style with the facilities within walking distances of office buildings which reduces the need to drive to appointments or access retail services such as the post office, banking, food, dentist, hair and beauty.

The Airport subsidises and actively promotes the Airliner bus system from the Airport to the City. The Airport also supports ACTION buses to operate to Brindabella Business Park, Majura Park and Fairbairn.

Secure bicycle storage and showers and change room facilities are provided to tenants. Also cycle paths on and off the new Pialligo Avenue upgrade have also been constructed to provides safe options for cyclist connecting with the broader Canberra cycle networks.

Aviation efficiency and emissions are the responsibility of the Airlines, however Canberra Airport is working with Airservices Australia and the Airlines to provide infrastructure to minimise on ground arrival and departure fuel burn. Airservices Australia and the Airlines continue to work with Canberra Airport on Aircraft procedures to reduce fuel burn and aircraft noise. Australian Airlines have the youngest fleet flying in the world with new age technology reducing fuel burn and noise.

National Aviation White Paper

"Airport operators do have a key role to play in working with aircraft operators and air navigation services providers to improve the efficiency of gate to gate operations."

The Hon Anthony Albanese, Minister for Infrastructure, Transport, Regional Development and Local Government, 2 December 2009

TABLE 5 Transport efficiency flowchart

			SOURCE		
	PUBLIC GROUND TRANSPORT		AIRPORT FACILITIES		AVIATION
			REUSE, REDUCE AND RECYCLE		
•	Canberra Airport subsidises Deane's Airliner Service between Canberra City and Canberra Airport.	•	Secure bicycle storage with adjoining showers and change rooms.	•	Ensure infrastructure is in place, as far as practicable and commercially feasible, to reduce taxiing and holding times for aircraft
٠	Promoting and assisting ACTION bus route and passenger growth	٠	Contribution to on/off road cycleway connectors to the Airport	٠	Support the airlines renewing their aircraft fleet over time
•	Continue to encourage public transport (including interstate services) through advertising, promotions	•	Provided free Park and Ride trial at Majura Office Park to encourage public transport Provide interchange and facilities for regional bus services	٠	Work with Airservices Australia, airlines, CASA and the community to implement environmentally efficient Australian Air Traffic (AATM) Management procedures
٠	Encourage an efficient and reliable taxi service	•	Air conditioned public waiting area in new terminal	•	Electric powered ground service equipment
			PERFORMANCE OUTCOMES		
•	Increase in public transport patrons	٠	Increase in bicycle use	٠	Reduction in aviation emissions

CHAPTER NINE KEY INDICATORS



The implementation of the Re-NEW Policy is measured and benchmarked in a number of ways including:

Compliance with federal and local legislation;

- Air quality monitoring below National Environment Protection Measure (NEPM) Guidelines;
- Adaptive reuse of existing buildings and infrastructure;
- Reduction in annual energy consumption and greenhouse gas emissions per m2 office space and per 1,000 passengers;
- Compliance with ACTEW Water Restrictions;
- Reduction in annual potable water consumption per m2 office space and per 1,000 passengers;
- Reduction of annual non-potable water use per hectare of landscaping;
- Realise target of 75% recycling rate in office buildings;
- Realise target of 75% recycling rate in new terminal (Airside section and airline lounges);
- Target of 80% recycling rate of construction rate;
- Landscaping to be recycled 100% (noxious weeds excluded);
- Additional alternative ground

transport options to and from the Airport;

- Additional retail facilities in business parks;
- Aviation infrastructure in place to ensure the safety, efficiency and regularity of aircraft to minimise aircraft fuel burn; and
- Improved aviation procedures to reduce aviation fuel burn.

The key indicators will be reported in the Canberra Airport annual environment report to the Department of Infrastructure and Transport.

The Canberra Airport website www.canberraairport.com.au will also be updated to provide the community information of new initiatives undertaken by Canberra Airport to Reuse, Reduce and Recycle natural resources.

CHAPTER TEN ENVIRONMENTAL PERFORMANCE AWARDS



ACT Government No Waste Award

2004 Silver Award Winner. 2005 Gold Award Winner. 2005 Property Owners/Managers Award

Australian Business Limited Annual Awards

2005 Finalist - Innovation Category Brindabella Business Park.

Department of Environment, Heritage & the Arts

ESD Design Guide for Australian Government Buildings Edition 1 (June 2005) and 2 (February 2006) Brindabella Business Park Case Study.

Banksia Awards

2005 Finalist - Category 9 Leadership in Sustainable Buildings, Canberra Airport.

Engineers Australia

2005 Engineering Excellence Awards (Australian), Winner ACT Sustainable Buildings, Brindabella Business Park.



Green Building Council of Australia

2004 First 5 Green Star Rating, 8 Brindabella Circuit, Brindabella Business Park.

2006 Case Study of Green Buildings, Brindabella Business Park. Dollars and Sense, Green Building Council of Australia.

Keep Australia Beautiful Sustainable Cities Awards

2005 Sustainable Building Award Winner, Brindabella Business Park

2009 ACT Sustainable Cities Award. For Excellence in Water Conservation, Majura Office Park's Central, Blackwater and Trigeneration plant. Highly Commended.

Master Builder's Association Awards

2002 Environmental Best Practice, Commercial Division Airport Service Centre, Caltex at the Airport.

2003 Excellence in Building Award, Brindabella Business Park.

2009 Winner, Commercial Building, Environmental Best Practice Award (ACT).

Royal Australian Institute of Architects, ACT Chapter Architecture Awards

2003 Commercial Building Category Colorbond Steel Award Qantas Hangar, Brindabella Business Park.

2009 Winner, Sir John Overall Urban Design Award, Brindabella Business Park.

United Nations Association of Australia World Environment Day

2005 Winner, Green Building Award.

Australian Institute of Architects, Year of the Built Environment

2004 Exemplars Program National Awards Excellence in Building, Brindabella Business Park.

Stormwater Industry Association (NSW)

2008 Award for Excellence in Stormwater Management Merit for Canberra Airport Stormwater Drainage Review.

CHAPTER ELEVEN REFERENCE



Canberra Airport 2009 Master Plan, August 2009, www.canberraairport.com.au

Canberra Airport 2009 Environmental Sustainability Report, Celebrating Canberra Airport's environmental excellence, July 2009.

Canberra Airport 2010 Environment Strategy, June 2010 www.canberraairport.com.au

Canberra Airport 2009 Summarised Water Management Plan, February 2009, www.canberraairport.com.au

Canberra Airport We're Just Plane Green www.canberraairport.com.au

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