HOW TO COMMENT ON THE PRELIMINARY DRAFT MASTER PLAN

The Preliminary Draft Master Plan will be available for public comment for 60 business days from Tuesday 15 June until Wednesday 8 September 2010.

Copies of the Preliminary Draft Master Plan will be available for inspection and purchase by members of the public during normal office hours throughout the public comment period at Darwin International Airport Management Centre, 1 Fenton Court, Marrara, NT 0812.

The Preliminary Draft Master Plan is also available to download free of charge from www.darwinairport.com.au

Written comments are welcome and must be submitted by COB Wednesday 8 September 2010.

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Email: masterplan@ntairports.com.au
Mail: Darwin International Airport Master Plan
     PO Box 40996
     Casuarina NT 0811
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All comments received will be carefully considered by Darwin International Airport Pty Ltd (DIA). As required under section 79(2) of the Airports Act 1996, DIA will provide a copy of all comments to the Minister for Infrastructure, Transport, Regional Development and Local Government and a summary of comments made. DIA will also demonstrate that it has had due regard to those comments in preparing the Draft Master Plan that is submitted to the Minister.
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I am pleased to present Darwin International Airport’s 2010 Preliminary Draft Master Plan (PDMP) for public comment.

In July 2009, Darwin International Airport Pty Ltd (DIA) released the 2009 Preliminary Draft Master Plan. Due to technical issues with the Joint Civil-Military Australian Noise Exposure Forecast (ANEF) in the 2009 PDMP this document was unable to be submitted to the Federal Minister in accordance with the Airports Act 1996 (the Act). Therefore to meet the requirements of the Act the Darwin International Airport Master Plan is being released again for public comment as the Preliminary Draft Master Plan 2010.

Darwin International Airport Pty Ltd has a 50 year lease plus 49 year option over the Darwin International Airport from the Commonwealth of Australia under the Airports Act 1996.

DIA is also a Joint User Airport under the Airports Act and a Joint User Deed with the Department of Defence governs the co-located operation of DIA and Royal Australian Air Force (RAAF) Base Darwin.

DIA is positioning itself as a growing international gateway to Australia and the Northern Territory and is strategically important to the growth and development of the Northern Territory’s tourism, trade, business and leisure activity.

In fact, current civil economic activity at DIA contributes 2% to Northern Territory Gross State Product. Additionally, the large General Aviation sector at DIA (185 light aircraft plus 12 regional aircraft) is crucial to service provision across the Territory. This highlights the importance of Darwin’s airport to both the Northern Territory economy and meeting the needs of remote communities.

The 2010 Master Plan retains the fundamental concepts of the 1999 and 2004 Plans. The changes that have been made largely reflect:

- the developing aviation industry structure with low cost carriers, the Darwin hubbing strategy and projected growth of aviation activity;
- the evolving Airport business, the needs of business partners and community requirements; and
- the potential to diversify airport income by expanding the property portfolio.

The 20 year Master Plan provides a 2030 development concept for long term development as an airport with an optimal mix of aeronautical and non aeronautical uses. The Master Plan assists and encourages progressive, orderly and strong growth.

Previous submissions received during the 2009 consultation have been reviewed and amendments resulting from comments received are shown in red throughout the document.

I encourage your feedback on the 2010 Preliminary Draft Master Plan for Darwin International Airport.

Yours sincerely

IAN KEW
Chief Executive Officer
Darwin International Airport
 iii Executive Summary

Darwin International Airport Pty Ltd (DIA) has a 50 year lease plus 49 year option over the Darwin International Airport from the Commonwealth of Australia under the Airways Act 1996. DIA is also a Joint User Airport under the Airways Act 1996 and a Joint User Deed with the Department of Defence governs the co-located operation of DIA and Royal Australian Air Force (RAAF) Base Darwin.

The Airways Act 1996 (the Act) and other regulations under the Act (the Regulations) stipulate the requirements for the management and operation of the Airport. The specific provisions of the Act applying to Joint User Airport Master Plans apply to the DIA Master Plan. The Act requires that DIA prepares a 20 year Master Plan to guide development of existing and proposed airport land uses and facilities, with the Master Plan renewed every 5 years.

The existing 2004 Final Master Plan was approved by the Acting Federal Minister for Transport and Regional Services in December 2004. The 2004 Final Master Plan has provided direction for the Airport’s aeronautical development as well as the strategy to enhance the Airport’s property portfolio.

In line with the 2004 Final Master Plan a wide range of developments have occurred, including:

**Apron, Taxiway and Runway works**
- Expansion of the Main Apron with additional aircraft parking positions and additional aerobridge to cater for peak airline demand;
- Pavement rejuvenation and resurfacing of the runways and taxiways;
- Upgrade of visual approach guidance system for the main runway;

**Terminal**
- Implement domestic and international checked bag screening system;
- Ongoing upgrade and refurbishment of terminal facilities;
- Approval of a Major Development Plan for the expansion of the terminal building in 2009;

**Ground Transport and Car Parks**
- Construction of Osgood Drive linking Charles Eaton Drive and Bagot Road;
- Re-alignment of approach roads to the terminal;
- Development of additional car parking facilities for public and staff;

**Commercial Developments**
- Opening of the Tourist Zone with the construction of the Darwin Airport Resort and Darwin Airport Inn. The Airport Lodge is currently under construction;
- First major retail facility with development of the Bunnings warehouse in the Commercial Zone;
- Continue development of the Airport business with construction of government agency buildings;
- Approval of a Major Development Plan for a Home and Lifestyle Super centre in 2009;
- AXIS 12˚130˚ marketing campaign launched in March 2010;

**Environmental Initiatives**
- Establishment of the 15 hectare Conservation Reserve;
- Ongoing development of public amenities in the Rapid Creek Environment Reserve and Wetland Buffer;
- Establishment of a wildlife corridor between the Conservation Reserve and Rapid Creek; and
- 20 metre landscape buffer along McMillans Road commenced.

In July 2009 DIA released the 2009 Darwin International Airport Preliminary Draft Master Plan (PDMP) for public comment. Due to a technical issue with the Joint Civil-Military Australian Noise Exposure Forecast (ANEF) presented in the document, DIA was unable to submit the 2009 PDMP to the Federal minister in accordance with the Airways Act.

The 2010 Master Plan retains the fundamental concepts of the 1999 and 2004 Master Plans. The changes that have been made largely reflect:
- the developing aviation industry structure with low cost carriers, the Darwin hubbing strategy and projected growth of aviation activity;
- the evolving Airport business, the needs of business partners and impacts on the community; and
• the potential to diversify airport income by expanding the property portfolio.

The 2010 Master Plan provides 2030 development concept plans for long term development as an airport with an optimal mix of aeronautical uses and non aeronautical uses. While the 2010 Master Plan provides a framework for future development, DIA is conscious the Master Plan must also incorporate the necessary flexibility to meet changing conditions.

**KEY FEATURES OF THE 2010 MASTER PLAN**

The current Darwin International Airport layout is shown in Figure 1.

The 2030 Development Concept, shown in Figure 2, is based on comprehensive technical studies, wide consultation and confidence in the future of the Airport business.

This Master Plan demonstrates that Darwin International Airport can accommodate forecast growth in aircraft movements and passenger activity, expanded aviation support facilities and commercial developments.

**Development Objectives**

Darwin International Airport has established the following development objectives to guide it’s planning and development of aeronautical and non-aeronautical facilities and services:

- Planning supports long term development as an airport with an optimal mix of aeronautical uses;
- Provide a safe, secure, reliable and sustainable airport operating environment;
- Enhance the airport’s contribution to Northern Territory economic growth through developing the airport’s aviation and property business and by facilitating the success of our business partners;
- Integrate environmental considerations into the development of facilities and services and seek to minimise their impact on the natural environment;
- Engage with key community, business and government stakeholders on airport related economic, social and environmental issues and be mindful of surrounding community interests;
- Provide airport infrastructure and facilities which are timely, cost effective, flexible in use and provide a good customer experience; and
- Undertake developments which enhance value to our shareholders and the broader economic community.

**Social, Economic and Regional Significance**

Darwin International Airport is a key commercial, military and recreational facility for Northern Australia. The Airport’s direct civilian contribution of economic activity to the Northern Territory economy constitutes some 2% of Northern Territory Gross State Product (GSP). The Airport currently employs some 960 people in civil airport operations related activity and an additional 680 people in other airport businesses.

In 2030, the projected annual output (or revenue) will be $1.186 billion, and its value added (or contribution to GSP) will be $648 million per year (both in today’s dollar values). Approximately 40 percent of the value added ($272 million in today’s dollars) will go to employees as wages and other income. Total employment at the Airport will grow to 3,600 by 2030.

The General Aviation sector at Darwin International Airport also plays a vital role in supporting the Northern Territory community. Comprising over 185 aircraft the General Aviation sector is essential to the provision of services to remote communities.

**Aviation Activity Forecasts**

It is projected that by 2030:

- passenger movements, including transit and transferring passengers, will increase from just over 1.8 million passengers to approximately 4 million passengers;
- international inwards freight will increase from 127 tonnes to nearly 800 tonnes and outwards freight will increase from 171 tonnes to over 600 tonnes;
- domestic airfreight will continue to be carried predominantly in the cargo hold of passenger services. As domestic airfreight movements increase, this will generate additional capacity for domestic freight uplift; and
- combined Airline and General Aviation aircraft movements will grow from 88,000 movements to some 130,000 movements per year.

**Airport Land Use**

Land use planning (see Land Use Zone Plan at Figure 3), is fundamental to an Airport Master Plan and is specifically highlighted in the Act. Land use planning in the 2010 Master Plan:

- ensures there is adequate land for expansion of aviation activity;
- clearly separates aeronautical and non aeronautical uses;
- has been developed using terminology and definitions consistent with that of the Northern Territory Planning Scheme where possible, with any variations being highlighted; and
- provides a considerable amount of land for conservation reserves.

A new land zone is Aviation Reservation which preserves land for ultimate aeronautical use but allows for non aeronautical interim use.
Airfield Development

No runway extensions are needed by 2030. The existing runway system is adequate to cater for future projected traffic and is proposed to be retained in its existing configuration. Lengthening of Runway 18/36 is not required for civilian operations within or beyond the planning period.

Taxiway system enhancement is needed to support the increase in scheduled airline (RPT) services and General Aviation traffic and support new apron areas. (refer to Figure 9)

The Main Apron will continue to effectively use the space and infrastructure available. The apron will continue to expand in a linear manner and then wrap around the terminal to the north-west. When terminal demands require a pier development the apron concept will alter to provide the best use of apron area.

There is a continued demand for General Aviation facilities and these will be developed on a commercial basis.

Helicopter growth will be accommodated by relocating the helicopter operations further east as required in the longer term.

Protection of Aircraft Operations

Obstacle Limitation Surfaces (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS–OPS) are prepared for Darwin International Airport to assist with the protection of airspace required for airport operations around the Airport (refer to Figures 10, 11 and 12).

The Department of Defence has statutory protection from intrusion into Defence airspace.

Aircraft Noise Management

As a Joint User Airport, Darwin has both civil and military aircraft movements. DIA as the civil airport operator has little direct control over noise produced by aircraft operations other than civil ground running. Airspace management is controlled by the Department of Defence.

The most important noise metric at an airport is the Australian Noise Exposure Forecast (ANEF). The ANEF is a set of geographical contours showing future aircraft noise levels. The ANEF is the only noise metric which has status under the:

- Northern Territory Planning Scheme for land use planning and development consent off-Airport; and
- Airports Act 1996 of the Commonwealth for land use planning and development consent on-Airport.

The ANEF is used, in accordance with Australian Standard AS2021-2000, to guide land use planning and development consent decisions by the relevant authority. This Master Plan incorporates a 2030 ANEF.

In developing the Joint Civil-Military ANEF consideration was given to the appropriate scenario for military movements. Two scenarios were developed. The Low Tempo level of military aircraft traffic characterises military traffic for 9 months of the year. High Tempo military traffic characterises the 3 months of the year with higher levels of military movements and includes the dry season peak exercise period. It was determined that the Low Tempo scenario was the appropriate representation of military movements at the Airport on which to base building control. The Joint Civil-Military 2030 ANEF endorsed by Airservices Australia is shown in Figure 13.

Information on High Tempo Military operations can be obtained from the Department of Defence.

Terminal Development

In February 2009, the Federal Minister for Infrastructure, Transport, Regional Development and Local Government approved a Major Development Plan (MDP) for an extension of Darwin International Airport Passenger Terminal.

The development includes new check-in, security, emigration, international departures lounge, immigration, and international baggage hall to cater for demand until 2015. This approved development will occur once commercial agreement is achieved with DIA airline partners.

Terminal growth beyond 2015 will be accommodated by expanding the existing terminal within the Terminal and Facilities Zone. Initially it is envisaged there will be a linear expansion to the west (refer to Figure 18). Key areas which will drive the future expansion of the overall footprint of the terminal will be baggage reclaim and baggage make-up.

Commercial Development

Of the 311 hectares in the airport lease area, some 80 hectares (26 percent) of the land is available for commercial development.

The 80 hectares in the Service Commercial, Commercial and Tourist Commercial Zones will be developed as commercial opportunities arise. A demand study for the greater Darwin region has estimated that some 153,000m² of development could occur in the Service Commercial and Commercial Zones over the next 20 years.

Development in the Service Commercial Zone aims to provide the first fully integrated and planned precinct of its kind in the Northern Territory. It is envisaged that development in this zone will offer a premium level of centrally located commercial and retail space. (refer to Figure 20)
Land in the Aviation Reservation Zone (46 hectares), while being planned for ultimate Aviation use, can be utilised for a variety of commercial purposes in the short to medium term.

AXIS 12°130’ marketing campaign was launched in March 2010. AXIS 12°130’ is the brand name for the Service Commercial land abutting Bagot and McMillians Roads.

Ground Transport
Projected growth in both aviation traffic (see Section 7) and commercial development will result in an increase in daily airport trips from around 15,000 currently to some 48,170 in 2030. A feature of the overall trip generation will be commercial development focused along Osgood Drive.

The major external access development concept is a new all movements signalised intersection off McMillans Road which will connect with Osgood Drive. The new intersection will be located between Rapid Creek and Sabine Roads. The approximate location is illustrated in Figure 21.

The external road access developments envisioned over the planning period are:
- new signalised intersection on McMillans Road providing access to the commercial zone referred to above;
- downgrading of the existing intersection of McMillans Road and Charles Eaton Drive to provide left-in and left-out traffic movements only; and
- increased queuing capacity at the Henry Wrigley Drive and Neale Street intersections on McMillans Road as required.

The approach to development of the internal road network will be to:
- maximise the use of existing road capacity;
- segregation of passenger and non-passenger (e.g. aircraft maintenance, commercial developments) traffic as far as practicable; and
- progressive enhancement of road system capacity in line with demand.

A parking study has indicated a medium term requirement for multi-level parking capacity. The location of one or more multi-level car parks will be subject to detailed planning and design at the time. General Aviation car parking is also an issue and will be developed when commercially viable.

Environmental Management
The Environment Strategy 1999 was approved by the then Federal Minister for Transport and Regional Services on 20 September 1999, with a review approved on 2 December 2004. The Airport Environment Strategy (AES) 2009 was approved by the Minister on 22 April 2010.

The Airport Environment Strategy (AES) establishes a framework for assessing compliance against the relevant standards and legislation. The AES also guides continual improvement to environmental management across the airport.

DIA strives to integrate environmental considerations into the development of facilities and services and seeks to minimise the impact on the natural environment.

In order to minimise any environmental impact of potential developments presented in the 2010 Master Plan, individual projects will be subject to environmental assessment appropriate to the development. A Construction Environmental Management Plan (CEMP) will be developed where required and all necessary mitigation measures implemented.

All proposed developments will take into consideration the procedures and requirements contained in the AES.

The 2010 Master Plan provides for some 30 hectares of land to cater for conservation and recreation activities. DIA will continue to enhance the airport environment and make areas publically accessible where practicable.

CONSULTATION
This Draft Master Plan (PDMP) has been prepared by DIA following consultation with a range of stakeholders. Consultation with the community and other stakeholders will continue throughout the public comment period.
Figure 1: Current Darwin International Airport layout (2010)
FIGURE 2: 2030 DARWIN INTERNATIONAL AIRPORT DEVELOPMENT CONCEPT

Legend
- Future Passenger Terminals
- Terminal Precinct
- Arnhem Area
- Aviation Fuel
- Business and Industry
- Existing Commercial Building
- Possible Commercial Building
- Aviation Support
- General Aviation Expansion
- Future Taxiway Reserve
- Designated Military Area
- Air Traffic Control

www.darwinairport.com.au
FIGURE 3: AIRPORT LAND USE ZONE PLAN
SECTION 1

Introduction

• Darwin International Airport is a curfew free international and domestic gateway to the Northern Territory.

• The Airports Act 1996 specifies that the Airport Master Plan be reviewed every 5 years.

• The 2010 Master Plan has been prepared following comprehensive technical studies and consultation with stakeholders.
Darwin International Airport is located around 13 kilometres north-east of the Darwin Central Business District on a 311 hectare leased site plus the 215 hectare joint-user (civil plus military use) area. Darwin International Airport is located within the City of Darwin, with good road connections, adjacent to the coastline to the west and the district centre of Casuarina to the north. The Airport is a curfew free gateway to the Northern Territory, providing international, domestic and general aviation services.

Darwin International Airport is ideally located as part of the regional transport system as it is the nearest capital to the developing areas of South-east Asia, including Singapore, Malaysia, Indonesia and the Philippines. Darwin is located half way between major Australian cities and South-east Asian capitals.

Darwin International Airport Pty Ltd (DIA) has a 50 year lease plus 49 year option over the Darwin International Airport from the Commonwealth of Australia under the **Airports Act 1996**. Darwin International Airport is also a Joint User Airport under the **Airports Act 1996** and a Joint User Deed with Department of Defence governs the co-located operation of DIA and RAAF Base Darwin. The DIA Airport boundary is shown in Figure 4.

Darwin International Airport civil facilities were moved from the south of the main runway to the north in the early 1990’s in order to separate military and civil activity. With the Airport lease under the **Airport Act** in place until 2097, Darwin International Airport will continue to be the only major airport in the Darwin region until at least the turn of the next century.

The **Airports Act 1996** (the Act) and other regulations under the Act (the Regulations) stipulate the requirements for the management and operation of the Airport. The specific provisions of the Act applying to Joint User Airport Master Plans apply to the Darwin International Airport Master Plan. The Act requires that DIA prepare a Master Plan to guide development of existing and proposed airport land uses and facilities. The 2004 Final Master Plan was prepared by DIA and was approved by the Acting Federal Minister for Transport and Regional Services on 7 December 2004. The 2004 Final Master Plan provides details of the airport future aeronautical development as well as the development strategy for the Airport’s undeveloped property.

### 2009 PRELIMINARY DRAFT MASTER PLAN

In July 2009, DIA released the 2009 Preliminary Draft Master Plan for public comment. Due to a technical issue with the joint Civil-Military Australian Noise Exposure Forecast (ANEF) DIA was unable to submit this plan to the Federal Minister in accordance with the **Airports Act 1996**. On 16 November 2009 the Federal Minister for Infrastructure, Transport, Regional Development and Local Government extended the 2004 Master Plan until 30 November 2010 to allow for the further preparation of a Joint Civil-Military ANEF.

Previous submissions received during the 2009 consultation have been reviewed and amendments resulting from comments are shown in red throughout the document. A table showing a summary of the changes can be found in Chapter 24.

### 2010 MASTER PLAN

This Preliminary Draft Master Plan (PDMP) has been prepared by DIA following consultation with a range of stakeholders. While the 2010 Master Plan provides a framework for future development to 2030, DIA is conscious the Master Plan must also incorporate the necessary flexibility to meet changing conditions.

This PDMP has been prepared by DIA with the assistance of a consultant team. The consultants and their technical work area are outlined below.

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SECTION 2

Background

- Civil operations commenced in 1945 as a Joint User Airport.
- Darwin International Airport Pty Ltd (DIA) has a 50 year lease plus 49 year option on the civil airport land.
- DIA has spent over $65 million on upgrading aviation facilities plus over $22 million on commercial facilities and environmental amenities since 1998.
Darwin's first aerodrome was located at Parap Police Paddock which was selected in 1919 as the Australian point of entry for the England to Australia air race. Keith and Ross Smith arrived on 10 December 1919 as the first international flight. Two days later, the first flight across the continent arrived from Melbourne. This aerodrome continued to be developed along the alignment of the current Ross Smith Avenue.

The current Darwin International Airport was commissioned in July 1940 by the Royal Australian Air Force (RAAF) and continued in its sole use until the end of the Second World War in 1945. During the Second World War it came under attack many times by Japanese aircraft, evidence of which remains in the form of bullet holes in some buildings. The Commonwealth Government made the military airfield available for civil use under the terms of a joint user policy, which included requirements for a civil building area to be set aside as a self-contained entity. At the time all existing civil building development was in the south west part of the aerodrome, in what is now the Department of Defence area. It was agreed that the civil facilities could be placed here whilst civil traffic levels were low. Starting small – in part of a hangar – the civil terminal expanded, as did the apron, roads and car park serving it, creating considerable congestion over time.

This congestion was recognised as early as the late 1950's and plans were prepared for a civil move north of the main runway 11/29. However, the high cost of this option led to civil facilities being planned to move to the east of runway 18/36. Runway upgrades continued throughout this time with the high-strength main runway completed in 1962 and the crosswind runway reconstructed in 1964. Around the same time, the eastern development started with a new combined fire station and control tower, traffic operations centre and other technical facilities placed there. A general aviation hangar area was also set out.

This situation continued until 1980 when it was concluded that civil operations should again transfer to the north-side. Following various studies, the Government confirmed this strategy in 1982 with the construction of a civil terminal starting in 1984. However, construction was halted the next year due to concerns over the total cost.

The Federal Airports Corporation assumed responsibility for civil facilities at Darwin on 1 April 1989 and immediately commenced the development of civil facilities on the north-side of the airport, largely along the lines of the Department of Aviation's 1983 Master Plan. Under a $55 million contract, construction commenced on a domestic/international terminal, aircraft apron, taxiways, roads and car parks in January 1990. Separate helicopter and general aviation aprons and support infrastructure were also developed.

Civil air services first started operations from the current terminal on 15 December 1991. Shared civil/military facilities, including a new control tower and separate fire station, were constructed on the north-side in 1998 by the Department of Defence.

In 1998, Airport Development Group acquired the three main Northern Territory airports: Alice Springs, Tennant Creek and Darwin International Airports. Airport Development Group owns 100% of Northern Territory Airports Pty Ltd, which in turn owns 100% of Darwin International Airport Pty Ltd, which has a fifty year lease with a forty nine year option on the civil airport. Darwin International Airport Pty Ltd is the Airport Operator.

**JOINT USER DEED**

Darwin International Airport has been a joint user airport with shared civil/defence facilities since 1945. Responsibilities between Department of Defence and DIA are set out in the Joint User Deed.

Darwin serves as a Defence transport air head, logistical base, redeployment point for combat aircraft and exercise base, with RAAF Base Darwin located on the southern side of the main runway. Both runways are under the direct control of the Department of Defence.
There is a cost-sharing agreement for the use of the aircraft manoeuvring areas (runways and taxiways) by civil aircraft. Both parties (civil and Defence) are responsible for providing and maintaining their own facilities and services whether they are located in their own areas or elsewhere. The Department of Defence provides Air Traffic Control facilities which are staffed by Defence personnel. Under the Joint User Deed, the Department of Defence is also responsible for the control of environmental impacts, including the preparation of ANEF charts, and also enforcing the requirements of the obstacle limitation surfaces.

**SIGNIFICANT DEVELOPMENTS ON AIRPORT**

Since the Airport Development Group acquired Darwin International Airport there have been substantial developments in both infrastructure and facilities at the Airport. DIA has spent over $65 million on upgrading aviation facilities plus over $22 million on commercial facilities and environmental amenities since 1998.

Details of the significant developments that have been funded by DIA are outlined below.

**Apron, Taxiway and Runway Works**

**2002**
- $4 million apron and taxiway development to service the Airnorth Regional hangar and office;

**2003**
- Pavement rejuvenation to both runways and major taxiways in a joint venture with Department of Defence, costing $700,000;

**2004**
- Two aircraft parking positions for larger aircraft and completion of a Ground Service Equipment area, costing over $5 million;
- Minor expansion of the Southern General Aviation area to accommodate a new operator, costing around $100,000;

**2005**
- $150,000 pavement rejuvenation for parts of the joint user taxiways and the main runway;
- $1.4 million project to expand aircraft parking positions and upgrade apron flood lighting;
- Covered walkway to parking positions not serviced by aerobridges, costing approximately $700,000;

**2006**
- Pavement work to expand parking positions on the western edge of the General Aviation Apron, costing $100,000;
- Reseal to the southern part of runway 18/36, costing $400,000;

**2007**
- $4 million expansion of Bay 1 aircraft parking, including accommodation for the Airbus A380 - the first new aerobridge since 1991;
- $12 million resurfacing of the main runway in a joint venture with the Department of Defence to extend the runway life by 15 years;
- $800,000 upgrade to Aerobridges on Bays 2, 3 and 4;
- Dedicated heritage aircraft parking position in GA area;

**2008**
- Replacement of the visual approach guidance system (with the installation of the PAPI system) in a joint venture with the Department of Defence, costing $500,000;

**2009**
- Construction of a new open cut drain ($2.5 million) in preparation of further apron expansion to the west of the current Regular Passenger Transport (RPT) apron;
- Commencement of the construction of two additional large aircraft parking positions ($5.5 million) to give greater capacity during the peak periods.

**Terminal**

**2002**
- $2 million refurbishment of domestic departure lounge retail concessions with new food and beverage outlets;
- Construction of new office accommodation and inspection facilities for the Border agencies $350,000;
- $750,000 provision of upgraded security screening point including new screening equipment;

**2003**
- $400,000 upgrade to air-conditioning chillers;

**2004**
- $800,000 extension to the terminal building to accommodate the QANTAS Club lounge;
- Demolition and construction commenced on the old Ansett-Golden Wing Lounge area in the Terminal giving domestic/ international swing lounge capabilities costing $400,000;

**2005**
- $11 million domestic and international checked bag screening system, the first airport in Australia to screen all domestic and international bags;

**2006**
- $1.2 million refurbishment of terminal building including locally inspired carpet designs to create a ‘Top End experience’;
- $1.3 million smoke spill system to enhance fire safety standards of the terminal building;

**2008**
- $1.3 million refurbishment of terminal retail facilities plus upgrade to terminal toilets;
- $2 million investment in new generators to provide back-up power to the Airport in the event of a mains failure;
- Upgrade of terminal air-conditioning packages to reduce energy consumption, costing $350,000;
- Redesign of the domestic departure lounge ($100,000) to improve efficiency in passenger processing;

**2009**
- Construction of a weather proofing walkway between Bays 2 and 3 to assist in the processing of passengers, costing $1.3 million.
Ground Transport and Car Parks

2004
- Road works to Charles Eaton Drive to accommodate development of ABC Childcare building ($200,000);

2005
- $3 million public carpark expansion, re-alignment of approach roads and refurbished exterior;

2006
- Second stage expansion ($750,000) of the western end of the carpark, including permit and rental car parking;
- $2 million establishment of new airport commercial development spine road “Osgood Drive” linking Charles Eaton Drive and Bagot Road, including major intersection works;

2007
- $800,000 extension to public car park facilities;

2009
- Completion of the extension to public car park ($450,000) including revising and extending the native garden “Matboerma’ landscaping;
- $1.2 million development of new staff car park facility.

Commercial and Environment Developments

2001
- $1.4 million construction of Environment Australia office, laboratory and workshop complex, the first major non-aeronautical related development at DIA;

2004
- Cleared site and completed infrastructure developments to accommodate new 130 room Darwin Airport Resort;
- Construction of ABC Childcare centre at a cost of $1 million including associated road works to Charles Eaton Drive;

2005
- Construction of $3 million AQIS building;

2006
- Completion of $10 million Bunnings development, the first development in the Service Commercial Zone;
- Construction of $1.3 million CASA administration building;
- Completion of the Yankee Pools Public Access Infrastructure project in association with Greening Australia providing public access to Rapid Creek costing $155,000;

2007
- $200,000 Extension of Larkin Avenue to provide additional service sites;
- $1.2 million establishment and maintenance of 20m native landscaping corridor associated with Bunnings and new intersections;
- Refurbishment and renovation of the Airport Management Centre Building, costing $1.6 million;
- Construction of a $800,000 stormwater retardation basin in a joint venture with the Department of Defence to reduce area flooding, including revegetation;
- Establishment of the 15 hectares Conservation Reserve, in a joint venture with Greening Australia;

2008
- $650,000 realignment of Cecil Cook intersection with Sir Norman Brearley Drive – included drainage works and erosion protection to facilitate the entry and exit of the $17 million Darwin Airport Inn development;
- $850,000 expansion of the Bunnings development; and
- Commencement of McMillians Road landscape buffer costing $120,000

2010
- AXIS 12”130” marketing campaign launched March 2010.
- Preparation of services and infrastructure to accommodate a 116 room Airport Lodge.
SECTION 3

Airports Act Framework

- The *Airports Act 1996* specifies the content of an Airport Master Plan which covers aviation, commercial and environment planning requirements.

- Consultation with government, business and community is a prominent part of the Master Plan development process.

- The Master Plan must be submitted to the Federal Minister for Infrastructure, Transport, Regional Development and Local Government for approval.

- The Final (approved) Master Plan is normally valid for 5 years, unless extended by the Federal Minister.
SECTION 3
Airport Framework

AIRPORTS ACT 1996 (AS AMENDED) AND ASSOCIATED REGULATIONS

The Federal Parliament passed the Airports Act 1996 and made the Airports (Environmental Protection) Regulations 1997 and associated regulations to govern the development and operations of Federal airports in Australia leased to the private sector. The Act and the Regulations are the statutory controls for the ongoing regulation of activities on airport land for both aeronautical and non-aeronautical development.

Part 5 of the Airports Act 1996 directs that an airport-lessee company (ALC) must develop a Master Plan. In accordance with the Act the Master Plan must provide strategic direction for development of the Airport.

AIRPORT MASTER PLAN REQUIREMENTS

The Act states that there is to be a final Master Plan, as defined in Part 5 Division 3 Section 70. The specific provisions of the Act applying to Joint User Airport Master Plans apply to the DIA Master Plan.

The Act specifies that a Joint User Airport Master Plan must set out:

- development objectives;
- an assessment of the future needs of civil aviation users and other users of the airport;
- intention for land use and related development of the area embracing landside, surface access and land planning/zoning aspects as well as airside aspects including runways or taxiways;
- an Australian Noise Exposure Forecast (ANEF) in relation to civil uses of the airport, for land surrounding the airport;
- civil flight paths at the airport;
- plans for managing aircraft noise within the area;
- an assessment of environmental issues associated with the implementation of the plan;
- management of the environmental impacts including plans for ameliorating or preventing environmental impacts; and
- whether a draft environment strategy has been approved;

Part 5 Division 3 Section 72 of the Act also states that the plan must cover a 20 year planning period. The Master Plan remains in force for a 5 year period, and thus must be reviewed every 5 years. An updated Draft Master Plan must be given to the Minister before the expiry of the current plan, unless an extension has been granted; in the case of Darwin International Airport prior to 30 November 2010.

AIRPORT MASTER PLAN ASSESSMENT PROCESS

Part 5 Division 3 Section 80 states that where a Master Plan is prepared, consultation will be undertaken to ensure compatibility and acceptability of the plan. The agencies that may be consulted include:

- Northern Territory Government;
- authorities of the Northern Territory Government;
- local government;
- Department of Defence; and
- users of the airport and any other person that may be specifically impacted upon.

Furthermore, pursuant to Section 79(1) of the Act, the Draft Master Plan is to be advertised for public comment for a period of 60 business days.

Once the public comment period is closed, DIA will submit to the Minister a copy of any written comments and a summary of those comments received together with the Draft Master Plan. This summary will contain the following:

- the names of persons or organisations that made comments;
- a summary of the comments;
- a statement declaring that DIA has taken due regard of the comments; and
- any other information relating to the comments that may be required by the Regulations.

Prior to the public comment period, DIA must advise in writing the following persons and provide evidence by way of a copy of the advice and a signed written certificate to the Minister of distributing the Draft Master Plan to:

- the Northern Territory Minister for Planning and Lands;
- the Department of Lands and Planning; and
- the Darwin City Council.
Once DIA submits the Draft Master Plan to the Minister, the Minister has 50 business days to decide whether to approve or refuse to approve the plan. In making a decision to approve or refuse the Draft Master Plan, the Minister must have regard to:

- the extent to which the plan achieves the purpose of a Master Plan;
- the extent to which the plan meets the need of the airport users;
- the effect on the use of land, including within the airport site and the areas surrounding the airport;
- consultation undertaken;
- the views of the Civil Aviation Safety Authority (CASA) and Airservices Australia in respect to safety and operational aspects;
- any other matters considered relevant.

**AVIATION WHITE PAPER**

The Federal Government released an Aviation White Paper on 16 December 2009. The White Paper has a number of policy initiatives that will impact on airport Master Plans and developments on airports.

**FIGURE 5: MASTER PLAN PROCESS OUTLINE**
SECTION 4

Stakeholder and Community Consultation

• Darwin International Airport (DIA) is committed to genuine consultation with all stakeholders.

• During preparation of the Preliminary Draft Master Plan, DIA has undertaken consultation with government agencies, airlines, general aviation operators, airport businesses, as well as community groups to scope the major issues.

• Consultation will continue throughout the public comment period.
Darwin International Airport is committed to effective and genuine consultation with all key stakeholders. DIA endeavours to provide a considered and clearly articulated approach to ensure that accurate information is disseminated and that feedback is encouraged in regards to development of Darwin International Airport.

COMMUNICATION AND CONSULTATION APPROACH
During preparation of the Preliminary Draft Master Plan, DIA has undertaken consultation with government agencies, airlines, general aviation operators, airport businesses, the general public as well as community groups to scope the major issues.

As part of the public comment process, DIA will provide or undertake:
- Copies of the Preliminary Draft Master Plan (PDMP) available from the Darwin International Airport Management Centre and on www.darwinairport.com.au;
- Copies of the PDMP available for viewing at the Darwin, Casuarina and Palmerston Public libraries;
- Public Display at the airport.

Presentations will be made as required to local council officers and elected members, Territory and Commonwealth Government representatives and to key stakeholders including the airlines and aviation-related businesses.

Stakeholders being specifically consulted during the public comment period of both the 2009 and 2010 PDMPs include:
- Airservices Australia – Canberra;
- Airservices Australia – Darwin;
- Civil Aviation Safety Authority (CASA) – Canberra;
- Civil Aviation Safety Authority (CASA) – Adelaide;
- Darwin City Council;
- Darwin International Airport staff;
- Department of Defence – Base Commander Darwin and RAAF Air Traffic Control;
- Department of Defence – Estate Planning - Canberra;
- Northern Territory Department of Lands and Planning;
- Australian Customs and Border Protection Service, Department of Immigration and Citizenship and Australian Quarantine Inspection Service – Darwin;
- Australian Federal Police – Darwin;
- Rapid Creek Catchment Advisory Committee (RCCAC); and
- General Aviation operators

Additionally, during preparation of the Preliminary Draft Master Plan, DIA undertook consultation with key stakeholders through surveys, data collection or direct consultation as part of the various technical studies.

Prior to the commencement of the public comment period, DIA advised, as per the Act, in writing the following persons:
- the Northern Territory Minister for Planning and Lands;
- the Department of Lands and Planning; and
- the Darwin City Council.

2009 PUBLIC CONSULTATION PROCESS
The 2009 Preliminary Draft Master Plan was on public display for the period 22 July 2009 to 14 October 2009. Extensive consultation occurred during this time, including face to face consultation through a stall at the 2009 Royal Darwin Show.
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Darwin International Airport has established Development Objectives to guide its planning and development of aeronautical and non aeronautical facilities and services.
Darwin International Airport has established the following development objectives to guide its planning and development of aeronautical and non aeronautical facilities and services:

1. Planning supports long term development as an airport with an optimal mix of aeronautical uses;
2. Provide a safe, secure, reliable and sustainable airport operating environment;
3. Enhance the airport’s contribution to Northern Territory economic growth through developing the airport’s aviation and property business and by facilitating the success of our business partners;
4. Integrate environmental considerations into the development of facilities and services and seek to minimise their impact on the natural environment;
5. Engage with key community, business and government stakeholders on airport related economic, social and environmental issues and be mindful of surrounding community interests;
6. Provide airport infrastructure and facilities which are timely, cost effective, flexible in use and provide a good customer experience; and
7. Undertake developments which enhance value to our shareholders and the broader economic community.
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SECTION 6
Social, Economic and Regional Significance

• Civil Economic activity at Darwin International Airport comprises some 2% of Northern Territory GSP.

• The net tourism sector impact of the Airport creates about 3,000 jobs in the tourism industry.

• The 185 aircraft General Aviation sector at the Airport is critical to delivery of services to Northern Territory remote communities.
CURRENT CIVILIAN ECONOMIC IMPACT OF DARWIN INTERNATIONAL AIRPORT

Darwin International Airport is a key commercial, military and recreational transport facility for northern Australia. It currently makes a substantial contribution to the Darwin and Northern Territory economies.

Input-output analysis has been used to estimate the economic impact of the airport, using data obtained from survey of airport businesses and airport financial information.

The current total annual impacts of the airport on the Northern Territory economy are significant, with revenues of $541 million, wages and other income of $124 million, value added of $296 million and 1,640 jobs.

| Output ($m) | 346.7 | 194.2 | 540.9 |
| Income ($m) | 79.8  | 44.3  | 124.1 |
| Employment (FTEs) | 958 | 683  | 1,641 |
| Value-added ($m) | 197.4 | 98.2  | 295.6 |

The Airport's direct contribution of economic activity to the Northern Territory economy constitutes some 2% of Northern Territory Gross State Product (GSP).

In addition to the economic activities taking place at the Airport, Darwin International Airport makes a significant contribution to the Darwin and Northern Territory economies by facilitating the air travel of domestic and international visitors into the Territory. An airport is especially important in a city such as Darwin due to the remoteness of its location and distance from other population centres in Australia.

The net tourism impact of the airport is also considerable with $317 million in value added, $168 million in wages and other income, $596 million in revenues and 2,790 jobs. These numbers are net of the tourism impacts due to visitor spending at the airport, as these are already included in figures shown in table 2.

FUTURE ECONOMIC IMPACT OF DARWIN INTERNATIONAL AIRPORT

Airport Business Impacts in 2030

Based on future passenger numbers, the projected impact of airport-related activities on the Northern Territory economy is significant. It is projected that Darwin International Airport and on-airport businesses will support over 3,600 jobs. The annual output (or revenue) will be $1.186 billion, and its value added (or contribution to GSP) will be $648 million per year (both in today’s dollar values). Approximately 40 percent of the value added ($272 million in today’s dollars) will go to employees as wages and other income.

| Output ($m) | 760.5 | 425.9 | 1186.4 |
| Income ($m) | 175.1 | 97.2  | 272.3 |
| Employment (FTEs) | 2,101 | 1,498 | 3’599 |
| Value-added ($m) | 433.1 | 215.3 | 648.4 |

Note: The above effects are in current dollar values
Data source ACIL Tasman
Tourism Impacts in 2030
The estimated airport-enabled tourism impacts show that over 7,600 jobs will be due to tourists arriving by air while they will add approximately $910 million of value in current dollar terms to the NT economy. Removing the impacts of tourism spending at the airport to avoid double-counting, the net impacts are estimated to be $370 million in wages and other income, $690 million in value added and 6,100 jobs.

Table 5: Estimated Airport Enabled Tourism Impacts in 2030

<table>
<thead>
<tr>
<th></th>
<th>Tourism Impact ($)</th>
<th>Tourism Impact Due to Spending at DIA ($)</th>
<th>Net Tourism Impact ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output ($m)</td>
<td>1,732.2</td>
<td>425.9</td>
<td>1,306.3</td>
</tr>
<tr>
<td>Income ($m)</td>
<td>465.0</td>
<td>97.2</td>
<td>367.8</td>
</tr>
<tr>
<td>Employment (FTEs)</td>
<td>7,622</td>
<td>1,498</td>
<td>6,123</td>
</tr>
<tr>
<td>Value-added ($m)</td>
<td>909.5</td>
<td>215.3</td>
<td>694.2</td>
</tr>
</tbody>
</table>

Note: The above effects are in current dollar values
Data source ACIL Tasman

Other Related Activities
There are a number of activities at Darwin International Airport whose value to Darwin and the Northern Territory has not been quantified in the above analysis.

Medical Services
The Royal Darwin Hospital (RDH) provides the Territory’s main concentration of medical services and serves as the main referral centre for the Top End of the Northern Territory as well as servicing parts of Western Australia and South East Asia. The Northern Territory Aerial Medical Service (NTAMS) is operated by the Northern Territory Government Department of Health and Families in the Top End. The NTAMS provides medical advice, assistance and a specialist retrieval service to all people living and working in rural and remote areas of the Top End, ships at sea, and oil and gas companies in the Timor Sea. In 2008, there were a total of 1,324 medical flights from Darwin by the NTAMS, compared to 875 medical flights in 2002.

The RAAF Base
From a defence perspective, Darwin International Airport is considered to be a strategic asset of the highest priority. This has particularly been the case since the independence of Timor-Leste.

Apart from aircraft-related activities that utilise infrastructure owned and operated by the Department of Defence, military usage of Darwin International Airport facilities is strategically significant and includes:
- Charter use by the Northern Defence Reserve Unit (known as “Norforce”). Approximately 90 percent of Norforce air travel requirements currently involve charters operating from the civil facilities at Darwin International Airport; and
- ADF personnel utilising commercial airlines.

Connecting Communities in the Territory
Darwin International Airport plays a vital role in sustaining remote communities across northern Australia through the utilisation of the large general aviation capability at the airport. There are a wide range of essential service type air services that connect remote communities to Darwin. Examples include aeromedical evacuations, education, utilities maintenance, housing, clinical visits and elections.
SECTION 7
Aviation Activity Forecasts

- There has been a dramatic increase in Low Cost Carrier services in recent years.
- The development of Darwin as a Low Cost Carrier domestic-international narrow body hub is crucial to future international growth.
- Total international and domestic passengers are forecast to increase from just under 2 million to 4 million over the next 20 years.
SECTION 7
Aviation Activity Forecasts

INDUSTRY OUTLOOK
As with the 2004 Final Master Plan, aviation industry conditions have changed considerably since the preparation of the previous Master Plan. In concert with most of the Australian economy, airports and airlines are focussed on weathering the economic slow down induced by the Global Financial Crisis.

Four particular features of DIA airline services over the last several years have been the:
- dramatic increase in Low Cost Carrier services as a proportion of total services;
- withdrawal of full service international carriers;
- the volatility of Low Cost Carrier services; and
- developing dominance of Qantas Group services.

In 2004 the only Low Cost Carrier (LCC) operating into Darwin was Virgin Blue with some 10 services per week. Over time Virgin Blue expanded services, then severely contracted services in late 2008 and again introduced new services six months later. Royal Brunei ceased operating to Darwin in 2008 after 25 years in the market. Tiger Airways commenced Darwin services in 2005, ceased in late 2008 and then reentered the market in June 2010. Long time carrier Garuda Indonesia ceased services in May 2009. Garuda Indonesia was the last international Full Service Carrier (FSC) that operated into Darwin.

Jetstar commenced Darwin services in 2006 and has expanded domestic and international services since then. In August 2008 Jetstar announced its intention to develop Darwin as an international-domestic hub, which included basing 7 aircraft in Darwin from 2012.

LCCs (largely Jetstar) now provide the majority of total Darwin airline capacity. The Qantas Group as a whole currently operates some 85% of total capacity.

It is expected that there will continue to be volatility in airline service levels in at least the short term. LCCs tend to vary capacity and routes in response to changing market conditions more frequently than full service airlines. This is a feature of the LCC model.

The General Aviation sector continues to experience entry and exit of industry participants.

RECENT PERFORMANCE
Due to DIAs relatively small passenger base, the addition of new services or suspension of existing services has a major impact on growth. This has been demonstrated several times in recent years following the collapse of Ansett, the September 11 attacks in New York, the Bali bombings and SARS outbreak in the Asia region.

Since the 2004 Master Plan, Darwin International Airport’s passenger numbers have grown strongly. This growth has been during a period of significant change in the airline industry.

Traffic Performance
International
Over the past 20 years the compound annual growth in international visitor arrivals at Darwin International Airport amounted to 5%.

The period 1994/95 to 2001/02 experienced an increase above the 20 year trend. A drop in passenger numbers during 2001/02 resulted from a significant slow down in activity in services to Dili, the withdrawal of services by Malaysia Airlines and Singapore Airlines and the collapse of Ansett. This decrease continued through to 2005/06.

The market recovered with strong growth in 2005/06. Total passenger movements declined slightly in 2006/07 to be followed by a substantial increase in 2008/09 based on capacity additions by Tiger Airways (departed the market...
October 2008) and Jetstar. The last two years have seen an improvement in traffic growth.

**Domestic**

Over the past decade to 2008/09 the numbers of domestic airline passenger movements at Darwin International Airport grew by a compound average of 7.5% per year, from 855,000 to almost 1.6 million. A strong downturn was experienced in 2001/02 with the collapse of Ansett.

**Market Composition**

**International**

The number of visitors travelling internationally with a stopover in Darwin for at least one night has declined from 196,400 in 1999/00 to 161,600 in 2008/09. In 2008/09 62% of stopover visitors were from United Kingdom, Germany and Europe with a further 12% from North America and 7% from New Zealand. Between them Japan, Singapore and China accounted for 6% of these visitors.

In 2008/09, Australian residents arriving and departing from Darwin accounted for almost two-thirds (64.4%) of passengers that actually cleared Customs at the Airport. The other two major markets include Europe (13.8%) and South East Asia (12.3%). This is a reflection of Darwin International Airport being an international hub to South East Asia.

**Domestic**

In 2008/09, Brisbane was the major route accounting for nearly 24% of domestic passengers. Between them the four major interstate routes (Brisbane, Melbourne, Sydney, Adelaide) account for 70% of passengers.

**Freight**

There are presently no international widebody airfreight services at Darwin International Airport. Indeed, since 2002 overall international widebody capacity services have decreased, leading to reduced international airfreight uplift. Domestic airfreight has continued to be carried in the cargo hold of passenger services. There is no central source of domestic freight data.

**General Aviation**

In recent times, General Aviation activities have been highly volatile with growth differing amongst the various categories of General Aviation flying. From 1999 to 2007 the compound annual growth for annual flying hours for GA activities was 0.6% for Charter, 6.6% Aerial work and 6.1% for Business operations.

From 1999 to 2007, Charter has accounted for the largest sector of general aviation in the Northern Territory with 56% of total flying hours. Aerial work was the second highest with 27% and Business flying accounted for a further 9%.

**AIRCRAFT MOVEMENTS**

In 2000 there were some 27,000 RPT and 58,000 GA movements. This declined to a low in 2003 of 18,200 RPT and 44,300 GA. Again rising to some 21,700 RPT and 62,000 GA movements in 2008.

**FORECAST METHODOLOGY**

The forecasts outlined below are produced by Tourism Futures International in consultation with Darwin International Airport. Due to growth being driven by capacity in the short term, the next five year growth forecasts are based on likely operating capacity. Beyond the first five years, a model (developed over the past 19 years for forecasting Australian airport growth) was used. For the international market estimates of the responsiveness of passenger traffic to general economic activity (generally measured by Gross Domestic Product (GDP)), air fares and exchange rates were used. The main influences on domestic growth are Australian GDP and airfares. Results from aggregate and market based models are compared before finalising results.

Low, central and high forecasts have been developed for both passenger and aircraft movements. The low and high forecasts

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**FIGURE 7: HISTORICAL AIRCRAFT MOVEMENTS**

**FIGURE 8: FORECAST PASSENGER MOVEMENTS**
represent the likely lower and upper bands of growth to 2030. The central forecasts represents the most likely growth scenarios and provides the basis for the planning throughout this document.

TRAFFIC FORECASTS

Passenger Movements

It is projected that passenger movements, including transit and transferring passenger, will increase from just under 2 million passengers to approximately 4 million passengers by the end of the planning period.

Darwin International Airport’s passenger movements are heavily driven by airline and capacity developments in line with a strategy to develop as a narrowbody hub between southern Australia and points in South East Asia. The development of the hub should see a significant increase in traffic in the short term, with early average annual growth for total passenger movements forecast at 10% pa. As the hub matures, total passenger movement growth is expected to reduce to an average annual growth of 2.3% pa.

Freight

It is projected that international annual inwards freight will increase from 127 tonnes to nearly 800 tonnes and outwards freight will increase from 171 tonnes to over 600 tonnes per annum by the end of the planning period.

As the Darwin hub develops, airfreight will be carried increasingly on narrowbody passenger services. Due to the low levels of existing airfreight, a ratio to aircraft movements calculation has been made to establish projected airfreight. As this airfreight grows (with expanded business and trade activity in coming years) the projections assume the reintroduction of international wide body capacity from 2015. Domestic airfreight will continue to be carried predominantly in the cargo hold of passenger services. As domestic airline movements increase, this will generate additional capacity for domestic freight uplift.

Aircraft Movements

It is projected that combined aircraft movements at Darwin International Airport will grow from over 88,000 movements to over 130,000 movements per year by the end of the planning period.

In line with the hub development, total aircraft movements at Darwin International Airport will increase by an average of 6% pa until 2013. At the hub matures average annual growth of aircraft movements until 2030 is forecast to be 1.5% pa.

General Aviation forecasts are generated using an assumption that the underlying growth represents half the growth rate in NT GSP per capita. For the period from 2010/11 to 2014/15 it has been assumed that the growth in mining and other major projects will add an average 4.25% per year (20% overall) to growth. Forecast growth beyond 2015 is 2.1% per year.

Refer to Figure 9: Forecast Airfreight below.

Refer to Figure 10: Forecast Aircraft Movements below.
SECTION 8

Airport Land Use

- Land use planning is fundamental to an Airport Master Plan and is specifically highlighted in the Act.

- Land use planning in the 2010 Master Plan:
  - ensures there is adequate land for expansion of aviation activity;
  - clearly separates aeronautical and non-aeronautical uses;
  - is consistent with that of the Northern Territory Planning Scheme where possible, with any variations being highlighted; and
  - provides a considerable amount of land for conservation reserves.

- A new land zone is Aviation Reservation which preserves land for ultimate aeronautical use but allows for non-aeronautical interim use.
SECTION 8
Airport Land Use

Darwin International Airport (DIA) incorporates 311 hectares of airport lease area plus 215 hectares of Joint User airside area. The airport lease area is high-value and centrally located land in Darwin region. Darwin International Airport is first and foremost an airport for Airlines and General Aviation operations. Airport land use planning focusses firstly on preserving adequate land for current and future aviation operations and secondly on land with commercial potential.

ADVANTAGES AND STRENGTHS OF AIRPORT LAND
Darwin and the Northern Territory have many strengths especially relevant to commercial property development on airport land. These include:
- Proximity to South-east Asia;
- Strong resource industries;
- Good lifestyle and attractive tourist destination;
- Above average population and economic growth;
- High quality infrastructure; and
- Educated and skilled work force.

Given these opportunities, Darwin International Airport has identified the following commercial property opportunities:
- Multinational companies requiring a reputable regional base;
- Retail, bulky goods and warehousing companies that would benefit from a central Darwin location with exposure and access;
- Meeting centres, accommodation facilities and other social support facilities;
- High technology industry that value timely manufacturing and supply;
- Industries that rely on good logistical support (e.g. Defence, mining, energy);
- Industries that process and produce time-sensitive products;
- Air, road and other transport base industries; and
- Administration of service industries.

AIRPORTS ACT 1996 AND ASSOCIATED REGULATIONS

Airports Act 1996
The Airports Act 1996 requires the Master Plan to specify DIA’s intentions for the land use and related development of the leased area of the airport site where uses and developments embrace airside, landside, surface access and land planning/zoning aspects. The Land Use Zones and Land Use Zone Plan, shown in Figure 3 have been developed observing this.

Consistency with the Northern Territory Planning Scheme
Part 5.02(2) of the Airport Regulations 1997 states: 'an airport master plan, must, in relation to the landside part of the airport, where possible, describe proposals for land use and related planning, zoning or development in an amount of detail equivalent to that required by, and using terminology (including definitions) consistent with that applying in, land use planning zoning and development legislation in force in the State or Territory in which the airport is located.'

In this regard where possible the Land Use Zones and the Land Use Zone Plan have been developed in an amount of detail and using terminology and definitions consistent with that of the Northern Territory Planning Scheme.

Definitions of Intended Land Uses are contained in Section 20.

Pre-Existing Interests
Part 5.02(3) of the Airport Regulations 1997 requires that any obligations or interests at Darwin International Airport are addressed. Existing interests are listed below:
- Electricity supply Easement to Power and Water Corporation
- Electricity supply Easement to Power and Water Corporation
- Electronic communications easement to Telstra corporation Limited
- Electronic communications easement to Telstra corporation Limited
- Electricity supply Easement granted to the Department of Defence – RAAF Base Darwin
- Water supply Easement granted to the Department of Defence – RAAF Base Darwin
- Access Easement granted to the Department of Defence – RAAF Base Darwin.
LAND USE ZONES

Land Use Zones for the airport land apply to areas on the Land Use Zone Plan as shown in Figure 3. These are based on known airport land use needs and current market trends. The administration of the zones aims to assist and encourage progressive, orderly and strong growth of the airport land. The zones have been categorised into:

- Aviation and Aviation Related Uses;
- Interim Uses; and
- Non-aviation Uses.

Where possible the zones and associated permitted and discretionary uses of the Northern Territory Planning Scheme have been adopted as zones and intended uses.

Where there are inconsistencies between existing land uses and land uses proposed in the zones the existing uses may continue. Further development of the existing uses may be consented to by DIA and be regarded as an additional permissible form of the existing use.

In overview terms, land use planning in the 2010 Master Plan:

- ensures there is adequate land for expansion of aviation activity;
- clearly separates aeronautical and non aeronautical uses;
- has been developed using terminology and definitions that are consistent with that of the Northern Territory Planning Scheme where possible, with any variations being highlighted; and
- provides a considerable amount of land for conservation reserves.

A new land zone is Aviation Reservation which preserves land for ultimate aeronautical use but allows for a non aeronautical interim.

Development in any land use zone will have regard to AS2021-2000 (Acoustics - Aircraft noise intrusions - Building siting and construction).

Application to Acquire or Incorporate Defence Land

DIA has applied to the Department of Defence to:

- acquire various parcels of land;
- incorporate some 5 hectares of Defence land in an existing DIA conservation reserve; and
- a land swap to rationalise one part of the shared land boundary.

DIA will be applying to DITRDLG to vary its lease under the Airports Act to incorporate changes resulting from the land transactions with Department of Defence.

AVIATION AND AVIATION RELATED USES

Aviation Activities Zone

(This zone is shown as pink on the Land Use Plan)

**Primary Purpose**

To provide for the future and current aviation operations and requirements of the airport.

**Intended Principal Land Uses**

- Aviation activities including General Aviation

<table>
<thead>
<tr>
<th>TABLE 6: AVIATION ACTIVITIES AND FACILITIES ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEVELOPMENT SHOULD</strong></td>
</tr>
<tr>
<td>Provide areas which are essential for aircraft operations and requirements.</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td>Promote the safe and orderly operation of aircraft operations and the airport facilities in general.</td>
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</tbody>
</table>

Development should provide areas which are essential for aircraft operations and requirements.

Promote the safe and orderly operation of aircraft operations and the airport facilities in general.

Facilitate compatible and ancillary uses within the zone which does not conflict with aviation activities or facilities.

www.darwinairport.com.au
Terminal and Facilities Zone
(This zone is shown as yellow on the Land Use Plan)

Primary Purpose
To provide for a variety of goods, services and facilities to meet the needs of travelling passengers, airport visitors, the airport workforce and the airlines. This zone includes the main terminal building, public car parking, airport and government offices and associated land.

Intended Principal Land Uses
- Airline passenger terminal
- Car parking
- Offices

<table>
<thead>
<tr>
<th>TABLE 7: TERMINAL AND FACILITIES ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEVELOPMENT SHOULD</strong></td>
</tr>
<tr>
<td>Provide for an airport terminal and passenger facilities which meet the needs of travellers, airport visitors, the airport workforce and airlines.</td>
</tr>
<tr>
<td>Provide for service corridors to accommodate existing and future infrastructure, pedestrian and cycle links, signs, lighting and landscaping.</td>
</tr>
<tr>
<td>Promote community safety in building design, having regard to adjacent and nearby uses.</td>
</tr>
<tr>
<td>Ensure that adequate car parking is provided.</td>
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</tbody>
</table>

INTERIM USES

Aviation Reservation Zone
(This zone is shown as rusty red on the Land Use Plan)

Primary Purpose
To provide for the potential future expansion of Aviation and Aviation Related Uses.

Intended Principal Land Uses
- Interim uses that do not conflict with future aviation and aviation related uses

<table>
<thead>
<tr>
<th>TABLE 8: AIRPORT RESERVATION ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEVELOPMENT SHOULD</strong></td>
</tr>
<tr>
<td>Facilitate compatible and ancillary uses within the zone which does not conflict with Aviation and Aviation Related Uses or render the land unfit for Aviation and Aviation Related Uses when it is required for this use.</td>
</tr>
<tr>
<td>Not prejudice the safety or efficiency of the airport.</td>
</tr>
<tr>
<td>Provide for buffer zones to accommodate existing and future infrastructure, pedestrian and cycle links, signs, lighting and landscaping.</td>
</tr>
<tr>
<td>Promote community safety in building design, having regard to adjacent and nearby uses.</td>
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<tr>
<td>Ensure that adequate car parking is provided.</td>
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</tbody>
</table>
NON-AVIATION USES

Commercial Zone
(This zone is shown as grey on the Land Use Plan)

Primary Purpose
To provide for a range of business, office, retail activities and community uses.

Intended Principal Land Uses
- Office
- Retail (shops)

<table>
<thead>
<tr>
<th>TABLE 9: COMMERCIAL ZONE DEVELOPMENT SHOULD</th>
<th>INTENDED LAND USES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage a range of activities which would benefit from a location in close proximity to the airport and its terminal area.</td>
<td>Business sign</td>
</tr>
<tr>
<td>Not prejudice the safety or efficiency of the airport.</td>
<td>Car park</td>
</tr>
<tr>
<td>Respect the amenity of the adjacent and nearby uses.</td>
<td>Child care centre</td>
</tr>
<tr>
<td>Promote community safety in building design, having regard to adjacent and nearby uses.</td>
<td>Community centre</td>
</tr>
<tr>
<td>Provide for buffer zones to accommodate existing and future infrastructure, pedestrian and cycle links, signs, lighting and landscaping.</td>
<td>Hostel</td>
</tr>
<tr>
<td>Ensure that adequate car parking is provided.</td>
<td>Leisure and recreation</td>
</tr>
<tr>
<td></td>
<td>Licensed club</td>
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<td></td>
<td>Medical clinic</td>
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<td></td>
<td>Motel</td>
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<tr>
<td></td>
<td>Motor repair station</td>
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<tr>
<td></td>
<td>Navigational aids</td>
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<tr>
<td></td>
<td>Office</td>
</tr>
<tr>
<td></td>
<td>Passenger terminal</td>
</tr>
<tr>
<td></td>
<td>Place of worship</td>
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<td>Plant nursery</td>
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<td></td>
<td>Promotion sign</td>
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<td>Restaurant</td>
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<td></td>
<td>Service station</td>
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<tr>
<td></td>
<td>Shop</td>
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<tr>
<td></td>
<td>Showroom sales</td>
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<td></td>
<td>Utilities and infrastructure</td>
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<tr>
<td></td>
<td>Vehicle sales and hire</td>
</tr>
<tr>
<td></td>
<td>Veterinary clinic</td>
</tr>
</tbody>
</table>

Service Commercial Zone
(This zone is shown as orange on the Land Use Plan)

Primary Purpose
To provide commercial activities, which because of the nature of the business or size of the population catchment, require large sites.

Intended Principal Land Uses
- Office
- Retail (shops)
- Showroom sales
- Warehouse

<table>
<thead>
<tr>
<th>TABLE 10: SERVICE COMMERCIAL ZONE DEVELOPMENT SHOULD</th>
<th>INTENDED LAND USES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow for a range of land uses including showroom sales and warehouse but will not by the nature of their operations detrimentally affect the amenity of the adjoining or nearby land developments.</td>
<td>Business sign</td>
</tr>
<tr>
<td>Not prejudice the safety or efficiency of the airport.</td>
<td>Car park</td>
</tr>
<tr>
<td>Promote community safety in building design, having regard to adjacent and nearby uses.</td>
<td>Child care centre</td>
</tr>
<tr>
<td>Provide for buffer zones to accommodate existing and future infrastructure, pedestrian and cycle links, signs, lighting and landscaping.</td>
<td>Community centre</td>
</tr>
<tr>
<td>Be designed in such a way to protect the amenity of the adjoining or nearby residences on McMillans Road.</td>
<td>Education establishment</td>
</tr>
<tr>
<td>Ensure that adequate car parking is provided.</td>
<td>Hostel</td>
</tr>
<tr>
<td>Recognise the requirement for a 20 metre wide native landscaping corridor abutting Bagot and McMillans Roads and extending from Osgood Drive to Charles Eaton Drive.</td>
<td>Leisure and recreation</td>
</tr>
<tr>
<td></td>
<td>Licensed club</td>
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<td>Medical clinic</td>
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<td>Motel</td>
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<td>Motor body works</td>
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<td>Motor repair station</td>
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<td>Navigational aids</td>
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<td>Office</td>
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<td>Passenger terminal</td>
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<td>Place of worship</td>
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<td>Plant nursery</td>
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<td>Promotion sign</td>
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<td>Service station</td>
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<td>Shop</td>
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<td></td>
<td>Short-stay accommodation</td>
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<td>Showroom sales</td>
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<td>Transport terminal</td>
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<td></td>
<td>Utilities and infrastructure</td>
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<td></td>
<td>Vehicle sales and hire</td>
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<td>Veterinary clinic</td>
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<tr>
<td></td>
<td>Warehouse</td>
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</tbody>
</table>
Tourist Commercial Zone
(This zone is shown as teal on the Land Use Plan)

Primary Purpose
To provide for uses or development servicing tourism, including commercial activities.

Intended Principal Land Uses
- Hostel
- Hotel
- Motel
- Short-stay accommodation

<table>
<thead>
<tr>
<th>DEVELOPMENT SHOULD</th>
<th>INTENDED LAND USES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be of a scale and character compatible with uses or</td>
<td>Business sign</td>
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<td>development nearby.</td>
<td>Caravan park</td>
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<td></td>
<td>Car park</td>
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<td></td>
<td>Community centre</td>
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<td>Hostel</td>
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<td>Hotel</td>
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<td>Leisure and</td>
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<td>recreation</td>
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<td>Licensed club</td>
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<td>Short-stay</td>
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<td>accommodation</td>
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<td>Utilities and</td>
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<td>infrastructure</td>
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<td>Vehicle sales and</td>
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<td>hire</td>
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<tr>
<td></td>
<td>Ensure that adequate car parking is provided.</td>
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</tbody>
</table>

Conservation Zone
(This zone is shown as green on the Land Use Plan)

Primary Purpose
To conserve, protect and enhance the flora, fauna and character of natural areas within the airport land.

Intended Principal Land Uses
- Nature Reserve
- Recreation

<table>
<thead>
<tr>
<th>DEVELOPMENT SHOULD</th>
<th>INTENDED LAND USES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be sensitive to the natural features and habitats of the zone and be so sited and operated to have minimal impact on the environment.</td>
<td>Business sign</td>
</tr>
<tr>
<td></td>
<td>Leisure and recreation</td>
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<td>Navigational aids</td>
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<td>Restaurant</td>
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<td>Utilities and infrastructure</td>
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Public Safety Zones
With exception of the Restricted Development Zone in the Northern Territory Planning Scheme, no legislation or guidelines exists at a Commonwealth or Territory level governing permissible land use with respect to aircraft crash risk.

Off-airport, land use zoning falls within the jurisdiction of the Northern Territory Government.

On airport, issues related to crash risk are considered by DIA in the approval process when assessing a proposed development. The proposed on-airport land uses contained within this Master Plan are considered to be appropriate.
SECTION 9

Airfield Development Concept

- No runway upgrading is required during the 20 year planning period.
- Taxiway enhancement will be required to support increased traffic and service expanded aircraft apron areas.
- The main aircraft apron will continue to expand in a linear manner then wrap around the terminal to the north-west.
The airfield consists of runways, taxiways and aircraft aprons. The Master Plan provides for further development of the airfield to ensure efficient handling of the forecast aircraft traffic.

The Darwin International Airport runway system is not located within the civil lease and is the responsibility of the Department of Defence in accordance with the Joint-User Deed.

Darwin International Airport is a Counter Terrorism First Response (CTFR) airport and therefore stringent security requirements must be met by both the Airport Operator and businesses that work at the airport. All activities at Darwin International Airport are subject to the security controls detailed in the Aviation Transport Security Act 2004 and Regulations along with DIA’s Transport Security Program (TSP).

Planning Standards
Civil aerodrome planning for the Airport adheres to Civil Aviation Safety Regulations Manual of Standards Part 139 (CASR MOS 139). This standard follows accepted International Civil Aviation Organisation (ICAO) methodology of using a code system, known as the Aerodrome Reference Code. The Code is composed of two elements: a Code Number and a Code Letter.

The Code Number indicates the runway type and is related to the length of the runway.

The Code Letter is related to the aeroplane wing span and outer main gear wheel span. The planning of aprons and taxiways is largely based on this element.

Refer to Table 14: Code Letter below.

Design Aircraft
The Airbus A380 aircraft is categorised by ICAO and CASA MOS 139 as a Code F with a wingspan of 80 metres. This aircraft is currently in service at major international airports in Australia. Although, it is not expected that Code F aircraft will operate regularly into Darwin there is the possibility for Code F diversions and cargo operations. These operations operate under dispensation and Code E aircraft will remain the critical design aircraft size.

Runway 11/29
The design aircraft for the main runway is a Code 4E aircraft. This allows for A330, B747, B777, B787 aircraft types.

Runway 18/36
The design aircraft for the secondary runway is a Code 3C aircraft. This allows for F100, Q300, SF340 and other General Aviation (GA) aircraft types.

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### Table 13: Code Number

<table>
<thead>
<tr>
<th>CODE NUMBER</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aeroplane reference field length</td>
<td>Less than 800m</td>
<td>800m up to but not including 1200m</td>
<td>1200m up to but not including 1800m</td>
<td>1800m and over</td>
</tr>
</tbody>
</table>

### Table 14: Code Letter

<table>
<thead>
<tr>
<th>CODE LETTER</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wingspan</td>
<td>Up to but not including 15m</td>
<td>15m up to but not including 24m</td>
<td>24m up to but not including 36m</td>
<td>36m up to but not including 52m</td>
<td>52m up to but not including 65m</td>
<td>65m up to but not including 80m</td>
</tr>
<tr>
<td>Outer main gear wheel span</td>
<td>Up to but not including 4.5m</td>
<td>4.5m up to but not including 6m</td>
<td>6m up to but not including 9m</td>
<td>9m up to but not including 14m</td>
<td>9m up to but not including 14m</td>
<td>14m up to but not including 16m</td>
</tr>
</tbody>
</table>
MOVEMENT AREAS
The existing airfield layout is shown in Figure 1.

Runways
Darwin International Airport has two runways, which are the responsibility of Department of Defence. The dimensions and declared distances of these runways are given in Table 15 below.

11/29
The main runway, with an orientation of 11/29, has a length of 3,354 metres and width of 60 metres. It is a flexible pavement runway and is grooved for the central 45 metre portion. Under the Joint-User Deed, the Department of Defence is responsible for maintaining the runway.

The use of the runway is dependent on seasonal weather. During the dry season (March – September), runway 11 is used predominantly in the mornings, whilst Runway 29 is used predominantly in the afternoon and evenings.

The runway is equipped with a cable arrestor system. The cable arrestor is designed for specific military aircraft and is not used by civil aircraft.

Land and Hold Short Operations (LAHSO) are available on Runway 29 to allow continuous use of Runway 18/36.

Runway 29 is equipped with a High Intensity Approach Lighting (HIAL) System – CAT I, which is designed to smooth the transition from instrument to visual flight on a precision instrument approach in conditions of low cloud or reduced visibility.

The main runway is also fitted with a 6 stage high intensity runway edge and threshold lighting. A Precision Approach Path Indicator (PAPI) also services both ends.

18/36
The crosswind runway has an orientation of 18/36, with a length of 1,524 metres, and width of 30 metres. As with the main runway, under the Joint-User Deed, the Department of Defence is responsible for maintaining this runway.

Runway 18/36 is predominantly used for departures on Runway 18 and landings on Runway 36. Landings on Runway 36 often involve Land and Hold Short Operations before aircraft clear Runway 11/29. There are restrictions on Runway 18/36 operations when high explosives are on Ordnance Loading Apron 9 in the Department of Defence area.

Helicopters
A helicopter aiming point is located at the intersection of taxiway A and C. A heliport is located at the east end of taxiway U.

Table 15: Runway Data

<table>
<thead>
<tr>
<th>RUNWAY DIRECTION</th>
<th>LENGTH (M)</th>
<th>WIDTH (M)</th>
<th>TAKE-OFF RUN AVAILABLE (M)</th>
<th>TAKE-OFF DISTANCE AVAILABLE (M)</th>
<th>ACCELERATE STOP DISTANCE AVAILABLE (M)</th>
<th>LANDING DISTANCE AVAILABLE (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>3354</td>
<td>60</td>
<td>3354</td>
<td>3444</td>
<td>3354</td>
<td>3354</td>
</tr>
<tr>
<td>29</td>
<td>3354</td>
<td>60</td>
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<td>3444</td>
<td>3354</td>
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<tr>
<td>18</td>
<td>1524</td>
<td>30</td>
<td>1524</td>
<td>1584</td>
<td>1524</td>
<td>1524</td>
</tr>
<tr>
<td>36</td>
<td>1524</td>
<td>30</td>
<td>1524</td>
<td>1584</td>
<td>1524</td>
<td>1524</td>
</tr>
</tbody>
</table>
TAXWAYS
Runways are supported by a comprehensive taxiway system designed to facilitate the efficient movement of aircraft between the runways and apron areas.

Refer to Table 16: Taxiway Data below.

APRONS
Aprons are areas provided for aircraft parking. Aircraft apron areas also support activities associated with the servicing of aircraft such as baggage, freight, refuelling and flight catering and utilise a variety of ground service equipment (GSE) operated by third parties.

An aircraft parking position is known as an aircraft stand (or bay). Existing aprons at Darwin International Airport accommodate a full range of aircraft types and operations.

RPT (Main) Apron
The Regular Public Transport (RPT) Apron can accommodate up to 14 large aircraft in various combinations. All parking bays on the RPT Apron are common use.

Four of the bays (Bay 1, 2, 3 & 4) are accessed by aerobridges to the terminal. Bay 1 has an apron drive aerobridge capable of servicing jet aircraft from the E170 up to the A380. Bay 2, 3 and 4 are equipped with “fixed T head” aerobridges. Bays 1 to 8 are equipped with fuel hydrants.

In 2008, two additional Code C (B738 aircraft) parking bays to the west were constructed, including the diversion of the north-south drain.

The RPT Apron is located within a Security Restricted Area (SRA).

General Aviation Aprons
General Aviation (GA) includes all parts of aviation industry that engage in activity other than scheduled commercial airline activity. This may include charter operations, aero medical operations, agricultural aviation businesses, aviation-based fire-fighting services, training and aerial work such as aerial photography and surveying. It also includes private, business, recreational and sports aviation activity and supporting businesses such as maintenance providers.

Currently there are three designated GA areas providing around 89,000m² of hangarage and 74,000m² of aircraft parking space. An estimated 185 GA and 14 regional aircraft are currently based in these areas. Around thirty businesses and a number of private individuals operate from these facilities.

<table>
<thead>
<tr>
<th>TABLE 16: TAXIWAY DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAXIWAY</td>
</tr>
<tr>
<td>A1-6</td>
</tr>
<tr>
<td>B1</td>
</tr>
<tr>
<td>B2</td>
</tr>
<tr>
<td>C1-4</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E1</td>
</tr>
<tr>
<td>E2</td>
</tr>
<tr>
<td>U1</td>
</tr>
<tr>
<td>U2</td>
</tr>
<tr>
<td>V1</td>
</tr>
<tr>
<td>V2</td>
</tr>
<tr>
<td>Y1</td>
</tr>
<tr>
<td>Z</td>
</tr>
<tr>
<td>G,H,J,K,L,M</td>
</tr>
</tbody>
</table>

Notes
1. Taxiway A1 – A6, B1, C1-C4, D and E1: these taxiways were constructed by the Commonwealth Government between 1958 and 1963 to the applicable standards of the relevant authority at that time. The widths of the straight sections range from 22.1 to 22.9 metres, slightly less than the design standards for Code D and E aircraft specified in the MOS 1.9 Section 6.3.1; the widths noted above are the average for each taxiway; the widths noted above are the average for each taxiway.
2. Taxiway C is west of and runs parallel to Runway 18/36 and also provides access for heavy aircraft to the military apron areas; taxiway C4 is on the northern side of Runway 11/29 providing access to Runway 18/36 and is not marked with taxiway edge lines.
3. Taxiway U1 east of taxiway U2 is restricted to helicopter only (fixed wing operations allowed with DIA approval).
4. Taxiway C south of the Military Hard Stand (MHS) restricted to PCN 18.
GA operations are clustered into 3 distinct areas:  
1. An area to the north of Slade Court bounded by Murphy Road – known locally as the Northern GA area;  
2. An area to the south of Slade Court and to the east of land reserve by the Department of Defence for a possible extension of Runway 18/36 – known locally as the Southern GA; and  
3. An area to the east of the passenger terminal bounded by Lancaster Road and beyond that by the Rapid Creek Reserve which, for the purpose of this plan, is identified as the Eastern Aviation area.

Northern GA

The Northern GA apron provides parking for approximately 80 aircraft, the wingspan of which must be less than 15m (Code A aircraft). The apron is flexible pavement with a PCN of 9.

Operations from the Northern GA include charter, light freight transportation and freight forwarding, aerial work, flight training, private flying, business flying, sport aviation and fuel supply AVGAS and Jet A1.

Itinerant aircraft parking is on an opportunity basis in this area.

Southern GA

The Southern GA apron provides parking for around 20 Code B aircraft but may be used by Code C aircraft subject to a pavement concession. The apron is flexible pavement with a PCN of 9.

Operations from the Southern GA include charter, aerial work, aircraft maintenance, hangarage, Coastal surveillance, search and rescue and aero medical services.

Eastern Aviation (includes private apron and helicopter apron)

Various components make up the Eastern Aviation area.

A private apron area is currently utilised for regional airline and specialist freight operations. This apron caters for Code C aircraft and occupies approximately 26,000m².

Freight facilities and on-airport airline catering facilities are also included. Freight is carried on passenger aircraft and handled directly on the RPT apron but consolidation is completed in the Eastern Aviation area.

Further to the east is the heavy helicopter zone, which provides a Final Approach and Take-Off (FATO) point and a sealed area for parking for six 18 passenger Super Puma helicopters. A non-sealed area is also available for helicopter operations.

Operations from the Eastern Aviation Area include RPT regional jet and turboprop aircraft, charter, heavy freight transportation and freight forwarding utilising domestic and regional airline services and dedicated freight aircraft (these aircraft utilise the RPT Apron), hangarage, fuel supply, light and heavy aircraft maintenance, and airline catering. Helicopter activities are located at the eastern end of this area.

EXISTING SUPPORT SYSTEMS

Department of Defence Facilities

Air Traffic Control (ATC) Services at Darwin International Airport are provided by the Department of Defence. The current control tower was constructed in 1997 and became fully operational in 1999. The tower is located to the east of the passenger terminal within the civil Darwin International Airport boundary. The primary role of ATC is the processing and separation of air traffic in both the initial and final stages of flight. ATC also provides surface movement control to aircraft and vehicles on the runways and taxiways.

Department of Defence is also responsible for the provision and maintenance of the TACtical Air Navigation (TACAN) and the Radar.

Airservices Australia Facilities

Fire and rescue services are provided by Airservices Australia from a facility located to the south-west of the main RPT apron within the Darwin International Airport lease boundary. A new fire station was constructed and commissioned by the Department of Defence in 1999. Aviation Rescue & Fire Fighting Service (ARFFS) currently provides up to ICAO Category 8 standard on a 24 hour notice basis. Under agreement with the Department of Defence, ARFFS is provided to all aircraft, both civil and military. A fire training area is located south-west of the passenger terminal on Department of Defence land.

Airservices Australia is responsible for the provision and maintenance of radio navigation aids and systems located on or near the airport, including:

- Distance Measuring Equipment (DME);
- Very High Frequency Omnidirectional Radio (VOR);
- Non-Directional Beacon (NDB); and
- Instrument Landing System (ILS) (Glide path and localiser).
2030 DEVELOPMENT CONCEPTS

The 2030 Airfield Development Concept Plan is shown in Figure 11.

Runway

The capacity of the runway system at Darwin International Airport is approximately 200,000 movements per year. It is estimated that in 2030 there will be a total of around 143,000 movements, including military traffic. The existing runway system is adequate to cater for future projected traffic and is proposed to be retained in its existing configuration. A future runway extension is safeguarded, so that Runway 11/29 can be extended to 4,000m beyond the planning period.

Lengthening of Runway 18/36 is not required for civil operations within or beyond the planning period. Hence the DIA position is that the existing runway extension reserve at the northern end of the runway should be available for aeronautical development, which will be increasingly required. However, the Department of Defence wishes to retain the runway expansion reserve in case the land is required for runway extension in the future.

Taxiways

The Master Plan concept proposes a number of new taxiway elements by 2030 to support the increase in traffic and support expanded apron areas, including:

- Realign taxiway Z to 190m (to a Code F taxiway) from the runway centreline and extend along Runway 11/29 to taxiway D;
- New taxiway system to service Main RPT apron expansions;
- New GA taxiway system to serve western GA development area;
- Extension to taxiway U1 to serve Eastern Aviation development area; and
- Future taxiway system (beyond the planning period) to the east to connect taxiway D to Runway 29.

It is expected that part of the extension to taxiway Z and the GA taxiway system to serve the western GA development area will be required during the first 10 years of the planning period. Any extension of Taxiway Z will need to resolve any potential conflicts such as navigation equipment location or explosive ordnance safeguard lines that may exist at the time.

RPT Apron

It is estimated that by 2030 the RPT Apron will need to accommodate a mix of 28 aircraft parking positions as indicated in Table 17.

<table>
<thead>
<tr>
<th>AIRCRAFT</th>
<th>2008</th>
<th>2014</th>
<th>2019</th>
<th>2024</th>
<th>2030</th>
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<tbody>
<tr>
<td>Code B</td>
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<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Code C</td>
<td>4</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Code D</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code E</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Active</td>
<td>8</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>15</td>
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<tr>
<td>Code B</td>
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<tr>
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<tr>
<td>Total</td>
<td>18</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>28</td>
</tr>
</tbody>
</table>

The RPT Apron will continue to effectively use the space and infrastructure available and expand in a linear manner and wrap around the terminal to the north-west until such time that the terminal demand triggers the need to alter this concept to cater for a pier terminal development.

Freight

It is envisaged that a dedicated freight apron is not required during the planning period. Freight on passenger aircraft or adhoc freight services will continue to be facilitated on the main RPT Apron.

General Aviation

There is demand for additional General Aviation facilities. The current ability to pay of the General Aviation sector means that charges are below the commercial level. The amount of land in the Aviation Reservation Zone provides a significant area for expansion of the General Aviation facilities both within and beyond the planning period. General Aviation facilities will be developed on a commercial basis.

DIA is working with GA operators to develop a stages General Aviation development. It is expected that stage 1 will consist of an extension to Slade Court GA facilities. This is expected to occur in the first 5 years of the planning period.

Helicopter growth will be accommodated by relocating the helicopter operations further east when the demand for aircraft maintenance or additional helicopter facilities is required and where commercially viable. Key areas which will drive the further expansion include economies of scale, demand for services and demand for facilities.
DEPARTMENT OF DEFENCE MASTER PLAN AIRFIELD CONCEPTS

The Department of Defence produced a Master Plan in 2008 which they supplied to DIA.

The key recommendations of the Defence Master Plan with respect to the airfield at Darwin International Airport were as follows:

- Safe guarding the extension of Runway 18/36 to 2010 metres. (Note that capacity review states that this is not needed for civil use);
- Extension of taxiway Z to the Runway 29 threshold to avoid conflicts with Explosive Ordinance (EO) safety zones;
- Extension of taxiway D across Runway 11/29 to join the extended taxiway Z;
- Provision of a new taxiway crossing Runway 11/29, joining taxiway A6 to taxiway Z between taxiway D and the runway threshold;
- Provision of two rapid exit taxiways between Runway 11/29 and taxiway A, in the approximate location of taxiway E1; and
- Extension of the existing Air Traffic Control facilities area.
SECTION 10

Protection of Aircraft Operations

- Obstacle Limitation Surfaces (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS–OPS) are prepared for Darwin International Airport to assist with the protection of airspace required for airport operations around the Airport.

- The Department of Defence protects military aircraft operations through the building controls contained in the Defence (Areas Control) Regulations.
Buildings and activities in the vicinity of an airport have the potential to create air safety hazards and to seriously limit the viability of aircraft operations into and out of the airport.

AIRSPACE PROTECTION
Part 12 of the Airports Act 1996 and the Airport (Protection of Airspace) Regulations 1996 declare prescribed airspace and give statutory protection from intrusion into this airspace. For the immediate and long term operation of Darwin International Airport new structures should be designed, or other activities controlled, to ensure that they do not intrude into the present or future protected airspace.

There are Australian Standards for airport design including Civil Aviation Safety Regulations and Civil Aviation Safety Authority Manual of Standards (MOS) Part 139. Under these Standards airspace is prescribed for protection in two categories:

- Obstacle Limitation Surfaces (OLS);

The protection of airspace procedures described below apply to civil aircraft.

Obstacle Limitation Surfaces (OLS)
The OLS are a series of surfaces in the airspace surrounding an airport and referenced to each runway.

The broad purpose of the OLS is to define the volume of airspace that should ideally be kept free from obstacles in order to minimise the danger to aircraft during an entirely visual approach or during the final visual segment of an instrument approach procedure. Infringements of these surfaces may occur subject to a safety analysis and provided the infringing obstacle is appropriately marked and lit.

Figure 12 depicts the OLS associated with Darwin International Airport for current and future requirements based on the long-term retention of the existing runway geometry.

The military equivalent of OLS is Obstruction Clearance Surfaces (OCS) and is prepared by the Department of Defence. Department of Defence undertake regular assessment to reduce the possibilities of structures infringing on flight tracks. Overall protection of airspace for both civil and military aircraft is a controlled activity (refer below) which requires a joint civil-military effort at a Joint-User airport.

Procedures for Air Navigation Services – Aircraft Operations Surfaces (PANS –OPS)
A PANS-OPS surface for an airport is a surface ascertained in accordance with the ICAO Procedures for Air Navigation Services – Aircraft Operations (Doc 8168, PANS-OPS).

The PANS-OPS surfaces are intended to safeguard an aircraft from collision with obstacles when the pilot is flying by reference to instruments. The designer of an instrument procedure determines the lateral extent of areas needed for an aircraft to execute a particular manoeuvre. The designer then applies minimum obstacle clearances to structures, terrain or other natural features within that area to determine the limiting altitude at which the manoeuvre can be safely executed. As a result, PANS-OPS surfaces cannot be infringed in any circumstances.

Figures 13 and 14 depict the PANS-OPS associated with Darwin International Airport for current and future requirements based on the long-term retention of the existing runway geometry and future changes in navigational aids that determine instrument procedures specific to the runway.

Airspace Protection Planning Control
Any activity (on or off airport) that infringes an airport’s protected airspace is called a controlled activity, and requires approval before it can be carried out. Controlled activities include the following:

- permanent structures, such as buildings, intruding into the protected airspace;
- temporary structures such as cranes intruding into the protected airspace; and
- any activities causing intrusion into the protected airspace through glare from artificial light or reflected sunlight, air turbulence from stacks or vents, smoke, dust, steam or other gases or particulate matter.
The Airports (Protection of Airspace) Regulations 1996 stipulate that ‘controlled activities’ need specific approval from the Department of Infrastructure, Transport, Regional Development and Local Government (DITRDGL).

The Regulations require that proponents of proposed ‘controlled activities’ must provide Darwin International Airport with the details of the proposal, which are then assessed against the OLS and PANS-OPS. Where it will affect the safety, efficiency or regularity of air transport at the Airport, DIA will oppose any proposals infringing the OLS and/or PANS-OPS surfaces.

Likewise, the Department of Defence has statutory protection from intrusion into its airspace through the Defence (Areas Control) Regulations [D(AC)R]. The [D(AC)R] for RAAF Base Darwin was established in 1998.

**NAVIGATION AIDS AND RADAR RESTRICTED SURFACES**

There are a number of radio navigation aids, communication installations and radar systems, which provide precision and other guidance to aircraft, which are operated by Airservices Australia and the Department of Defence, including the DME, VOR, NDB, ILS (Glide path and localiser), TACAN and Radar. These systems rely on the transmission of radio waves that must be protected from any structures or obstacles that could cause signal refraction or interference. Consequently, areas surrounding these facilities may have development restrictions.

To meet the necessary performance requirements, airspace restrictions are established for each item of equipment and procedures. It may be possible under some circumstances to permit infringements of the protective surfaces, without degradation in system performance. Protection of the navigation aids and radar restricted surfaces is managed cooperatively between DIA, Airservices Australia and the Department of Defence.

**RESTRICTIONS TO BUILDING STRUCTURE AND MATERIAL**

The Civil Aviation Safety Authority (CASA) has the power under the Civil Aviation Regulations 1988 to control ground lights where they have the potential to cause confusion or distraction from glare to pilots in the air. To assist lighting designers and installation contractors in the vicinity of the airport, CASA has established guidelines on the location and permitted intensities of ground lights within a six kilometre radius of airports. External advertising, sport field floodlighting and street lighting are some of the more likely lighting sources requiring consideration.

DIA will make documentation available that indicate the zones around DIA which have maximum permissible lighting intensities.

**BIRD HAZARD**

Surrounding land use can have the potential to attract problem bird species to the airport. Darwin International Airport is required to monitor and control the presence of birds on or in the vicinity of the airport in accordance with CASA regulations.

Darwin International Airport maintains a vigilant Bird and Animal Hazard Management System to remove and reduce potential high risk bird species. Bird hazard management considerations are also taken into account when planning potential airside or landside developments.
Figure 13: Existing PANS-OPS

Legend:
- Circling Category A, B & C
- Circling Minima Category A, B & C
- Minimum Safe Altitude 15 NM
- GNSS (Global Navigation Satellite System) Approach
- ILS (Instrument Landing System) Approach
- VOR (VHF Omirange) Approach
- DME (Distance Measuring Equipment) Approach

Note:
HP is Horizontal Plane
Elevations in metres Australian Height Datum
Figure 14: Future PANS-OPS

PROCEDURES FOR AIR NAVIGATION SERVICES - OPERATIONS (PANS-OPS)

LEGEND

- Circling Category A, B & C
- Circling Minima Category A, B & C
- Minimum Safe Altitude 15 NM
- GNSS (Global Navigation Satellite System) Approach
- ILS (Instrument Landing System) Approach

NOTE:
HP is Horizontal Plane
Elevations in metres Australian Height Datum
 SECTION 11

Aircraft Noise Management

• As a Joint-User Airport, Darwin has military and civil aircraft operations.

• The noise metric used for land use planning and building control is the Australian Noise Exposure Forecast (ANEF).

• This Master Plan incorporates an endorsed joint civil-military 2030 ANEF.
Darwin International Airport (DIA) as the civil airport operator has little direct control over noise produced by aircraft operations other than civil ground running. Airspace management is controlled by Department of Defence.

The International Civil Aviation Organisation (ICAO) has developed standards and guidelines which address civil aircraft noise, referred to as Annex 16. Australian Government aircraft noise legislation reflects the standards developed by ICAO and the obligations placed on Australia as a member of ICAO.

ICAO has set standards for aircraft noise within Chapter 3 of Volume I Annex 16. Aircraft that comply with these standards are commonly referred to as "Chapter 3 aircraft". Few civil aircraft that are not Chapter 3 compliant operate into Darwin. Military aircraft are not subject to ICAO noise standards.

Building approvals external to the airport are the responsibility of the Northern Territory Government. On-airport development is under the final approval of the Airport Building Controller under the Airports Act 1996.

DARWIN AS JOINT USER AIRPORT
Darwin International Airport has been a joint user airport with shared facilities with RAAF Base Darwin since 1945, including being the home Base for 75 Squadron in the 1980s prior to their relocation to Tindal. Responsibilities between Department of Defence and DIA are set out in the Joint User Deed.

Under the Joint User Deed the Department of Defence is responsible for producing a joint civil-military Australian Noise Exposure Forecast (ANEF).

AUSTRALIAN NOISE EXPOSURE FORECAST (ANEF)
The Australian Noise Exposure Forecast (ANEF) is a set of contours showing future forecasted levels of exposure to noise for building control purposes.

The ANEF is an important noise metric because it is the only noise metric which has status under the:
- Northern Territory Planning Scheme for land use planning and development consent off-Airport; and
- Airports Act 1996 of the Commonwealth for land use planning and development consent on-Airport.

The ANEF is used in accordance with Australian Standard AS2021-2000 to guide land use planning and development consent decisions by the relevant authority.

The ANEF is subject to review and endorsement by Airservices Australia.

ANEF in Land Use Planning and Development Consent
The following table from Australian Standard AS2021-2000 provides guidance for new construction in relation to ANEF contours. "Conditional" means that approval may be given if appropriate noise control features can be incorporated in the construction.

<table>
<thead>
<tr>
<th>BUILDING TYPE</th>
<th>ACCEPTABLE</th>
<th>CONDITIONAL</th>
<th>UNACCEPTABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>House, home unit, flat, caravan park</td>
<td>Less than 20 ANEF</td>
<td>20 to 25 ANEF</td>
<td>Greater than 25 ANEF</td>
</tr>
<tr>
<td>Hotel, motel, hostel</td>
<td>Less than 25 ANEF</td>
<td>25 to 30 ANEF</td>
<td>Greater than 30 ANEF</td>
</tr>
<tr>
<td>School, university</td>
<td>Less than 20 ANEF</td>
<td>20 to 25 ANEF</td>
<td>Greater than 25 ANEF</td>
</tr>
<tr>
<td>Hospital, nursing home</td>
<td>Less than 20 ANEF</td>
<td>20 to 25 ANEF</td>
<td>Greater than 25 ANEF</td>
</tr>
<tr>
<td>Public building</td>
<td>Less than 20 ANEF</td>
<td>20 to 30 ANEF</td>
<td>Greater than 30 ANEF</td>
</tr>
<tr>
<td>Commercial building</td>
<td>Less than 25 ANEF</td>
<td>25 to 35 ANEF</td>
<td>Greater than 35 ANEF</td>
</tr>
<tr>
<td>Light industrial</td>
<td>Less than 30 ANEF</td>
<td>30 to 40 ANEF</td>
<td>Greater than 40 ANEF</td>
</tr>
<tr>
<td>Other industrial</td>
<td>Acceptable in all ANEF zones</td>
<td>Acceptable in all ANEF zones</td>
<td>Acceptable in all ANEF zones</td>
</tr>
</tbody>
</table>
ENDORSED JOINT CIVIL-MILITARY ANEF
The Airports Act 1996 requires that a minimum 20 year ANEF be provided, ie a 2030 ANEF for this Master Plan.

Methodology
An ANEF is a set of noise contours at some point in the future (in this case 2030). The contours were prepared in accordance with the Airservices Australia document “Guidelines for the Production of Noise Contours for Australian Airports” and comply with the “manner of endorsement” approved by the Minister for Infrastructure, Transport, Regional Development and Local Government.

ANEF inputs include aircraft movement forecasts, runway and flight path usage, time of day and fleet mix. The ANEF ensures that forecast traffic is within the aircraft movement capacity of the Airport (in this case both civil and military movement forecasts). The ANEF for Darwin International Airport assumes that there is to be no major changes to the airfield layout, any runway extensions or changes to the current flight patterns within the planning period. The current procedures for aircraft arriving and departing the Airport were defined in close consultation with local Air Traffic Control.

In developing the Joint Civil-Military ANEF consideration was given to the appropriate scenario for military movements. Two scenarios were developed. The Low Tempo level of military aircraft traffic characterises military traffic for 9 months of the year. High Tempo military traffic characterises the 3 months of the year with higher levels of military movements and includes the dry season peak exercise period. It was determined that the Low Tempo scenario was the appropriate representation of military movements at the Airport on which to base building control. As such, the Low Tempo military scenario was used in the production of the joint ANEF. Although military traffic varies, civil traffic remains relatively stable throughout the year. Information on High Tempo military operations can be obtained from the Department of Defence.

Approval Process
Prior to seeking endorsement by Airservices Australia of the ANEF, the Airport provided the local planning authorities with a copy of a draft ANEF and the opportunity to comment. In the case of Darwin International Airport the relevant authorities are the Northern Territory Department of Lands and Planning and Darwin City Council.

The joint civil-military 2030 ANEF endorsed by Airservices Australia is at Figure 15. Note that this ANEF includes projected 2030 civil aircraft traffic and Low Tempo military aircraft traffic also projected to 2030.

For comparison purposes, the 2024 ANEF from the 2004 Master Plan and the endorsed 2030 joint civil-military ANEF is shown in Figure 16.

CIVIL AIRCRAFT NOISE
There are some 27,600 civil jet movements forecast for 2030 compared to 15,500 per annum currently. As noted above the number of civil aircraft movements is relatively constant throughout the year, whereas military traffic is seasonal.

2030 N70 Civil Contours and 2030 Civil Flight Paths
A guide to aircraft noise which is more explanatory than an ANEF is a N70 chart. The N70 chart is based on “Number Above” contours which are contour maps combining information on single event noise levels with aircraft movement numbers above the specified noise level. The Civil N70 chart shows the number of civil aircraft noise events greater than 70 dB(A) that occur in a typical day. (refer to Figure 24: 2030 Civil N70)

Flights Paths illustrate the broad spread of flight tracks that an aircraft may fly when arriving or departing at an airport. The approved civil flight paths are at Figures 17-19. While aircraft follow flight paths these are not as precise as a train on a railway line or a car on a highway, with aircraft approaching or departing the runway within a flight path “envelope” (or “corridor”). The envelopes may vary with aircraft configuration and weather and when presented, are referred to as Swoosh Tracks. Figures 26 and 27 represent the broad civil flight tracks (swoosh tracks) and numbers of civil aircraft departures and approaches for each direction of the main runway – Runway 11/29 in 2030.

2030 N70 Joint Civil-Military Contours and Military Flight Paths
Approved military flight paths are at Figures 20-23. The Joint Civil-Military N70 Contours, which include Low Tempo military operations, are contained in Figure 25.
MANAGING NOISE INTRUSION

Darwin International Airport Role
The Aviation White Paper (released December 2009) states ‘Australian airports currently have very little direct involvement in managing aircraft noise or decisions relating to the land use and development of noise sensitive buildings around the airport and under the flight paths. Airports do have a broad scope of influence and it is in their best interests to work with governments, local communities, aircraft operators, regulators and air navigation service providers to help develop practical solutions to minimise noise impacts on communities. The Government is looking to airport operators to work constructively in this area.’

Darwin International Airport will continue to work where it sensibly can to minimise noise impacts on the Darwin community. However, as noted above, airports have little direct involvement in managing aircraft noise and its impacts.

Aircraft Ground Running
Ground running of aircraft engines is a significant part of aircraft maintenance. The majority of aircraft maintenance is conducted by General Aviation operators. DIA has established stringent operating procedures for ground running of civil aircraft, which limit this activity to specific locations and times. These locations and conditions under which ground running can occur are detailed in the Engine Ground Running Management Plan.

Noise Abatement Procedures
Darwin International Airport takes a proactive approach to ensure that aircraft noise is minimised. Noise abatement procedures are published in the document Departures and Approach Procedures (Airservices Australia). Procedures have been designed for civil and military operations. These nominate Runway 11/29 as the preferred runway and note that only jet propelled aircraft that are noise certificated as per ICAO Annex 16 can operate from Runway 18/36.

NOISE MONITORING
The Department of Defence is installing a Noise and Flight Path Monitoring System (NFPMS) at RAAF Base Darwin / Darwin International Airport. The NFPMS will monitor and record the noise impact of aircraft operations both on the airport and in the communities in the vicinity of the airport. The NFPMS collects, analyses and reports on aircraft operations and noise data to allow Defence and DIA to improve the management of aircraft noise. The NFPMS also assists in providing factual information on aircraft noise to Territory and local authorities and to the community generally.
FIGURE 17: 2030 CIVIL FLIGHT PATHS ARRIVALS
FIGURE 20: 2030 MILITARY FLIGHT PATHS ARRIVALS
FIGURE 21: 2030 MILITARY FLIGHT PATHS DEPARTURES
FIGURE 23: 2030 MILITARY FLIGHT PATHS HELICOPTERS
### Figure 26: 2030 Runway 11 Civil Swoosh Tracks and Aircraft Departures/Arrivals

<table>
<thead>
<tr>
<th>RUNWAY 11</th>
<th>STANDARD DAY</th>
<th>BUSY DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEPARTURE CORRIDOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>2</td>
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</tr>
<tr>
<td>B</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>ARRIVAL CORRIDOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>1</td>
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</tr>
<tr>
<td>B</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>
FIGURE 27: 2030 RUNWAY 29 CIVIL SWOOSH TRACKS AND AIRCRAFT DEPARTURES/ARRIVALS

<table>
<thead>
<tr>
<th>RUNWAY 29</th>
<th>STANDARD DAY</th>
<th>BUSY DAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPARTURE CORRIDOR</td>
<td></td>
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</tr>
<tr>
<td>A</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
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<td>3</td>
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<td>C</td>
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<td>D</td>
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<td>1</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>5</td>
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<tr>
<td>ARRIVAL CORRIDOR</td>
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<td>B</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>
SECTION 12

Terminal Development Concept

• DIA aims to provide passengers with a safe, secure and efficient terminal which meets the needs of our airline partners.

• A Major Development Plan for a terminal expansion has been approved by the Federal Minister under the Airports Act, but actual construction will depend on achieving commercial agreement with DIA airline partners.

• Following the initial terminal expansion, there will be linear expansion to the west in line with passenger growth. Eventually the terminal will expand to the north-west.
Darwin International Airport passenger terminal provides a lasting impression for passengers and visitors to the Airport. The terminal is the front door to the airport business and serves as the public interface between landside and airside activities. DIA aims to provide passengers with a safe, secure and efficient terminal which meets capacity and flexibility requirements of our airline partners while delivering a unique Top End experience to the travelling public.

There are currently four daily peak periods of operations at the Airport; 3 hourly peak periods are spread around midday, midnight, early morning and late afternoon. Due to Darwin’s geographic location and average sector lengths (4 hours) from international and domestic cities, these peak times of operation are unlikely to change in the foreseeable future. These peaks influence the design of the terminal.

Planning Principles
The International Air Transport Association (IATA) Guidelines for airport capacity management provides a level of service framework which permits comparison between sub-systems within the airport environment. The framework ranges from levels of service Category A, which provides an excellent level of comfort, to Category F, which provides unacceptable levels of service, delays and an unacceptable level of comfort.

Future terminal and passenger facility planning for Darwin International Airport has been based on IATA level of service Category C, which provides good levels of service and comfort, whilst helping to achieve a reasonable cost. This is in line with maintaining flexibility to support both Full Service Carriers (FSC) and Low Cost Carriers (LCC) simultaneously.

CURRENT TERMINAL FACILITIES
The passenger terminal, a two level, 16,500 square metre integrated terminal building handling international and domestic passenger movements, is the service centre for the transfer of passengers and their baggage between surface vehicles and aircraft, or from aircraft to aircraft for interconnecting or transfer passengers.

In the airport terminal, passengers expect to find comfortable, attractive surroundings and to be served in an efficient, pleasant and expeditious manner. Check in, baggage reclaim, and security screening facilities and offices are located on the ground floor together with small scale concessionaires, including eatery, ticket sales and car rental.

Domestic and international departure lounges, main concessionaires and an airline lounge are on the first floor. Border agency processing areas are split across the two levels in the western end of the terminal building. Inwards processing is located on the ground floor and outwards processing is located on the first floor.

The terminal is currently equipped with 7 boarding gates serviced by three fixed linked aerobridges able to accommodate aircraft up to B747 and one apron drive aerobridge which can accommodate jet aircraft up to A380 Airbus.

Current Terminal Expansion Project
In February 2009, the Federal Minister for Department Infrastructure, Transport, Regional Development and Local Government approved a Major Development Plan (MDP) for an extension of Darwin International Airport Passenger Terminal.

The development will include new check-in, security, emigration, international departures lounge, immigration, and international baggage hall to cater for demand until 2015. Terminal expansion will occur once commercial agreement is achieved with DIA airline partners.
FUTURE DEMAND
The projected annual passenger demand in 2030 for the passenger terminal is approximately 4 million passengers. Annual passenger demands do not provide a true representation of the impact on terminal capacity. Therefore hourly passenger flows are used to determine development requirements.

2030 DEVELOPMENT CONCEPTS
Terminal growth beyond 2015 will be accommodated by expanding the existing terminal within the Terminal and Facilities Zone. Initially it is envisaged that the terminal will expand in a linear fashion and then wrap around to the north-west. A terminal pier will be developed if required. Key areas which will drive the future expansion of the overall footprint of the terminal will be baggage reclaim and baggage make-up.

Further extension of the passenger terminal within the Terminal and Facilities Zone will include, but not limited to:
- Construction of new domestic processing areas, including check in and departure lounges;
- Enhanced baggage facilities including inbound baggage reclaim areas;
- Expanded baggage make up facilities;
- Enhanced depth for terminal to achieve a minimum depth of approximately 75m; and
- Increased international arrivals and departure processing areas.
FIGURE 28: 2030 TERMINAL DEVELOPMENT CONCEPT
SECTION 13
Aviation Support Facilities and Utilities

• Fuel supply is critical to airline operations and land for expansion of the existing fuel storage facility has been identified.

• Expansion of aircraft maintenance, freight handling, ground service equipment, flight catering and utilities capacity is provided for.
There are a range of aviation support activities at Darwin International Airport that support the core aviation business of transporting passengers and freight.

Facilities to support these activities include supply, storage and distribution of fuel, aircraft maintenance, ground support equipment storage and flight catering. Support utilities include water supply, sewage, stormwater drainage, electricity supply and communications.

DIA is responsible for internal electricity, water, sewage and stormwater infrastructure.

AVIATION FUEL
The safe and continuous supply of fuel is critical to on-time performance of all aircraft operators at the Airport. Any disruptions to the supply of fuel will impact aircraft movements and passengers.

Existing Facilities
There is no fuel pipe line delivery to Darwin International Airport. Fuel is supplied to the Airport by road tanker to a storage facility consisting of five underground fuel tanks, totalling 1 million litres. At maximum capacity this could serve the airport needs for 2 to 3 days depending on demand. Between 300,000 – 500,000 litres of Jet A1 is delivered each day by B-double tanker to Joint Aviation Fuel Services (JAFS) located on Lancaster Road. The Jet A1 fuel is dispensed via an in-ground hydrant system currently servicing 8 aircraft parking positions on the RPT Apron.

General Aviation aircraft are serviced from a fuel facility located in the Northern GA area. Fuel is stored in two underground fuel tanks, totalling 145,000 litres. AVGAS is delivered 2 to 3 times a week by single tankers. Airport fuel tankers, carrying up to 16,000 litres, deliver this fuel to aircraft in all parts of the Airport.

2030 Development Concept
The forecast increase in aircraft movements will result in increased fuel consumption over time. This will necessitate expanded fuel facilities. Adequate land has been specifically reserved in the Aviation Activities Zone for this purpose as indicated in Figure 29. The land is adjacent to the current facility and has taken into consideration additional storage capabilities, increased number of refuelling vehicles and their associated parking and maintenance, as well as the associated increase in fuel deliveries required into the Airport.

The existing hydrant system will be extended incrementally to serve the RPT apron peak demands.

AIRCRAFT MAINTENANCE
There are three main types of aircraft maintenance activities:

1. Line maintenance - this occurs during transit and turnaround and can be performed at the aircraft parking position.
2. Base Maintenance - this requires ground-time in a hangar with simple access docking, or at a parking position away from the terminal. Ground time periods can range between 20 and 36 hours.
3. Heavy maintenance - this requires significant ground-time in a hangar with extensive docking capabilities. Ground-time periods can range between 6 to 50 days depending on the type of heavy maintenance being performed.

In addition to hangars, there is a need for support functions such as workshops, component stores and engine run facilities.

Existing Facilities
There is extensive General Aviation maintenance activity covering line, base and heavy maintenance throughout the GA areas. Currently Airlines conduct line maintenance on the RPT Apron. Airnorth conducts base and heavy maintenance activity in their facilities.

2030 Development Concept
Provision is made for expanded airline maintenance facilities (including base and heavy) within the Aviation Activities Zone in the Eastern Aviation Area.

General Aviation aircraft maintenance capacity will expand in line with General Aviation facilities expansion.

GROUND SERVICE EQUIPMENT
Ground Service Equipment (GSE) includes a range of vehicle and equipment used to service aircraft between flights. GSE is used to perform a variety of functions, including starting
aircraft, aircraft maintenance, aircraft refuelling, transporting freight to and from the aircraft, loading freight, transporting passengers to and from the aircraft, baggage handling, aircraft waste disposal services and food services. Provision of adequate areas adjacent to the apron for storage of GSE is necessary for efficient operations.

**Existing facilities**
The existing GSE storage area lies to the east of the existing terminal area, and comprises an area of approximately 5,500m². There are additional GSE parking areas on the RPT aircraft bays.

**2030 Development Concept**
The area required for GSE storage is dependant on a number of key factors including peak demand, aircraft configuration, number of ground handling agents and types of equipment.

Provision is made for adequate GSE facilities adjacent to the RPT apron.

**FLIGHT CATERING**
Uplift catering for RPT aircraft is prepared on and off airport.

**Existing facilities**
Currently there is only one on-airport flight catering facility located in the Eastern Aviation area of the Airport. Unlike many aviation-related activities, there is no specific need for flight catering facilities to be located on-airport. Currently Darwin International Airport is also serviced by off-airport companies.

**2030 Development Concept**
Provision is made for flight catering to continue on-airport if required.

**UTILITIES**
To ensure that Darwin International Airport operates effectively into the future, appropriate infrastructure and utility services must be able to meet future demands placed on them. Commercial developments which require additional utility capacity can also assist to reduce the utility cost of aeronautical developments.

**Water Supply**
**Existing Services**
Potable water for the airport is taken from the external mains at a connection adjacent to McMillans Road south of the intersection with Charles Eaton Drive. This water supply is fed into a holding tank which then feeds a high level tank to ensure adequate pressure. There is also a connection to the terminal area reticulation via a non-return valve at the elevated storage tank to allow a direct supply from the town supply when there is adequate pressure.

Both the domestic and fire hydrant mains share the same system with pressure booster pumps activated on demand for fire requirements.

**Future Extensions**
It is possible that, over time, the existing water tower storage supply to the airports domestic reticulation will be abandoned and replaced by a pressure pump system and connection to storage tanks.

DIA is investigating the separation of the water reticulation system from the fire fighting system.

It is expected that future developed areas may require a dedicated combined fire hydrant and sprinkler boosted service.

**Sewerage**
**Existing Services**
The current built area has a reticulated gravity system which feeds the various pumping stations that discharge to the Main Sewerage Pumping Station (MSPS) to the north of the General Aviation area. The MSPS pumps via a rising main to the Power and Water Corporation (PWC) Marrara Trunk Sewer on the north-east side of Rapid Creek.

The existing system is nearing capacity.

**Future Extensions**
The sewerage system capacity will be expanded in line with demand over time.

Additional pumping stations may be required within the Service Commercial Zone to meet demand resulting from the staged development of this zone. Several new gravity sewer mains falling towards the Murphy Road pumping station may need to be constructed to cater for future growth.

**Stormwater Drainage**
**Existing Services**
Surface water drainage utilises open drains which lead into Rapid Creek and Ludmilla Creek. DIA has established extensive monitoring and implemented a variety of controls to minimise the impact of Airport stormwater.

The stormwater system is designed to cater for:

- Landside – ten-year floods
- Airside – fifty-year floods

A retention basin was established in the north-western corner of the Airport site in 2007 in conjunction with Department of Defence to retard water flows from airside land.

**Future Extensions**
Further stormwater retention structures may be required to mitigate the downstream impact on the Rapid Creek system.
DIA will continue to investigate the need for additional retention structures.

**Electricity Supply**

**Existing Services**

There is a single existing feed into a ring main, which enables some redundancy if necessary. The PWC mains feed into an intake substation at McMillans Road by two parallel feeders. An existing 11kV ring main conducts power in a loop around the airport via several transformers. A further intake station at Bagot Road supplies the recent Bunnings development.

An emergency generator enables all current buildings and infrastructure within the airport (except for Bunnings) to be self sufficient for up to 7 days. The two x 1.5MW diesel powered Cummins Quad Turbo generators are connected to the airport HV ring main and are backed up with 140,000 litre diesel supply tanks.

**Future Extensions**

The current 11kV ring main has cable which may not be adequate to meet demand much above the present peak demand. Future developments proposed within the Terminal and Facilities Zone may require an upgraded or separate feed.

**Communications**

**Existing Services**

As with all other major international airports there is a range of communications available to airport tenants. Radio and land line communications are largely the responsibility of other authorities.

**Future Extensions**

DIA is investigating the provision of additional services to provide redundancy for the terminal and in particular the border agencies and to provide Information Technology and Communication (ITC) capabilities for occupants within the Service Commercial Zone.
Figure 29: 2030 Development Concept - Aviation Support Facilities and Utilities

Legend:
- Existing Aviation Fuel
- Aviation Fuel Expansion
- Existing Aviation Support
- Future Aviation Support
- Facilities Expansion
- Conservation
SECTION 14

Commercial Development Concept

• Of the 311 hectares in the airport lease area, some 80 hectares (26 percent) of the land is available for commercial development.

• Development in the Service Commercial Zone, aims to provide the first fully integrated and planned precinct of its kind in the Northern Territory.

• A demand study for the greater Darwin region has estimated that some 153,000m² of development could occur in the Service Commercial and Commercial Zones over the next 20 years.
Aeronautical activities require the use of the majority of the airport land and aeronautical activities will always remain the priority for DIA. However, there is land that will never be required for aeronautical purposes. In addition there is land that will not be required for aeronautical purposes for many years to come. Both categories can be considered for commercial opportunities and developed for ‘highest and best use’ on short, medium and long term bases.

Darwin remains a developing economy with significant economic and population growth projected. In that context, the non aeronautical land holding of DIA is strategic in four respects:

- a central location in the Darwin urban area;
- proximity to the aviation activities located at the airport;
- provides the only large parcels of land available for development; and
- proximity to the arterial road network.

In considering commercial development opportunities on airport land there are four primary considerations:

- contributing to Northern Territory economic growth through developing the property business and by facilitating the success of our business partners;
- enhancing value to our shareholders;
- contributing to the broader economic community; and
- underpinning infrastructure for further aeronautical development.

COMMERCIAL DEVELOPMENT VISION

Contemporary and high quality building form which is sensitive to the natural environment and the Darwin seasonal variations will be encouraged. Over the planning period, DIA will require increased emphasis on sustainable design, with sustainable design techniques that consider energy and water conservation; a particular example is building orientation that maximises natural light and minimises heat transfer.

A feature of DIA’s commercial development philosophy is a focus on enhancing the airport environment and making improved areas publically accessible where possible.

RECENT COMMERCIAL DEVELOPMENTS

Major developments in recent times have included:

- first development in the Tourist Commercial Zone was the construction of the Darwin Airport Resort, and sequentially complemented by development of the Darwin Airport Inn, providing the only hotel accommodation available in the Northern suburbs at the time of construction;
- first major retail facility with development of the Bunnings warehouse providing the gateway development within the Service Commercial Zone;
- establishment of a 20m native landscaping corridor associated with Bunnings and the Service Commercial Zone which forms a barrier against traffic noise and provides a peaceful bush setting for businesses within the zone;
- continued development of the Terminal and Facilities Zone with construction of government agency buildings, including AQIS and CASA;
- refurbishment and renovation of the Airport Management Centre Building, incorporating a emergency coordination centre and business meeting facilities available to airport business and wider community; and
- establishment of a 15 hectare Conservation Reserve, in a joint venture with Greening Australia.

Home and Lifestyle Super Centre

In May 2009, the Federal Minister for Infrastructure, Transport, Regional Development and Local Government approved a Major Development Plan (MDP) for the Home and Lifestyle Super Centre to be located on Osgood Drive.
**2030 DEVELOPMENT CONCEPTS**

Of the 311 hectares in the airport lease area, some 80 hectares (26 percent) of the land is available for commercial development.

The 80 hectares in the Service Commercial, Commercial and Tourist Commercial Zones will be developed as commercial opportunities arise. A demand study for the greater Darwin region has estimated that some 153,000 m² of development could occur in the Airport Service Commercial and Commercial Zones over the next 20 years. Possible developments include commercial offices, showrooms, warehousing, large format and specialty retail, entertainment/leisure, hotel and other short-stay accommodation, café and restaurants.

Figure 31 illustrates the Service Commercial Zone with current commercial development, the approved Home and Lifestyle Super Centre and a possible outline of future commercial development to 2030.

Development in the Service Commercial Zone aims to provide the first fully integrated and planned precinct of its kind in the Northern Territory. It is envisaged that development in this zone will offer premium level of centrally located commercial and retail space.

It is not possible to depict the development timeline for this zone, even for the first 5 years. Developments which occur will be in response to demand. Darwin, and the Northern Territory in general, is still a developing economy (ie not a mature economy like south eastern Australia) it is therefore difficult to predict the commercial developments which will occur.

**AXIS 12˚130˚** marketing campaign was launched in March 2010. **AXIS 12˚130˚** is the brand name for the Service Commercial land abutting Bagot and McMillians Roads (refer to **AXIS image Figure 30**). The promotional material is not intended to and does not indicate the actual developments which will be occurring. It is however a marketing vehicle to allow the Airport to engage with developers on potential development opportunities.

A whole of Airport 2030 traffic study, based on both aviation forecasts and the projected 153,000 m² of commercial development, was undertaken to ascertain future road system requirements (see Section 15).

Land in the Aviation Reservation Zone (41 hectares), while being planned for ultimate Aviation use, can be utilised for a variety of commercial purposes in the short to medium term.

Provision is made for some 30 hectares of land to cater for conservation and recreation activities. DIA will continue to enhance the airport environment and make areas publically accessible where practicable. (see Section 16).

Developments abutting Bagot and McMillians Roads will continue to recognise the implementation of the 20 metre wide native landscaping corridor.
SECTION 15

Ground Transport Plan Concept

- Projected growth in both aviation traffic and commercial development will result in an increase in daily airport trips from around 15,000 currently to some 49,000 in 2030.

- A parking study has indicated a medium term requirement for multi-level parking capacity.

- The major external access development concept is a new all movements signalised intersection off McMillans Road which will connect with Osgood Drive.
EXISTING ROAD AND GROUND TRANSPORT SYSTEM

External Access and Internal Road System
Darwin International Airport currently has access to the external road network through:
- the signalised Henry Wrigley Drive off McMillans Road and Osgood Drive off Bagot Road; and
- Charles Eaton Drive and Neale Street off McMillans Road.

Henry Wrigley Drive provides the main access to the Passenger Terminal.

The 2004 Final Master Plan included proposals to signalise a new intersection opposite Totem Road and create a new access between Bagot Road and Sabine Road on McMillans Road. These have been constructed as Osgood Drive and Neale Street respectively in conjunction with the development of Bunnings, the Airport’s first large retail development.

Darwin International Airport’s internal road system has developed over time in response to aviation and commercial development and specific traffic requirements. Current airport external access and internal road network are illustrated in the Current Airport layout shown in Figure 1.

Existing Ground Transport and Parking
There are no public bus services to Darwin International Airport and most Airport customers and staff arrive by private vehicle or taxi. One aspect which makes it difficult to effectively service the Airport with public transport is the large number of flights occurring between 11.00pm and 7.00am.

The results of a June 2008 survey (conducted over one week) of the mode of transport arrival at the Passenger Terminal are outlined in Table 19.

<table>
<thead>
<tr>
<th>MODE</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Private vehicle</td>
<td>67</td>
</tr>
<tr>
<td>Taxi</td>
<td>19</td>
</tr>
<tr>
<td>Shuttle bus</td>
<td>7</td>
</tr>
<tr>
<td>Rental car</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

As can be seen, the car accounts for 93% of journeys to the Passenger Terminal.

The provision of vehicle parking spaces at the airport caters for short and long term public car parking, staff car parking, bus/coach parking and car rental storage. There are 624 public and 220 staff parking capacity at the Passenger Terminal and formal and informal public and staff parking areas throughout the rest of the Airport.

While there is no formal bicycle path network there is widened shoulders on some internal roads. A pedestrian network exists within the Terminal and Facilities Zone connecting the Passenger Terminal with Airport accommodation and office buildings.

2030 DEVELOPMENT CONCEPTS

Background
The information and development concepts contained within this Master Plan are derived from data collection and detailed traffic modelling studies commissioned by DIA. These studies have involved the development, calibration and testing of microsimulation models for the internal and external road network and provide a sound basis for the land transport proposals.

A detailed carparking study was also undertaken.

There are two key demand areas for the land transport system to 2030:
- demand created by growth in aviation related activities; and
- demand created by growth of commercial (non-aviation) activity.

The traditional midnight and midday peaks have also been added to by late afternoon and early morning peaks as a result of domestic-international low cost carrier hubbing.

External Road Access
The road network surrounding Darwin International Airport will be adequate for the planning period.
A whole of Airport traffic study, based on projected aviation growth and commercial development to 2030 (refer Section 14), was undertaken. This traffic study incorporated the relevant external road network plus internal Airport roads.

Projected growth in both aviation traffic (refer Section 7) and commercial development will result in an increase in daily airport trips from around 15,000 currently to some 49,000 in 2030 (refer to Table 20 below). A feature of the overall trip generation will be commercial development focused along Osgood Drive.

The major external access development concept is a new all movements signalised intersection off McMillans Road which will connect with Osgood Drive. The new intersection will be located between Rapid Creek and Sabine Roads and the approximate location is illustrated in Figure 32 Future New External Access.

It is not considered important to strongly connect commercial with aviation based areas. The philosophy is therefore that the access to the:

- Terminal and Eastern Aviation areas should be retained via Henry Wrigley Drive;
- Northern and Southern General Aviation areas are provided via Henry Wrigley Drive, Charles Eaton Drive and the new signalised road; and
- Service Commercial Zone is provided by means of Osgood Drive, Charles Eaton Drive and the new signalised road centrally located within the development area.

The external road access developments envisioned over the planning period are:

- new signalised intersection on McMillans Road providing access to the Commercial Zone (anticipated in the first 5 years of the planning period); and
- downgrading of the existing intersection of McMillans Road and Charles Eaton Drive to provide left-in and left-out traffic movements only (anticipated in the first 5 years of the planning period); and
- increased queuing capacity at the Henry Wrigley Drive and Neale Street intersections on McMillans Road as required.

DIA has worked closely with the Department of Lands and Planning during development of the traffic study which analysed the traffic implications of the development concept.

The Northern Territory Government approved in principle the new signalised intersection on McMillians Road in November 2009.

Bike paths will be considered in conjunction with the NT Government where practical.

### Internal Road Network

Key internal roads are Sir Norman Brearley Drive, Osgood Drive, Charles Eaton Drive and Henry Wrigley Drive.

The traffic modelling indicated that access to/from the external road system was adequate with the nominated improvements above. The internal road network will develop over time in response to demand.

The approach to development of the internal road network will be to:

- maximise the use of existing road capacity;
- segregation of passenger and non-passenger (eg maintenance, commercial developments) traffic as far as practicable; and
- progressive enhancement of road system capacity in line with demand.
- facilitate aviation and commercial developments.

The alignment of Osgood Drive may be varied to accommodate developments during the planning period. This will not impact on the external road access or traffic movements. Extensions to the internal road system (including bike paths) over the planning period will be subject to the normal design considerations and the views of relevant airport customers and other stakeholders.

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**Table 20: Estimated Total Trips 2030**

<table>
<thead>
<tr>
<th>DEVELOPMENT</th>
<th>DAILY TRIP GENERATION, 2008</th>
<th>DAILY TRIP GENERATION, 2030</th>
<th>DAILY INCREASE IN TRIP GENERATION</th>
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</thead>
<tbody>
<tr>
<td>Terminal + short term parking</td>
<td>5890</td>
<td>13150</td>
<td>7260</td>
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<tr>
<td>Staff car park and long term car park</td>
<td>1360</td>
<td>3040</td>
<td>1680</td>
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<tr>
<td>General aviation east</td>
<td>2560</td>
<td>5710</td>
<td>3150</td>
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<tr>
<td>General Aviation west</td>
<td>2640</td>
<td>5890</td>
<td>3250</td>
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<tr>
<td><strong>Aviation subtotal</strong></td>
<td><strong>12450</strong></td>
<td><strong>27790</strong></td>
<td><strong>15340</strong></td>
</tr>
<tr>
<td>Hotel and resort</td>
<td>720</td>
<td>1170</td>
<td>450</td>
</tr>
<tr>
<td>Homemaker super centre</td>
<td>/</td>
<td>11350</td>
<td>11350</td>
</tr>
<tr>
<td>Office and commercial</td>
<td>/</td>
<td>3670</td>
<td>3670</td>
</tr>
<tr>
<td>Industry, warehouse</td>
<td>/</td>
<td>2370</td>
<td>2370</td>
</tr>
<tr>
<td>Bunnings and Bagot Road commercial</td>
<td>1750</td>
<td>2600</td>
<td>850</td>
</tr>
<tr>
<td><strong>Non-aviation subtotal</strong></td>
<td><strong>2470</strong></td>
<td><strong>21170</strong></td>
<td><strong>18700</strong></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>14920</strong></td>
<td><strong>48960</strong></td>
<td><strong>34040</strong></td>
</tr>
</tbody>
</table>
**Ground Transport and Parking**

It is difficult to predict whether public bus services will be provided to Darwin International Airport over the planning period. However, the Department of Lands and Planning has not indicated any intentions to introduce public bus services to the Airport.

As indicated earlier, 100 percent of terminal passengers and general aviation customers arrive by car or private bus services. Hence it is clear that ground transport planning needs to focus on transport to the airport by private vehicle, taxi, rental cars and private shuttle bus services. Taxi, shuttle bus and private hire car arrangements will be refined over time in line with any Passenger Terminal forecourt changes.

Recent expansion of parking capacity at grade will meet short term parking demand at the Passenger Terminal. A comprehensive parking study has indicated a medium term requirement for multi-level parking capacity. The location of one or more multi-level car parks during the planning period will be subject to detailed planning and design at the time.

General Aviation car parking is also an issue and will be developed when commercially viable.
SECTION 16

Environmental Management

• A Construction Environmental Management Plan (CEMP) will be developed where required.

• DIA strives to integrate environmental considerations into the development of facilities and services and seek to minimise their impact on the natural environment.

• The Airport Environment Strategy (AES) establishes a framework for assessing compliance with the relevant standards and legislation.

• The 2010 Master Plan provides for some 30 hectares of land to cater for conservation and recreation activities. DIA will continue to enhance the airport environment and make areas publicly accessible where practicable.
AIRPORT ENVIRONMENT STRATEGY

The Act and the Regulations require that besides the Master Plan, a separate Airport Environment Strategy (AES), which is a five year strategic environmental plan for the management of Darwin International Airport operations, be produced. Its purpose is to ensure relevant environmental standards and legislation is adhered to and establishes a framework for assessing compliance with the standards and legislation. The strategy also guides continual improvement to environmental management across the airport.

The Airport Environment Strategy is relevant to all operations on airport, including both aviation and non-aviation related activities. It has been developed alongside the Darwin International Airport Master Plan 2009 and together these documents will provide direction for the management of the Airport site. The Airport Environment Strategy 2009 is a key document for ensuring that the forecast growth and development of Darwin International Airport envisaged in the Master Plan is undertaken in an environmentally responsible manner.

The Airport Environment Strategy 2009 is the third Airport Environment Strategy (AES) for Darwin International Airport, developed as a requirement of the Airports Act 1996. The Environment Strategy 1999 was approved by the then Federal Minister for Transport and Regional Services on 20 September 1999, with a review approved on 2 December 2004. The Airport Environment Strategy 2009 was approved by the Minister of Infrastructure, Transport, Regional Development and Local Government on 22 April 2010.

The AES 2009 replaces the previous AES and is a legally binding document which will remain in force until development of the next AES in 2014.

The Act states that there is to be a final Airport Environment Strategy, as defined in Part 6 Division 2 Section 115.

The Act specifies that an Airport Environmental Strategy must set out:

- objectives for the environmental management;
- the areas if any within the airport site which are identified as environmentally significant;
- the sources of environmental impact associated with airport operations;
- the studies, reviews and monitoring to be carried out;
- the time frames for completion of those studies and reviews and for reporting on that monitoring;
- the specific measures to be carried out for the purposes of preventing, controlling or reducing the environmental impact associated with airport operations;
- the time frames for completion of those specific measures; and
- details of the consultations undertaken in preparing the strategy (including the outcome of the consultations).

Airport Environmental Management

Darwin International Airport maintains an Environmental Management System (EMS) which is consistent with ISO 14001. The EMS provides the system by which long term and daily environmental management can be planned, implemented and reviewed, in a cycle of continuous improvement. The EMS also guides environmental response to any future airport developments.

The AES is the cornerstone of the EMS. The AES provides strategic policies, objectives and targets for environmental management of the Airport within the EMS framework. This includes monitoring progress, reviewing performance and implementing corrective action for the strategic actions outlined in the AES.

ENVIRONMENTAL ACHIEVEMENTS

DIA is committed to creating an airport that will become an environmental management showcase. DIA is proud of its environmental performance and will continue to work closely with stakeholders to strive for improvement and incorporation of environmental considerations into all elements of its operations.
A number of environmental initiatives have been implemented at the airport resulting in what DIA believes are worthy environmental management credentials. These initiatives are summarised as follows:

**Rapid Creek Environment Reserve**
The majority of the DIA site is within the Rapid Creek catchment, with the exception of the north-west section. Rapid Creek is less than ten kilometres long and drains a catchment area of approximately 19 square kilometers.

"Rapid Creek is the only significant freshwater system in Darwin and as such, it is considered to be of environmental and social importance.”  

DIA is committed to the conservation and management of a corridor which runs alongside Rapid Creek, 75 metres from the creek’s centreline, and acts as an environmental buffer zone.

Over the last 10 years, DIA has implemented a weed control and vegetation rehabilitation program and water quality monitoring in the Rapid Creek corridor and catchment. This work has resulted in significant improvement in the quality of this habitat over time, enabling the development of public access infrastructure to allow the public to visit and enjoy the area. Public amenity features have been installed by the airport within the Rapid Creek Environment Reserve that includes approximately 2.5km of public nature trails, picnic tables and resting seats, interpretive signage and stabilised entry points to the creek enabling safe public access without destroying the fragile creek banks and an interface with the new Darwin Airport Resort bird viewing platform.

Following a Community Planting Day in 2006, when nearly 3000 plants were planted by volunteers, DIA provided an environmental grant to the Rapid Creek Landcare Group to enable it to continue its good work in the rehabilitation of areas of Rapid Creek catchment.

The Airport has been a member of the Rapid Creek Catchment Advisory Committee (RCCAC) since its inception in 1996. Committee members aim to improve the cooperative management of the catchment and advise the Minister of Natural Resources, Environment and Heritage on policy for management of the natural resources of the catchment in alignment with the Rapid Creek Management Plan – a plan developed by Darwin City Council and Greening Australia Northern Territory (GANT).

In June 2006, DIA received a Highly Commended award at the Power Water Environmental Excellence Awards for its work in the preservation and rehabilitation of Rapid Creek and its close working relationship with the community.

**Ludmilla Creek Catchment**
The western extent of the airport land holding and the north-western portion of the RAAF Base forms part of the Ludmilla Creek catchment. Due to the development of the Service Commercial Zone a stormwater detention basin was installed on RAAF property to attenuate the peak stormwater discharges from the Service Commercial Zone and RAAF land holdings to match the capacity of the existing downstream stormwater infrastructure. RAAF and DIA are engaged in a joint venture with Greening Australia Northern Territory to re-vegetate the site with native vegetation species.

**Conservation Reserve**
A long-standing relationship between DIA and Greening Australia Northern Territory led to a partnership to develop a Conservation Reserve on airport land. The project implements strategies from a range of planning documents that used scientific and environmental information and extensive community consultation to determine positive environmental outcomes for the Rapid Creek catchment. It addresses DIA’s commitment to protecting and enhancing the local environment and offsetting greenhouse gas emissions. Greening Australia’s long-term involvement in the Rapid Creek catchment and the Darwin community has been instrumental in ensuring the project’s success.

The Conservation Reserve covers fifteen hectares and includes an important wildlife corridor joining an area of existing bushland in the upper catchment to the Rapid Creek corridor. The extra trees and shrubs planted in the bushland will improve its condition and the thousands of native trees and shrubs planted in the corridor will gradually recreate habitat for wildlife. A very successful community tree-planting day launched the community participation component of the project in March 2008 with thousands of trees planted by nearly one hundred planters of which the majority were community volunteers. In the first year of the project over 7000 plants were planted. Ongoing revegetation, weed control and fire management over three years will see the project through to fruition.

DIA and GANT won the Commercial/Industry Category of the 2008 Power and Water Melaleuca Environment Awards for this work. The awards were established to recognise outstanding achievement in environmental excellence in the Northern Territory.

**Landscape Master Plan**
DIA created a vision of having an exceptional landscaped environment alongside a developing quality airport business. To achieve this, the airport worked closely with GANT and developed an Airport Landscaping Master Plan (LMP).

The main aim of the Landscape Master Plan is to provide guidelines that will enable the future building and infrastructure program to be designed and constructed in a unified and coherent manner that is sympathetic to the unique natural values and flavour of the Top End.
The Airport Landscaping Master Plan has been used to tie together airport developments and significant environmental features within the native landscape, including the Rapid Creek Corridor and the new Conservation Reserve. DIA believes this integrated approach, while being conducive to good business, will add value and amenity for all users of the airport, shareholders, staff and the public alike.

Successful implementation of the LMP has created a ‘native’ plant precinct around the office area of the airport, pedestrian and bike paths, car parks and the Bunning’s development. Such is the success of the gardens that it was featured on ABC Television “Gardening Australia” in June 2008.

The planting of a 20 metre native landscaping corridor along Bagot Road and McMillans Road from Osgood Drive to Charles Eaton Drive is also being undertaken as part of the implementation of the LMP. When completed, the buffer will provide a biological corridor approximately 2.1 kilometres in length, linking the Ludmilla and Rapid Creek catchment.

**Sustainability Achievements**

“Greenhouse Challenge” members since 2000, DIA has understood that one of the biggest challenges the world faces is climate change.

A sustainability action group has been created to engage staff from across the organisation to improve sustainability performance. The airport is collaborating with Power and Water Authority to reduce power and water consumption at the Airport.

Darwin International Airport has also been ‘nominated’ as the case study participant for the Australian Airports Association to report to the Department of Climate Change against the National Greenhouse and Energy Reporting Act 2007.

**ENVIRONMENTAL MANAGEMENT OF FUTURE DEVELOPMENTS**

DIA strives to integrate environmental considerations into the development of facilities and services and seeks to minimise their impact on the natural environment.

Development activities have the potential to impact upon environmental attributes addressed throughout the AES. Broadly, the likely sources of environmental impact associated with each attribute during development include:

- **Surface Water, Groundwater and Land** – alterations to the water table through excavation or fill/material placement, contamination by hazardous material spills or inappropriate treatment of construction water prior to release and inappropriate sediment and erosion control structures resulting in increased sediment loads in water courses, downstream impacts off airport from airport stormwater management;
- **Flora** – vegetation clearing, introduction of disease and weeds through inadequate management of tyres, equipment and footwear;
- **Fauna** – accidental chemical spills, death or injury by machinery and habitat loss through vegetation clearing;
- **Noise** – produced by mobile plant and their reverse warnings, power tools, site clearing and earthworks, increase air traffic;
- **Air Quality** – the movement of mobile plant on disturbed ground has a high potential to create dust and exhaust fumes; and
- **Cultural Heritage** – inadequate awareness of the potential for cultural heritage sites and artefacts could lead to the destruction or damage of known cultural heritage sites;
- **Waste** – increase in volumes of waste generated from increased activity; and
- **Resource use** – increase demands for resources e.g energy, water and construction materials.

DIA has developed a range of initiatives aimed at minimising the impacts of development:

- Contractors performing major works or those with potential to cause environmental harm are required to prepare a Construction Environment Management Plan and are required to go through the development approval process;
- Potential developments will be assessed against data entered into the Environment Site Register to determine potential impacts upon sensitive areas;
- In the event that major developments are proposed in areas of intact native habitat on Airport land, a flora and fauna survey will be conducted before construction begins and management options assessed; and
- Work on developments will be stopped immediately if suspected culturally significant/heritage artefacts are found and the relevant authority informed.

**SUSTAINABILITY**

Sustainable design principles will be incorporated into the design and construction of future airport expansion and commercial development at Darwin International Airport. Planned developments will work towards improving the environmental performance of the facility through the integration of energy efficient, water conservation and indoor environmental quality best practice that will complement the objectives identified in the Airport Environment Strategy.

NT Department of Planning and Infrastructure outline the principles of Water Sensitive Urban Design (WSUD) as:

- Protect existing natural features and ecological processes;
- Maintain water quality hydrologic behaviour of catchments;
- Protect water quality of surface and ground water;
- Minimise demand of the reticulated water supply system;
- Minimise wastewater discharges to the natural environment; and
• Integrate water into the landscape to enhance visual, social, cultural and ecological values.

DIA applies the principles of WSUD through the implementation of the Airport Environment Strategy, in particular the policies centred around the following environmental attributes:
  • Section 5: Water (ground and surface) Management
  • Section 6: Land
  • Section 7: Biodiversity
  • Section 12: Resource Use
  • Section 14: Development.

2030 DEVELOPMENT CONCEPT – CONSERVATION RESERVES
A feature of DIA’s development philosophy is a focus on enhancing the airport environment and ecological value including making improved areas publically accessible where possible. The Conservation Reserve concepts stems from two environmental initiatives undertaken by DIA:
  • the preservation and promotion of the Territory’s native flora and fauna; and
  • offset of greenhouse gas emissions created by the DIA business though biosequestration.

There is a natural riparian corridor associated with the Rapid Creek system which is logically incorporated in a conservation reserve. In additional the Airport has identified land suitable for a nature reserve in another undeveloped part of the airport, an area to the west of the existing Northern GA area (Defence land). Together the two reserves which serve both conservation and recreation purposes comprise some 30 hectares of land. DIA will continue to enhance the airport environment and make areas publically accessible where practicable.

Rapid Creek Environment Reserve and Wetland Buffer
DIA will continue to work with community organisations, including the Rapid Creek Advisory Committee and Greening Australia NT, to both:
  • maintain the natural value of the Rapid Creek catchment area; and
  • continue to improve public amenities in the Rapid Creek Environment Reserve over time.

Conservation Reserve
The Conservation Reserve will continue to be a feature of Darwin International Airport environmental credentials. The wildlife corridor connecting the body of the Conservation Reserve to Rapid Creek will be increasingly populated with native trees.
SECTION 17
Implementation

- The Approval of the Final Master Plan does not automatically confer approval on subsequent major developments.

- Prior to the Ministerial approval, proposals are subject to further detailed assessment including community consultation, environmental studies, traffic effects and aviation impacts.

- Smaller developments are assessed by the DITRDLG appointed Airport Building Controller and Airport Environment Officer.
IMPLEMENTATION FRAMEWORK

This Master Plan represents current views of developments expected to be realised in a staged manner, largely as a result of increased aircraft movement, passenger demand and commercial development.

Planning by its nature is a dynamic activity requiring continuous monitoring of changing conditions, standards and practices, and technology. Therefore implementation of the Final Master Plan will require flexibility that takes into account fluctuations in economic activity and factors that affect air travel and commercial demand.

The approval of the Final Master Plan does not automatically confer approval on subsequent major developments. The Airports Act 1996 requires that certain developments must undergo a Major Development Plan (MDP) process which is subject to Ministerial approval. Prior to the Ministerial approval, proposals are subject to further detailed assessment including community consultation, environmental studies, traffic effects and aviation impacts.

Other smaller developments, that do not trigger a Major Development Plan, are subjected to DIA’s internal development review process. DITRDLG also has a role for most airport developments through its statutory office holders – the Airport Building Controller (ABC) and Airport Environment Officer (AEO). The role of the ABC is to administer the Airports (Building Control) Regulations 1996 and the AEO oversees adherence to the final approved AES and administers the Airports (Environmental Protection) Regulations 1997. Therefore for smaller developments a regulatory and development consent process is still applied.

The Aviation Reservation Zone provides for eventual aviation use but with interim (short to medium term) non aviation/commercial use.

REVIEW PROCESS

The Airports Act provides for a Final Master Plan to remain in force for five years. Therefore this Master Plan will again be reviewed and updated in 2015. The Act includes additional provisions for minor amendments to the Master Plan, and for the Minister to direct another Master Plan to be prepared.
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SECTION 18

Assessment as to Consistency with the *Airports Act 1996*

- Darwin International Airport 2010 Master Plan is consistent with the requirements of the *Airports Act 1996*. 
## SECTION 18
### Assessment as to Consistency with the Airports Act 1996

**TABLE 21: ASSESSMENT AS TO THE CONSISTENCY WITH THE AIRPORTS ACT 1996 AND ASSOCIATED REGULATIONS**

<table>
<thead>
<tr>
<th>LEGISLATION</th>
<th>FINAL DETAILS IN SECTION OF THE MP</th>
</tr>
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<tbody>
<tr>
<td>AIRPORTS ACT 1996</td>
<td></td>
</tr>
<tr>
<td>70 Final Master Plan</td>
<td></td>
</tr>
<tr>
<td>(1) For each airport, there is to be a final master plan</td>
<td>Noted – see Section 3</td>
</tr>
<tr>
<td>(2) The purpose of the final master plan for an airport are:</td>
<td></td>
</tr>
<tr>
<td>(3) To establish the strategic direction for efficient and economic development at the airport over the planning period of the plan; and</td>
<td>Section 5,8,9,12,13,14 and 15</td>
</tr>
<tr>
<td>(a) To provide for the development of additional uses of the airport site; and</td>
<td>Section 8,9,13,14 and 15</td>
</tr>
<tr>
<td>(b) To indicate to the public the intended uses of the airport site; and</td>
<td>Section 8,9,13,14 and 15</td>
</tr>
<tr>
<td>(c) To reduce potential conflicts between uses of the airport site, and to ensure that uses of the airport site are compatible with the areas surrounding the airport.</td>
<td>Section 8,10 and 11</td>
</tr>
<tr>
<td>71 Contents of draft or final master plan</td>
<td></td>
</tr>
<tr>
<td>(3) In the case of a joint-user airport, a draft or final master plan must specify:</td>
<td></td>
</tr>
<tr>
<td>(a) the airport-lessee company’s development objectives for civil use of the airport; and</td>
<td>Section 5</td>
</tr>
<tr>
<td>(b) the airport-lessee company’s assessment of the future needs of civil aviation users of the airport, and other civil users of the airport, for services and facilities relating to the area of the airport site leased to the company; and</td>
<td>Section 8,9,12,13,14 and 15</td>
</tr>
<tr>
<td>(c) the airport-lessee company’s intentions for land use and related development of the area of the airport site leased to the company, where the uses and developments embrace airside, landside, surface access and land planning/zoning aspects; and</td>
<td>Section 8,9,12,13,14 and 15</td>
</tr>
<tr>
<td>(d) an Australian Noise Exposure Forecast (in relation to civil uses of the airport and in accordance with regulations, if any, made for the purpose of this paragraph) for the areas surrounding the airport; and</td>
<td>Section 11</td>
</tr>
<tr>
<td>(da) civil flight paths (in accordance with regulations, if any, made for the purpose of this paragraph) at the airport; and</td>
<td>Section 11</td>
</tr>
<tr>
<td>(e) the airport-lessee company’s plans, developed following consultations with the airlines that use the airport, local government bodies in the vicinity of the airport and the Department of Defence, for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels; and</td>
<td>Section 11</td>
</tr>
<tr>
<td>(f) the airport-lessee company’s assessment of environmental issues that might reasonably be expected to be associated with the implementation of the plan; and</td>
<td>Section 16</td>
</tr>
<tr>
<td>(g) the airport-lessee company’s plans for dealing with the environmental issues mentioned in paragraph (f) (including plans for ameliorating or preventing environmental impacts); and</td>
<td>Section 16</td>
</tr>
<tr>
<td>(h) if a draft environment strategy for the airport has been approved—the date of the approval; and</td>
<td>Section 16</td>
</tr>
<tr>
<td>(i) such other matters (if any) as are specified in the regulations.</td>
<td>See below</td>
</tr>
</tbody>
</table>

**Matters provided by regulations**

| (4) The regulations may provide that the objectives, assessments, proposals, forecasts and other matters covered by subsection (2) or (3) may relate to one or more of the following: | |
| (a) the whole of the planning period of the plan; | Section 3 |
| (b) one or more specified 5-year periods that are included in the planning period of the plan; | No such periods specified in the regulations. |
| (c) subject to any specified conditions, a specified period that is longer than the planning period of the plan. | No such periods specified in the regulations. |
(5) The regulations may provide that, in specifying a particular objective, assessment, proposal, forecast or other matter covered by subsection (2) or (3), a draft or final master plan must address such things as are specified in the regulations.

**Plan to address consistency with planning schemes**

(6) In specifying a particular objective or proposal covered by paragraph (2)(a) or (c) or (3)(a) or (c), a draft or final master plan must address the extent (if any) of consistency with planning schemes in force under a law of the State or Territory in which the airport is located.

**Company to have regard to Australian standard**

(8) In developing plans referred to in paragraph (2)(e) and (3)(e), an airport-lessee company must have regard to Australian Standard AS2021—1994 (“Acoustics—Aircraft noise intrusion—Building siting and construction”) as in force or existing at that time.

**AIRPORT REGULATIONS 1997 – REG 5.02**

**Contents of draft or final master plan**

(1) For paragraphs 71 (2) (j) and (3) (j) of the act, the following matter are specified:

(a) Any changes to the OLS or PANS-OPS surfaces for the airport concerned that is likely to result if development proceeds in accordance with the master plan

(b) For an area of an airport where a change of use of a kind described in subregulation 6.07 (2) of the Airport (Environment Protection) Regulations (see Note 1) is proposed:

(i) The contents of the report of any examination of the area carried out under regulation 6.09 of those Regulations; and

(ii) The airport-lessee company’s plans for dealing with any soil pollution referred to in the report

(2) For section 71 of the Act, an airport master plan must, in relation to the landside part of the airport, where possible, describe proposals for land use and related planning, zoning or development in an amount of detail equivalent to that required by, and using terminology (including definitions) consistent with that applying in, land use planning, zoning and development legislation in force in the State or Territory in which the airport is located.

(3) For subsection 71 (5) of the Act, a draft or final master plan must:

(a) address any obligation that has passed to the relevant airport — lessee company under subsection 22 (2) of the Act or subsection 26 (2) of the Transitional Act; and

(b) address any interest to which the relevant airport lease is subject under subsection 22 (3) of the Act, or subsection 26 (3) of the Transitional Act; and

(c) if the development proposed in the plan relates to Canberra Airport — comply with and otherwise not be inconsistent with the National Capital Plan prepared under Part III of the Australian Capital Territory (Planning and Land Management) Act 1988.

(4) In subregulation (1):

**OLS and PANS-OPS surface have the same meanings as in the Airports (Protection of Airspace) Regulations.**

**Note 1**

Subregulation 6.07 (2) – Airport Environment Protection ) Regulations

A change of use to which paragraph (1) (a) applies is a change that necessitates greater environmental protection measures because the use will result in the land being used in a way, or for a purpose, that will, or is reasonable likely to, cause greater harm:

(a) to an aspect of the environment; or

(b) to the health, safety or, in any respect, the welfare or, human beings.
SECTION 19

Acronyms
**SECTION 19**

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ABC</td>
<td>Airport Building Controller</td>
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<tr>
<td>AEO</td>
<td>Airport Environment Officer</td>
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<tr>
<td>AES</td>
<td>Airport Environment Strategy</td>
</tr>
<tr>
<td>ALC</td>
<td>Airport lessee Company</td>
</tr>
<tr>
<td>ANEC</td>
<td>Aircraft Noise Exposure Concept</td>
</tr>
<tr>
<td>ANEF</td>
<td>Australian Noise Exposure Forecast</td>
</tr>
<tr>
<td>AQIS</td>
<td>Australian Quarantine and Inspection Service</td>
</tr>
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<td>ARFFS</td>
<td>Aviation Rescue and Fire Fighting Service</td>
</tr>
<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
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<tr>
<td>CASA</td>
<td>Civil Aviation Safety Authority</td>
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<td>CASR</td>
<td>Civil Aviation Safety Regulations</td>
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<td>CAT</td>
<td>Category</td>
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<td>CBD</td>
<td>Central Business District</td>
</tr>
<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
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<tr>
<td>CTFR</td>
<td>Counter Terrorism First Response</td>
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<td>DIA</td>
<td>Darwin International Airport Pty Ltd</td>
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<tr>
<td>DITRDLG</td>
<td>Department of Infrastructure, Transport, Regional Development and Local Government</td>
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<td>DME</td>
<td>Distance Measuring Equipment</td>
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<td>Exposure Draft Master Plan</td>
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<td>Environmental Management System</td>
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<td>EO</td>
<td>Explosive Ordnance</td>
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<td>FATO</td>
<td>Final Approach and Take Off</td>
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<td>Full Service Carrier</td>
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<td>FTE</td>
<td>Full Time Equivalent</td>
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<td>General Aviation</td>
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<td>Greening Australia Northern Territory</td>
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<td>Gross Domestic Product</td>
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<td>Global Navigation Satellite System</td>
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<td>Gross State Product</td>
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<td>HIAL</td>
<td>High Intensity Approach Lighting</td>
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<td>High Voltage</td>
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<td>International Air Transport Association</td>
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<td>International Civil Aviation Organisation</td>
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<td>Instrument Landing System</td>
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<td>Land &amp; Hold Short Operations</td>
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<td>Major Development Plan</td>
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<td>Manual of Standards</td>
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<td>Master Plan</td>
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<td>MSPS</td>
<td>Main Sewerage Pumping Station</td>
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<tr>
<td>N70</td>
<td>Noise Events Louder than 70dB(A)</td>
</tr>
<tr>
<td>NFPMS</td>
<td>Noise and Flight Path Monitoring System</td>
</tr>
<tr>
<td>NDB</td>
<td>Non-Directional Beacon</td>
</tr>
<tr>
<td>NT</td>
<td>Northern Territory</td>
</tr>
<tr>
<td>NTAMS</td>
<td>Northern Territory Aerial Medical Services</td>
</tr>
<tr>
<td>NTG</td>
<td>Northern Territory Government</td>
</tr>
<tr>
<td>OCS</td>
<td>Obstruction Clearance Surfaces</td>
</tr>
<tr>
<td>OLA</td>
<td>Ordnance Loading Area</td>
</tr>
<tr>
<td>OLS</td>
<td>Obstacle Limitation Surfaces</td>
</tr>
<tr>
<td>PANS-OPS</td>
<td>Procedures for Air Navigation Services – Aircraft Operations</td>
</tr>
<tr>
<td>PAPI</td>
<td>Precision Approach Path Indicator</td>
</tr>
<tr>
<td>PCN</td>
<td>Pavement Classification Number</td>
</tr>
<tr>
<td>PDMP</td>
<td>Preliminary Draft Master Plan</td>
</tr>
<tr>
<td>PWC</td>
<td>Power and Water Corporation</td>
</tr>
<tr>
<td>RAAF</td>
<td>Royal Australian Air Force</td>
</tr>
<tr>
<td>RCCAC</td>
<td>Rapid Creek Catchment Advisory Committee</td>
</tr>
<tr>
<td>RDH</td>
<td>Royal Darwin Hospital</td>
</tr>
<tr>
<td>RPT</td>
<td>Regular Public Transport</td>
</tr>
<tr>
<td>SRA</td>
<td>Security Restricted Area</td>
</tr>
<tr>
<td>TACAN</td>
<td>TACTical Air Navigation</td>
</tr>
<tr>
<td>TSP</td>
<td>Transport Security Program</td>
</tr>
<tr>
<td>TWY</td>
<td>Taxiway</td>
</tr>
<tr>
<td>VHF</td>
<td>Very High Frequency</td>
</tr>
<tr>
<td>VOR</td>
<td>Very High Frequency Omni-directional Range</td>
</tr>
<tr>
<td>WSUD</td>
<td>Water Sensitive Urban Design</td>
</tr>
</tbody>
</table>
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**SECTION 20**

**Definition of Land Uses**

**Note:**
- **Black** denotes those Precincts and Land Uses identical to the NT Planning Scheme.
- **Red** denotes those Precincts and Land Uses that have been amended from those in the NT Planning Scheme to appropriately reflect on-site aviation and non-aviation land uses and activities.
- **Blue** denotes independent definitions for aviation Precincts and Land Uses not provided in the NT Planning Scheme.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>animal boarding</td>
<td>means premises used as a commercial enterprise for the accommodation or breeding of domestic animals.</td>
</tr>
<tr>
<td>aviation activity</td>
<td>means any activity for the arrival, departure, movement or operation of aircraft and includes aircraft aprons, helipads, heliports, runways, taxiways, areas set aside for the parking and or storage of aircraft either short or long term, and the like.</td>
</tr>
<tr>
<td>aviation support facility</td>
<td>means any aircraft maintenance facility, engine-run area, ground support equipment, transport depot and associated ground base activities necessary for the orderly and efficient operation of aviation activity.</td>
</tr>
<tr>
<td>business sign</td>
<td>means a device using words, letters or images exhibited for the purpose of advertising, announcement or display restricted to the name of the business carried on and the nature of the services or goods available, on the land on which the sign is erected, and includes, where a number of persons are carrying on different businesses on that land, a sign identifying the place.</td>
</tr>
<tr>
<td>caravan park</td>
<td>means land used for the parking of caravans or the erection or placement and use of tents or cabins for the purpose of providing accommodation.</td>
</tr>
<tr>
<td>car park</td>
<td>means the parking of motor vehicles, including buses and trucks, otherwise than as an ancillary use of land.</td>
</tr>
<tr>
<td>child care centre</td>
<td>means premises used for the caring for 17 or more children.</td>
</tr>
<tr>
<td>community centre</td>
<td>means a building or part of a building designed or adapted primarily to provide facilities for social, sporting or cultural purposes but does not include premises licensed under the Liquor Act.</td>
</tr>
<tr>
<td>education establishment</td>
<td>means an academy, college, kindergarten, lecture hall, technical college or university, but does not include a place of worship;</td>
</tr>
<tr>
<td>fuel depot</td>
<td>means a depot for the storage or sale of solid, liquid or gaseous fuel, but does not include a service station.</td>
</tr>
<tr>
<td>general aviation and support facilities</td>
<td>means any aviation and aviation related use of the land. General aviation commonly refers to that part of the aviation industry that engages in activity other than scheduled commercial airline activity. This may include charter operations, aeromedical operations, agricultural aviation businesses, aviation-based fire-fighting services, training and aerial work such as aerial photography and surveying. It also includes private, business, recreational and sports aviation activity and supporting businesses such as maintenance providers.</td>
</tr>
<tr>
<td>general industry</td>
<td>means an industry other than a light industry or a rural industry.</td>
</tr>
<tr>
<td>helipad</td>
<td>means a place not open to the public used for taking off and landing of helicopters.</td>
</tr>
</tbody>
</table>
| heliport                     | means a place not open to the public for the taking off and landing of helicopters whether or not it includes:  
(a) a terminal building;  
(b) Facilities for parking, storage or repair of helicopters.                                                                         |
| hostel                       | includes boarding houses, guest houses, lodging houses and other premises used to provide board or lodging with communal toilet, ablution, dining or cooking facilities but does not include bed and breakfast accommodation or a group home. |
| hotel                        | means premises which require a licence under the Liquor Act and where, as a principal part of the business, alcoholic beverages are ordinarily sold to the public for consumption on the premises whether or not accommodation is provided for members of the public and whether or not meals are served, but does not include a licensed club, motel or restaurant. |
industry includes the following operations:
(a) the carrying out of a process of manufacture whether or not to produce a finished article;
(b) the dismantling of an article, machinery or vehicle;
(c) the treatment of waste materials;
(d) the packaging of goods or machinery;
(e) the process of testing or analysis of an article, goods or materials;
(f) the storage of goods, equipment or vehicles not in association with any other activity on the site, but not including transport terminal, vehicle sales and hire or warehouse;
and if on the same land as any of the operations referred to in paragraphs (a) to (f) above:
(g) the storage of goods used in conjunction with or resulting from any of the above operations;
(h) the provision of amenities for persons engaged in the operations;
(i) the sale of goods resulting from the operations;
(j) any work of administration or accounting in connection with an operation; and
(k) an industry or class of industry particularly described in this Scheme;
but does not include motor body works, motor repair station or a home occupation.

leisure and recreation means the provision indoors or outdoors of recreation, leisure or sporting activities and includes cinemas, theatres, sporting facilities and the like as a commercial enterprise but does not include a licensed club or community centre.

licensed club means premises used as club rooms which require a licence under the Liquor Act.

light industry means an industry in which the process carried on, the machinery used and the goods and commodities carried to and from the premises on which the industry is sited are not of such a kind as are likely to adversely affect the amenity of the surrounding locality by reason of the emission of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit, oil or otherwise.

medical clinic means a building or place used by one or more medical practitioners, physiotherapists, dentists or persons ordinarily associated with health care, or their employees, but does not include a hospital.

motel means premises wholly or principally used for the accommodation of travellers and the vehicles used by them, whether or not the building is also used to provide meals to the travellers or to members of the general public and whether or not the premises are licensed under the Liquor Act, but does not include bed and breakfast accommodation.

motor body works means premises for repairing the body work of motor vehicles and includes body building, panel beating or spray painting of motor vehicles.

motor repair station means premises used for carrying out repairs to motor vehicles but does not include a motor body works or a transport terminal.

navigational aids means any aircraft surveillance equipment, control towers, radars, visual and non-visual navigation aids and the like.

office means a building or part of a building used for the conduct of administration whether public or otherwise, the practice of a profession, or the carrying on of mercantile, banking, insurance, legal, clerical or similar services, but does not include a home occupation.

passenger terminal means premises used as a railway or bus station, shipping passenger terminal, airline passenger terminal, hoverport or heliport.

place of worship means premises used as a church, chapel, mosque, temple, synagogue or place of religious instruction or worship or for the purpose of religious training.

plant nursery means premises principally used for the growing and/ or display of plants for sale, whether or not seeds, equipment, soil, sand, rocks, railway sleepers or other associated products are displayed or sold, but does not include the use of land for agriculture or horticulture.

promotion sign means a device using words, letters or images exhibited for the purpose of advertising, announcement or display which contains information relating to:
(a) goods, services or products not provided, produced or sold; or
(b) events or activities which are not carried on;
(c) on the land or in the building on which the sign is constructed or erected;

restaurant means premises (other than a shop, or part of a hotel or a motel) in which meals are served to the public whether or not the premises provides a drive-through service or requires a licence under the Liquor Act.

rural industry means an industry which involves the treatment, processing or packing of primary products transported to the site where the goods and commodities carried to or from the premises on which the industry is sited are not of such a kind as are likely to adversely affect the amenity of the surrounding locality.

service station means premises used for the sale by retail of fuels, oils and other products for use in connection with the operation of motor vehicles, whether or not it includes convenience shopping, but does not include a fuel depot, motor repair station or motor body works.

shop means premises used for the display and sale by retail or for hire of goods or services but does not include a restaurant, retail agricultural stall, service station, showroom sales or vehicle sales and hire.
<table>
<thead>
<tr>
<th><strong>short-stay accommodation</strong></th>
<th>means hotel and/or motel style accommodation which has been specifically designed for short stay business or tourist accommodation and which is not subject to a residential lease.</th>
</tr>
</thead>
</table>
| **showroom sales**         | means the sale or hire in premises of goods of a bulky nature including:  
                              (a) furniture, floor coverings, furnishings, household appliances or camping gear; or  
                              (b) materials, tools, equipment or machinery for use in industry, commerce, the trades, primary production, medical purposes or party hire. |
| **transport terminal**     | means premises used for the:  
                              (a) loading, discharge or storage of goods in the course of the transport of those goods by air, road, rail or ship;  
                              (b) garaging and basic maintenance of fleet vehicles; or  
                              (c) servicing, repair and garaging of buses. |
| **utilities and infrastructure** | means a road, traffic lights, stormwater drains, facilities for the reticulation of services and disposal of sewage and waste water, telecommunications facilities, electricity substations and electricity transmission facilities, including sustainable generation systems, and the like. |
| **vehicle sales and hire** | means premises used wholly or principally for the display for sale by retail or for rental of motor vehicles, caravans, trailers, farm machinery or boats but does not include motor body works, motor repair station, a shop or showroom sales. |
| **veterinary clinic**      | means premises used for the medical treatment of animals, whether or not the animals are boarded there as part of the treatment. |
| **warehouse**              | means premises used for the bulk storage of goods, or the display and sale of goods by wholesale. |
SECTION 21

Glossary and Aviation Terminology
Glossary and Aviation Terminology

**AIRCRAFT NOISE TERMS**

**Aircraft Noise Exposure Concept (ANEC)**
A set of contours based on hypothetical aircraft operations at an airport in the future. As ANEC maps are based on hypothetical assumptions and may not be subject to review or endorsement, they have no official status and cannot be used for land use planning purposes. An ANEC however, can be turned into an ANEF.

**Australian Noise Exposure Forecast (ANEF)**
A set of contours showing future forecasted levels of exposure to noise. The ANEF is the only type of noise map intended to be used to assist land use planning decisions. ANEF maps are subject to review and endorsement by Airservices Australia.

**Flight Path**
These maps provide an indication of where aircraft fly and how many over flights there are over a particular period.

**N70 Chart**
N70 Chart provides a guide to aircraft noise which is more explanatory than an ANEF. N70 refers to the number of noise events louder than 70 dB(A) over a particular period. The level of 70 dB(A) has been chosen because it is equivalent to the single event level of 60dB(A) specified in the Australian Standards AS2021 as the indoor design sound level for normal domestic areas in dwellings.

**AIRFIELD TERMS**

**Aerodrome/Airport**
A defined area of land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

**Aircraft Operator**
A person, organisation or enterprise engaged in or offering to engage in aircraft operation.

**Airport Operator**
Any owner, licensee, authority or corporation, or any other body which has legal responsibility for a particular aerodrome. (e.g. Darwin International Airport Pty Ltd).

**Airside**
The movement area of an airport, adjacent terrain and buildings or portions thereof, access to which is controlled.

**Aprons**
An apron is a defined area for the aircraft parking. An apron area enables passengers to board or disembark from an aircraft, loading of freight onto, or unloading freight from, an aircraft; and refuelling, parking or carrying out maintenance on aircraft in between flights.

**Explosive Ordnance**
Equipment carried in an aircraft designed to detonate with explosive force.

**General Aviation**
General Aviation (GA) commonly refers to that part of the aviation industry that engages in activity other than scheduled commercial airline activity. This may include charter operations, aero medical operations, agricultural aviation businesses, aviation-based fire-fighting services, training and aerial work such as aerial photography and surveying. It also includes private, business, recreational and sports aviation activity and supporting businesses such as maintenance providers.

**Joint User**
An airport under the control of a part of the Defence Force in respect of which an arrangement under Section 20 of the Civil Aviation Act is in force.

**Gate**
Physical location where passengers depart/arrive at the terminal to access aircraft either directly from contact stands or by walking from remote stands.

**Landside**
Those parts of an aerodrome not considered airside, that is, areas normally accessible to the general public.

**Manoeuvring Areas**
Those parts of an aerodrome used for the take-off, landing and taxiing of aircraft, excluding aprons.
**Movement Areas**
Those parts of an Aerodrome used for the take-off, landing taxiing and parking of aircraft (i.e. the manoeuvring area plus the aprons)

**Runways**
Defined area provided for the landing and taking off of aircraft. Darwin International Airport has 2 runways, which are identified by international convention by a two-part designator derived from the direction in which the aircraft is flying:
- Runway 11/29 is the main east-west runway
- Runway 18/36 is the secondary north-south runway.

**Runway Strips**
Defined area surrounding a runway and are provided to reduce the risk of damage to aircraft running off runways and also to provide obstacle-free airspace for aircraft flying over the area during take-off and landing operations.

**Stand / Bay**
Physical location where an aircraft parks, also referred to as an aircraft parking position.

**Taxiways**
Taxiways are defined paths providing safe and expeditious surface movement of aircraft between the runway and aprons.

**Thresholds**
Thresholds are the points on the runway for which the landing distance available to an aircraft is measured. A threshold is determined with reference to obstacle-free approach gradient required for the particular category of runway. Where there is no obstacle infringement, the threshold and runway end normally coincide. Where obstacles infringe the approach surface it is necessary to displace the threshold to achieve the required obstacle free gradient.
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In responding to comments made by submitters on the Preliminary Draft MP 2009, the approach taken was to respond to issues raised in the submissions under the relevant sections of the MP.

All validly made submissions received during the public comment period were reviewed by DIA.

For some sections of the Preliminary Draft MP there were no corresponding issues raised by submitters. In these cases, no change to the MP was required and reference to these sections does not appear in this report.
Amendments to Master Plan Resulting from 2009 Comment Period

SUBMISSION IDENTIFIERS
In characterising the author of the submission received, submitters were further identified as being representative of four major groups:

- **Community.** Consisting of individuals making submissions as residents or small business owners.
- **Government.** Consisting of submissions from the Federal Government, the Northern Territory Government and local governments such as Darwin City Council.
- **Non-Government Organisations (NGO).** Consisting of submissions lodged on behalf of an organisation, group or larger businesses.
- **Aviation Industry.** Consisting of airlines, general aviation operators, aviation related organisations and airport non-aviation businesses.

CATEGORIES
A total of 12 valid submissions were received during the public comment period.

**Community**
2 Community responses were received during the public comment period.

**Government**
6 Government responses were received during the public comment period. From the following agencies:
- Darwin City Council
- Airservices Australia
- Department of Defence
- Civil Aviation Safety Authority (CASA)
- Northern Territory Government
- Northern Territory Department of Business and Employment

**Non Government Organisations (NGO)**
1 Non Government Organisation response was received during the public comment period.

**Aviation Industry**
3 Aviation Industry responses were received during the public comment period.

SUBMISSIONS
The following outlines the issues raised in the submissions categorised by the sections contained in the Preliminary Draft MP.

**Executive Summary**
**Issue raised:**
Page 6 of the MP does not make reference to the approved MDP for the Home and Lifestyle Super Centre.

**DIA response:**
Although this is mentioned in Section 14 Commercial Development Concept, MP amended to include reference under the Executive Summary.

**Issue raised:**
Figure 1 and 2 do not include ‘Designated Military Area’ in the legend.

**DIA response:**
Figure 1 and 2 amended.

**Issue raised:**
Executive summary does not include reference to Defence (Areas Control) Regulations 1998.

**DIA response:**
Although this is mentioned in Section 10 Protection of Aircraft Operations, MP amended to include reference under the Executive Summary.

**Introduction**
**Issue raised:**
Table 1 does not specifically make reference to motor vehicle therefore may cause misinterpretation for aircraft traffic.

**DIA response:**
MP amended to further clarify.

**Issue raised:**
DIA should commence planning for the airport to be moved in order to avoid the noise, traffic and impacts on the urban environment surrounding it.
DIA response:
This issue raised is responded to in two contexts:
• projected future impacts by aircraft operations on surrounding areas; and
• the airport lease over the current airport site.

A whole of airport traffic study was conducted by consultants Sinclair Knight Merz (SKM) based on 20 year projections of both airport aviation activity and commercial development plus projected growth in general (non-airport) traffic. That study found that the existing public road system, with some enhancement of intersection capacity, is more than adequate to handle the traffic task of 20 years hence.

DIA and the Department of Defence have produced a joint 2049 (40 year) Australian Noise Exposure Forecast (ANEF) in order to have a longer term view of aircraft noise effects on the population of Darwin (the minimum requirement is a 20 year forecast). An ANEF is the only noise metric which is used in Australian Planning Schemes to regulate the type of land use in areas affected by aircraft noise (refer to Table 18 from the Master Plan below).

As indicated by the above table, residential use is acceptable outside the 20 ANEF contour and conditionally acceptable (i.e. sound attenuation measures should be employed) between the 20 and 25 ANEF contours.

As aircraft noise and road traffic issues are not going to reach southern capital proportions and a lease over the current airport site will be in place until 2097, it would appear unlikely there would be moves to shift the Airport site for some considerable time.

MP amended to reflect that Darwin Airport /RAAF Base will remain in its current location as the sole major airport for Darwin for at least the remaining term of the lease that DIA has with the Commonwealth.

**Social, Economic and Regional Significance**

**Issue raised:**
Economic contribution figures presented do not explain that they relate to civilian use of the airport only.

**DIA response:**
MP amended to reflect that the data provided is specific to civilian use of the airport.

**Aviation Activity Forecasts**

**Issue raised:**
No growth forecast.

**DIA response:**
Presumably this comment applies to GA. The following is an excerpt from p40 of the Master Plan.

‘General Aviation forecasts are generated using an assumption that the underlying growth represents half the growth rate in NT GSP per capita. For the period from 2010/11 to 2014/15 it has been assumed that the growth in mining and other major projects will add an average 4.25% per year (20% overall) to growth.

Refer to Figure 8: Forecast Aircraft Movements below.’
Airport Land Use

Issue raised:
MP is currently not clear that all developments must be consistent with AS2021-2000.

DIA response:
MP amended to include ‘Developments in any land use zone will have regard to AS2021-2000’.

Issue raised:
Permitted land uses within Conservation Zone include place of worship, utilities and infrastructure.

DIA response:
MP amended to remove Place of worship as an intended land use for the Conservation Zone. Utilities and infrastructure need to remain as intended land uses within this zone as this replicates the NT Planning Scheme mechanism of utilities and infrastructure being exempted from nominated land uses in each zone.

Issue raised:
Zoning and intended land uses not consistent with NT Planning Scheme, main discrepancy is development objectives under the ‘Development Should’ heading.

DIA response:
The Airports Act 1996 requires the Master Plan to specify DIA’s intentions for the land use and related development of the leased area of the airport site where uses and developments embrace airside, landside, surface access and land planning/ zoning aspects. The Land Use Zones and Land Use Zone Plan, shown in Figure 3 of the Master Plan have been developed observing this.

Part 5.02(2) of the Airport Regulations 1997 states: ‘an airport master plan, must, in relation to the landside part of the airport, where possible, describe proposals for land use and related planning, zoning or development in an amount of detail equivalent to that required by, and using terminology (including definitions) consistent with that applying in, land use planning zoning and development legislation in force in the State or Territory in which the airport is located.’

In this regard the Land Use Zones and the Land Use Zone Plan have been developed in an amount of detail and using terminology and definitions consistent with that of the Northern Territory Planning Scheme, except where it is inconsistent with the operation of an airport or expansion of land uses in one or more zones is needed to reflect the specific circumstances of DIA.

The development objectives under each “Development Should” heading are consistent with the Zone Purposes in the NT Planning Scheme with additions to personalise the development objectives to an airport planning environment. The Commercial Zones in the DIA Master Plan and NT Planning Scheme are compared below to illustrate this.

### TABLE 9: COMMERCIAL ZONE

<table>
<thead>
<tr>
<th>DEVELOPMENT SHOULD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage a range of activities which would benefit from a location in close proximity to the airport and its terminal area.</td>
</tr>
<tr>
<td>Not prejudice the safety or efficiency of the airport.</td>
</tr>
<tr>
<td>Respect the amenity of the adjacent and nearby uses.</td>
</tr>
<tr>
<td>Promote community safety in building design, having regard to adjacent and nearby uses.</td>
</tr>
<tr>
<td>Provide for buffer zones to accommodate existing and future infrastructure, pedestrian and cycle links, signs, lighting and landscaping.</td>
</tr>
<tr>
<td>Ensure that adequate car parking is provided.</td>
</tr>
</tbody>
</table>

DIA MASTER PLAN NT PLANNING SCHEME

ZONE C – COMMERCIAL

1. The primary purpose of Zone C is to provide for a range of business and community uses.
2. The zone applies to shopping areas ranging from neighbourhood convenience shopping to regional centres.
3. Development should:
   (a) be of a scale and character appropriate to the service function of a particular centre;
   (b) respect the amenity of adjacent and nearby uses; and
   (c) promote community safety in building design, having regard to adjacent and nearby uses.

As can be clearly seen, the development objectives reflect the NT Planning Scheme with additions to personalise the development objectives to an airport planning environment. Therefore no amendment to the MP required.

Issue raised:
Public Safety Zones considered but not in terms of prescribed safety zones under current CASA considerations.

DIA response:
DIA has undertaken a study (Demeyne Aviation) on public safety zones in the absence of any Australian standard. This study provided the basis of the statement that ‘The proposed on-airport land uses contained within this Master plan are considered to be appropriate’. DIA will implement any public safety zone national standards that are introduced.

Issues raised:
Insufficient or misplaced conservation areas, especially in the service commercial areas.
DIA response:
The Wildlife Corridor and Rapid Creek Environment Reserve are linked by the Darwin City Council (DCC) owned Rapid Creek conservation area located to the east of Charles Eaton Drive. At the point of DIA-DCC conservation areas linking Charles Eaton Drive is a Northern Territory Government road.

DIA is also a member of and works closely with the Rapid Creek Catchment Advisory Committee (RCCAC) which comprises the 4 Rapid Creek abutting land holders (DCC, NT Government, Department of Defence and DIA) plus interested agencies and organisations.

DIA has a total of 30 hectares reserved for conservation purposes which is around 10% of the total airport lease area and a little larger than George Brown Botanical Gardens in Darwin.

There is also a 20 metre native plant landscaped corridor which commenced with the Bunnings development on Bagot Rd. It will be progressively extended along McMillans Rd in tandem with commercial development. In fact, the landscape corridor for the planned Home and Lifestyle Super Centre site was planted in January 2009, well ahead of any site development.

Table 10: Service Commercial Zone amended to highlight that developments should recognise the requirement for a 20 metre wide nature landscaping corridor abutting Bagot and McMillans Roads and extending from Osgood Drive to Charles Eaton Drive.

Issues raised:
Safeguards should be imposed against the use of Aviation Reservation land slipping into ‘permanent’ non-aviation uses.

DIA response:
This is difficult to do in a Master Plan as a Master Plan is not a contractual type document. However, the clear intention is to ensure that Aviation Reservation land is reserved for aviation use in the longer term. One step in the “safeguards” direction is to re-zone the Aviation Reservation land abutting the Tourist Commercial Zone to Terminal and Facilities which is an aviation land use and any future reduction in aviation related land use zoning would require the approval of the Federal Minister after stakeholder consultation has been considered in future Airport Master Plans.

MP amended to change the zoning of the Aviation Reservation land abutting the Terminal and Facilities Zone to Terminal and Facilities Figure 3 Airport Land Use Zone Plan page 12.

Airfield Development Concept
Issue raised:
Page 53 dot point 2 does not address Department of Defence requirement that any future expansion of a parallel taxiway should consider potential impacts to navigational aids and explosive ordnance safeguarding lines.

DIA response:
This consideration is covered on page 52. The Defence reference on page 53 merely repeats the key recommendations of the Master Plan. Therefore no change to the MP is needed.

Issue raised:
Master Plan should be based on priorities for the aviation industry and in particular the incumbent and prospective airside operators.

DIA response:
The Master Plan is a land use and broad scale development document. Hence particular projects are not outlined in detail in the document. Projects are considered in the context of both the forward looking budget and the airport technical assessment processes.

Protection of Aircraft Operations
Issue raised:
Section 10 refers to the separate obstacle limitation surfaces for civil and military aviation. Some areas of urban land in the vicinity of the airport are beneath both control surfaces which are different in shape, definition and datum. The rationalisation of these surfaces to one datum and to one airspace control plan that the NT Planning Scheme could reference would provide greater clarity.

DIA response:
Although a joint civil and military OLS is not a MP issue, DIA will approach Department of Defence and propose that, in accordance with clause 10.2(c) of the Joint User Deed, a common document which can be referenced in the NT Planning Scheme be developed.

Issue raised:
MP does not include permissible maximum lighting intensities or make reference that plan is available.

DIA response:
Reference to the fact that documentation will be made available is already included in the MP page 57.

Issue raised:
MP does not go into detail of the application of the Bird and Animal Hazard Management System in early planning concepts.

DIA response:
Reference to Bird Hazard Management considerations are taken into account when planning potential airside or landside developments is contained in page 57.

Issue raised:
Any developments forecasted should take into account critical zones / siting criteria around navigational aids.
DIA response:
Reference to navigation aids and radar restricted surfaces is included on page 57.

Aircraft Noise Management

Issue raised:
MP does not provide guidance on how the public can obtain information regarding high tempo military operations.

DIA response:
MP amended to give guidance on where to find additional information.

Issue raised:
Provision of information to the public on aircraft noise, including the addition of N70 is encouraged.

DIA response:
Combined N70 and flight paths provided in the MP for the first time. Department of Defence has indicated it will install an Integrated Noise and Flight Path Management System (NFPMS). This initiative is supported by DIA.

Terminal Development Concept

Issue raised:
Current proposal for terminal expansion (not shown in the development concept) is not in accordance with the master plan.

DIA response:
The proposed terminal expansion the subject of a recent Major Development Plan, does fit within the terminal expansion envelope featured in the Terminal Development Concept section of the Draft Master Plan.

Commercial Development Concept

Issue raised:
Lack of detail in MP, especially commercial development concept.

DIA response:
Section 14 of the Master Plan (Commercial Development Concept) contains existing facilities, proposals which have obtained development consent under the Airports Act and development concepts extending to 2029. It is technically difficult, and most probably misleading, to attempt to include further detail in what is essentially a land use and broad scale development document.

Issue raised:
No reference is made to AXIS12°130° in the MP.

DIA response:
The AXIS12°130° project is a marketing concept/campaign and is based on the land use in the 2004 approved Master Plan. It hence it has not been included in the 2009 Draft Master Plan. Further amended to add reference to the marketing campaign after the launch in March 2010.

Issue raised:
Developments on airport land have a distinct market advantage as they are not liable for infrastructure cost contributions normally imposed by local and State or Territory governments.

DIA response:
Although not a MP issue, DIA has addressed the comment below.

Power and Water Corporation supplies electricity and water to the DIA boundary and DIA distributes power and water to 63 internal customers. Similarly, DIA provides sewage and waste water infrastructure and delivers sewage/waste water to the Power and Water Corporation system at the DIA boundary. Hence DIA is the local electricity and water distribution authority.

This means that internal utility distribution infrastructure within the DIA boundary is funded by DIA. A developer contributions equivalent cost is hence added to DIA's cost base. It is then up to DIA to recover this from the 63 internal customers.

It is hence true that DIA aeronautical or commercial developments are not subject to utility infrastructure developer contributions. However, the infrastructure extension costs which are the basis of developer contributions are fully met by DIA developments. Hence, developments on DIA land have no market advantage in terms of utility infrastructure cost contributions.

Indeed, as the owner of key power, water and sewer infrastructure, we are prevented by the Northern Territory regulatory regime from recovering a separate return for our internal distribution facilities.

In terms of access to the external road network, DIA has fully met all costs of changes to road access arrangements. These costs have included improving intersection capacity of existing intersection traffic movements that do not impact on DIA access.

In addition, in conjunction with the Bunnings development, DIA funded the relocation and upgrading of both the nearest outbound and inbound Route 10 bus stops.

Reflecting DIA’s area stormwater infrastructure responsibilities, a significant infrastructure upgrade also associated with the Bunnings development was the construction of a major stormwater retardation basin.

Further stormwater infrastructure will be required for future aeronautical and commercial development and will be funded by DIA.
In summary, DIA aeronautical or commercial developments do not enjoy any market advantage through reduced infrastructure contribution costs. In fact, since DIA has local government type responsibilities for utility, road and stormwater infrastructure, the reverse is probably true.

**Issue raised:**
It is unclear if the demand study relates solely to the airport or retail development throughout the greater Darwin region, as page 83 states that the Master Plan’s traffic impact assessment is based on 153,000m² of commercial development at the airport. The demand study is not listed in the References.

**DIA response:**
The 153,000 sqm of commercial development over 20 years relates to Darwin Airport only. This will be clarified in the Draft Master Plan. It is emphasised that commercial development includes retail, hotel, light industrial and office development. The 20 year commercial development potential study by Urbis will be included in the references.

**Ground Transport Plan Concept**

**Issue raised:**
Increased vehicle traffic (particularly heavy vehicles) due to future commercial developments should not negatively impact on passengers travelling to and from the terminal.

**DIA response:**
The Airport road system is designed so that aviation and non aviation light vehicles and heavy vehicle traffic are largely separated and for two of the four daily airline peaks there is little probability of conflict in any case.

**Issue raised:**
No reference to pedestrian and cycleway corridors

**DIA response:**
MP amended to state that bike paths will be considered in conjunction with the NT Government where practical.

**Issue raised:**
No provision has been made for a future public transport corridor and lack of consistent road access.

**DIA response:**
The provision of mass transit public transport corridors and services is a matter for the Northern Territory Government. DIA has raised the issue of availability of public bus services to the Airport with the Department of Planning and Infrastructure.

**Environmental Management**

**Issue raised:**
Ensure that on airport developments do not negatively impact off airport capacity to handle stormwater.

**DIA response:**
DIA already designs to minimise off-airport stormwater impacts from on-airport developments. Water Sensitive Urban Design principles are employed in designing for airport developments. An example is the Bunnings development.

Within the 20 metre landscaped buffer is a PAWC electricity easement which must be kept trafficable. Hence there is capacity within that easement to construct a full width bike path on DIA land. However, there is also ability for the Northern Territory Government to construct a bike path in its road reserve along McMillans Road.

MP amended to state that bike paths will be considered in conjunction with the NT Government where practical.
airfield what was previously uncontrolled. This retention basin directed area water at a measured rate to two pipes across Bagot Road instead of the previous one pipe. The retention basin successfully handled the largest storm event in some years in early 2008. An additional benefit of the new retention basin has been to significantly reduce the incidence of flooding both across Bagot Road and in Coconut Grove.

WSUD principles are apart of DIA’s commitment to a sustainable airport and a statement on sustainability has been added on page 95 of the MP.

Issue raised:
Ensure that DIA incorporates the principles of Water Sensitive Urban Design (WSUD) into all airport developments.

DIA response:
DPI outlines the principles of Water Sensitive Urban Design (WSUD) as:
• Protect existing natural features and ecological processes;
• Maintain natural hydrologic behaviour of catchments
• Protect water quality of surface and ground waters
• Minimise demand of the reticulated water supply system
• Minimise wastewater discharges to the natural environment; and
• Integrate water into the landscape to enhance visual, social, cultural and ecological values.

DIA already applies the principles of WSUD through the implementation of the Airport Environment Strategy, in particular the policies centred around the following environment attributes:
• Section 5: Water (ground and surface) management
• Section 6: Land
• Section 7: Biodiversity
• Section 12: Resource Use
• Section 14: Development

The Airport Environment Strategy can be referred to for further details.

WSUD principles are apart of DIA’s commitment to a sustainable airport and a statement on sustainability has been included on page 95.

Issue raised:
NT Department of Planning and Infrastructure encourages DIA to investigate whether recycled water or captured stormwater could be used for irrigation and fire fighting purposes.

DIA response:
DIA is committed to reducing water use on the Airport. The Airport Environment Strategy addresses this issue in Section 12 Resource Use.

Issue raised:
Ensure mosquito management practices conform with World Health Organisation International Health Regulations for an International Airport.

DIA response:
In accordance with the World Health Organisation International Health Regulations Article 19, DIA in conjunction with the Australian Quarantine and Inspection Service (AQIS) maintains the airport free from the mosquito Aedes aegypti and all other mosquitoes capable of hosting human diseases, in both their immature and adult forms. For this purpose, active anti-mosquito measures must be maintained within a protective area extending for a distance of at least 400 metres around the perimeter of the international airport terminal and international aircraft parking areas. Outside of the 400m zone Department of Health and Families – Medical Entomology (DHFME) conduct surveillance and implement control measures.

DIA is part of a Memorandum of Understanding (MOU) for Mosquito Vector Management in Darwin, NT. This MOU is also between the following parties:
• Darwin International Airport (DIA)
• Australian Quarantine and Inspection Service (AQIS) – Darwin
• NT Department of Health and Families – Medical Entomology (DHFME)
• Darwin City Council
• Darwin Port Corporation
• Royal Australian Air Force (RAAF) – Darwin

The MOU is a binding in honour only agreement, however it was developed to meet the following objectives:

To achieve effective detection, management/control of import/export of medically important mosquito vectors at first ports of call through:
• Effective monitoring processes
• Rapid communication of incidents
• Effective control to prevent survival of significant vectors
• Health education of principal stakeholders and their personnel regarding mosquito prevention and control

To enhance and formalise the good communication, cooperation and arrangements that currently exists between the Principal Stakeholders.

To comply with all relevant legislation including:
• Quarantine Act 1908
• World Health Organisation Regulations
• Public Health (General Sanitation, Mosquito Prevention, Rat Exclusion & Prevention) Regulations, under the Northern Territory Public Health Act 1998.
DIA, as part of the MOU, is charged with the following responsibility of mosquito management at the Airport:

- Facilitate access to necessary DIA sites for AQIS and DHFME to conduct mosquito surveillance and control
- Communicate health, safety and environmental issues relevant to mosquito vector management to all Principal Stakeholders
- Liaise with other Principal Stakeholders regarding the control of mosquito vectors of import/export significance including measures to exclude mosquito breeding sites on DIA land

The Mosquito vector Control Zone for DIA is depicted below.

**Activities within the Last Reporting Period (July 2008-June 2009)**

AQIS and DHFME undertook weekly surveillance around the terminal and in drains behind the Airport Resort. Monitoring in the form of carbon dioxide trap (light traps) and ovitraps (tyres) are conducted by DHFME and AQIS.

DIA receive the DHFME results weekly.

If found, mosquito breeding areas are sampled and analysed; the site is then treated immediately. Follow up action is taken when necessary. In the reporting period the drain behind the airport resort was cleared and remains on a maintenance schedule.

The Murphy Road/Charles Eaton Drive drain is regularly monitored by DIA and sampled and analysed periodically by DHFME.
**SUMMARY OF MP AMENDMENTS**

After review of the submissions received amendments were made to the Preliminary Draft MP to reflect omissions or additions. Minor changes were made to the document as highlighted in the table below.

Note that additions or omissions are shown in red coloured text in the Draft MP to assist the reader in identifying changes.

<table>
<thead>
<tr>
<th>ADDITION / OMISSION</th>
<th>DETAILS OF AMENDMENTS</th>
<th>LOCATION IN DRAFT MP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addition</td>
<td>Include Approval of major Development Plan for Home and Lifestyle Centre in 2009 as a development that has occurred.</td>
<td>Page 6</td>
</tr>
<tr>
<td>Addition</td>
<td>Reference to contribution of economic activity data is for civil use of the airport only.</td>
<td>Page 7, 33 and 34</td>
</tr>
<tr>
<td>Addition</td>
<td>Include reference that Department of Defence also have statutory requirements in relation to protection of airspace in the Executive Summary.</td>
<td>Page 8</td>
</tr>
<tr>
<td>Addition</td>
<td>Include information on where the public can obtain further information on High Tempo Military operations.</td>
<td>Page 8 and 63</td>
</tr>
<tr>
<td>Amendment</td>
<td>Include ‘Designated Military Area’ in the legend for the Current Darwin International Airport Layout (2009) diagram.</td>
<td>Page 10</td>
</tr>
<tr>
<td>Amendment</td>
<td>Include ‘Designated Military Area’ in the legend for the Darwin International Airport Development Concept diagram.</td>
<td>Page 11</td>
</tr>
<tr>
<td>Amendment</td>
<td>Change zoning of the Aviation Reserve land abutting the Terminal and Facilities zone and the Tourist Commercial Zone to Terminal and Facilities.</td>
<td>Page 12</td>
</tr>
<tr>
<td>Addition</td>
<td>Include details that the airport will remain in its current location.</td>
<td>Page 14</td>
</tr>
<tr>
<td>Addition</td>
<td>Clarify General Aviation forecast beyond 2015.</td>
<td>Page 40</td>
</tr>
<tr>
<td>Addition</td>
<td>Further clarify DIA's commitment to aviation development.</td>
<td>Page 42</td>
</tr>
<tr>
<td>Addition</td>
<td>Link Airport Land use with Section 20 – Intended Land Uses.</td>
<td>Page 42</td>
</tr>
<tr>
<td>Addition</td>
<td>Include reference that all developments must comply with Australian Standard relevant to Acoustics – Aircraft noise intrusion – building siting and construction.</td>
<td>Page 43</td>
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<tr>
<td>Addition</td>
<td>Include that developments within the Service Commercial Zone should recognise the 20 metre native landscaping corridor.</td>
<td>Page 45</td>
</tr>
<tr>
<td>Omission</td>
<td>Remove Place of worship as an intended land use for the Conservation Zone.</td>
<td>Page 46</td>
</tr>
<tr>
<td>Addition</td>
<td>Reference to NT Planning Scheme restricted development in relation to public safety zones.</td>
<td>Page 46</td>
</tr>
<tr>
<td>Addition</td>
<td>Include statement that Department of Defence undertake regular assessments to reduce the possibility of structures infringing on flight tracks.</td>
<td>Page 56</td>
</tr>
<tr>
<td>Omission</td>
<td>Remove note that Figure 13 is not endorsed.</td>
<td>Page 63</td>
</tr>
<tr>
<td>Addition</td>
<td>Include statement that DIA is responsible for internal electricity, water, sewage and stormwater infrastructure.</td>
<td>Page 84</td>
</tr>
<tr>
<td>Addition</td>
<td>Clarify that demand study is related to Airport developments.</td>
<td>Page 91</td>
</tr>
<tr>
<td>Addition</td>
<td>Include reference to 20m wide native landscape corridor in the Commercial Development Concept.</td>
<td>Page 91</td>
</tr>
<tr>
<td>Addition</td>
<td>Include reference to bike paths to be considered in conjunction with the NT Government.</td>
<td>Page 95</td>
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<tr>
<td>Addition</td>
<td>Clarify that the external and internal road systems adequate for the planning period.</td>
<td>Page 95</td>
</tr>
<tr>
<td>Addition</td>
<td>Amend Environment Management Section to ensure in line with changes to the Airport Environment Strategy as a consequence of the AES comments received during the public comment period.</td>
<td>Page 102</td>
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<tr>
<td>Addition</td>
<td>Include section on commitment to sustainability.</td>
<td>Page 102</td>
</tr>
<tr>
<td>Addition</td>
<td>Include detail on Water Sensitive Urban Design (WSUD) and implementation.</td>
<td>Page 102 and 103</td>
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</tbody>
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