



## 8. *Passenger Terminal Zone*

This section considers the passenger terminal and the associated areas for parking aircraft and vehicles. The need for expansion is recognised to ensure that present and future passengers are provided with a high-standard, safe and secure passage through the airport.

The consultants Woodhead International and Rehbein AOS Airport Consulting provided design assistance for the passenger terminal and aircraft apron respectively.

### ***Terminal Building***

#### **Current Terminal Operation and Layout**

The existing Darwin International Airport passenger terminal caters for international, domestic and regional passengers within the one building. It is a two-storey building with a ground floor area of approximately 8,500 square metres and first storey of approximately 4,800 square metres. Check-in, baggage reclaim, customs baggage inspection and security screening facilities are on the ground floor together with some small scale concessionaires, including duty free, newsagent bar, eatery and car rental. Domestic and international departures lounge, main concessionaires and the Qantas Club are on the first floor. Customs Immigration and Quarantine processing areas and offices are on the first floor in the international zone. Aerobridges, leading from the first floor, serve Bays 2, 3 and 4 which can handle aircraft up to B747/B767 in size.

#### **Future Demand**

The annual number of passengers using the airport is not a good measure of the pressures that passenger throughput places on a terminal. For this, the busy-hour rate is required to indicate the actual pressure passenger demand places on a terminal.

# 8. Passenger Terminal Zone



Forecasts of inbound and outbound passenger busy-hour rates have been prepared for international and domestic passengers.

### Future Proposals

In the medium term, there is a need to expand the terminal to allow greater areas for passenger circulation and facilities. An early review indicates that the existing building can be expanded to cater for growth within the planning period.

see **Diagram 8.1** Ground Staging Plan

see **Diagram 8.2** First Staging Plan

### Airside Area

#### Aerodrome Planning

Planning for the aerodrome movement areas will be based on the following provisions:

- The terminal apron and taxiway access to it will accept aircraft up to Code E with the provision of two auxiliary parking bays for this sized aircraft
- The remaining terminal apron and taxiway access will accept a variety of aircraft up to Code D in size
- The commuter apron and taxiway access will accept aircraft up to Code B in size
- The General Aviation apron and taxiway access will accept Code A aircraft

#### Terminal Apron – Current Operations

The existing terminal apron has provision for ten aircraft of varying sizes to be parked at any one time. Busy hour demand is such that Darwin International Airport has introduced formal schedule controls by Airport Coordination Australia.

### Terminal Apron – Future Operations

Precise forecasts of aircraft parking requirements are difficult to develop on a year by year basis, with demand at any particular time being influenced by seasonal and airline marketing needs.

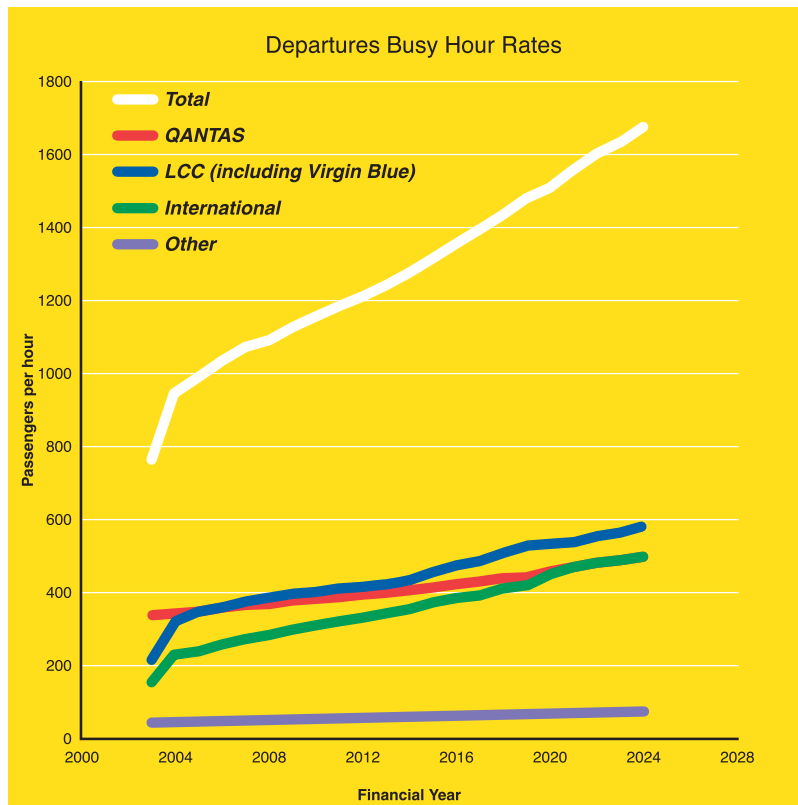
An estimate of long-term international parking needs is given below.

	B747		B737		BAe 146		Long Stay	Total Coincidental	Long Stay
2003	–	1	1	3	1	4	1		
2024	2	–	4	5	1	9	1		

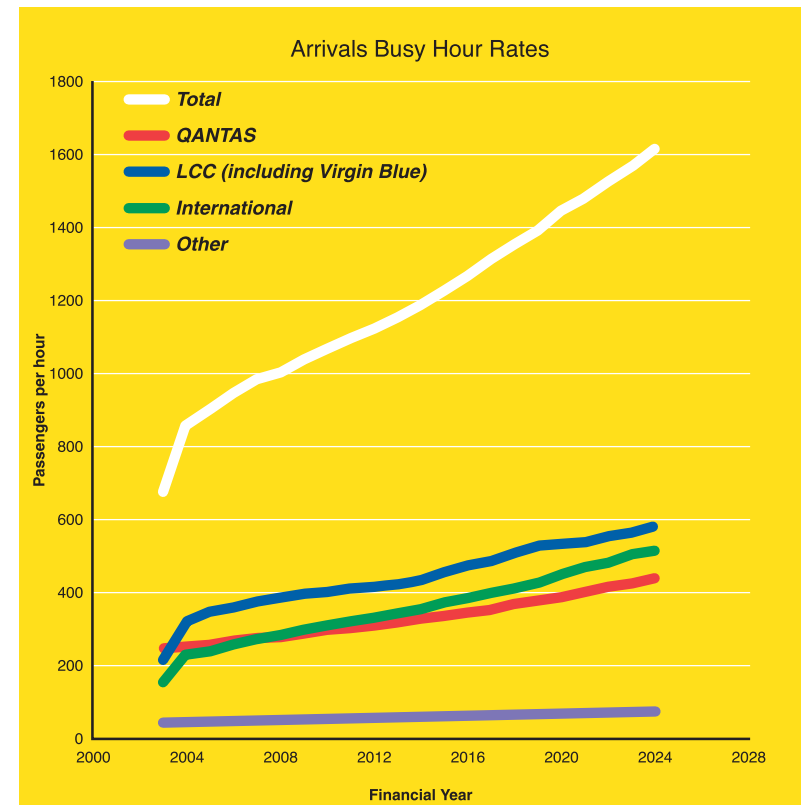
**Table International Stand Demand**

Current international stand-demand reflects the large number of relatively short-haul operations to Dili. Whilst these will remain, other long-haul services will be introduced requiring greater provision of larger parking bays. Both now and in the future, at least one international long-stay parking bay will be required for aircraft remaining on the ground for over 24 hours.

The parking of domestic aircraft will increasingly be dominated by the requirements of Boeing B737-800 and Airbus A320 aircraft. A more dominant issue may be the need to assign bays to particular airlines. Whilst such assignments cannot be guaranteed in all operations, it is useful to attempt to assign parking demand to particular airlines. Reflecting the continuously changing nature of airline operations, such specific demand cannot be forecast longer than the mid-term future. Qantas and Virgin Blue are identified, as is another which may be JetStar.



**Graph 8.1**



**Graph 8.2**

	Qantas Group	Virgin Blue	Other	Long Stay	Total Coincidental	Long Stay
2003	3	2	3	3	5	9
2009	4	5	4	3	8	9
2024	N/A	N/A	N/A	N/A	11	11

**Table Domestic Stand Demand**

The changing international situation regarding Dili and East Timor has seen very recent falling demand for this route. BAA plc has re-examined overall aircraft parking needs and reviewed the required provision for total parking needs (combining international and domestic demand).

## 8. Passenger Terminal Zone

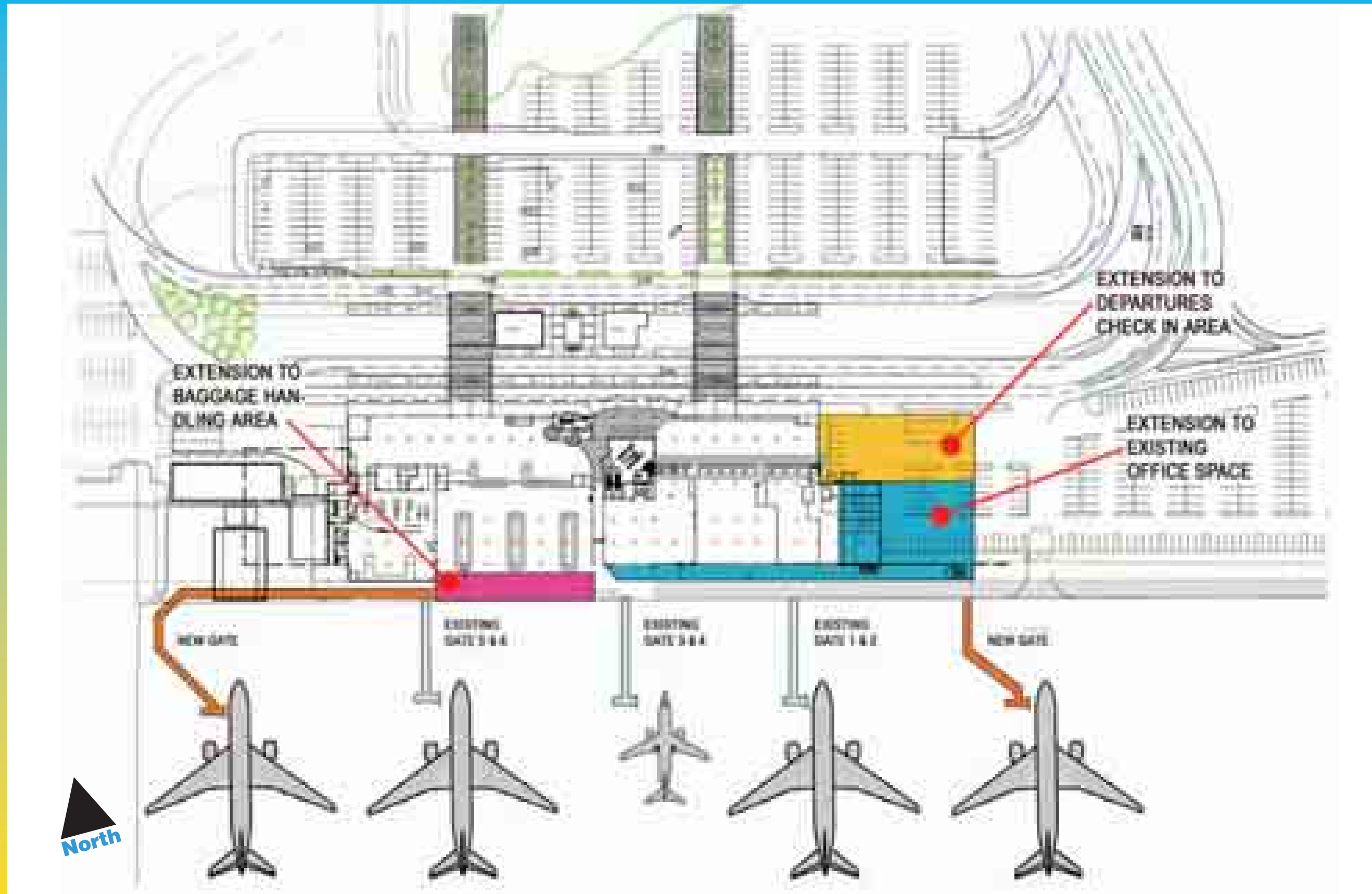


Diagram 8.1 Ground Staging Plan

# 8. Passenger Terminal Zone

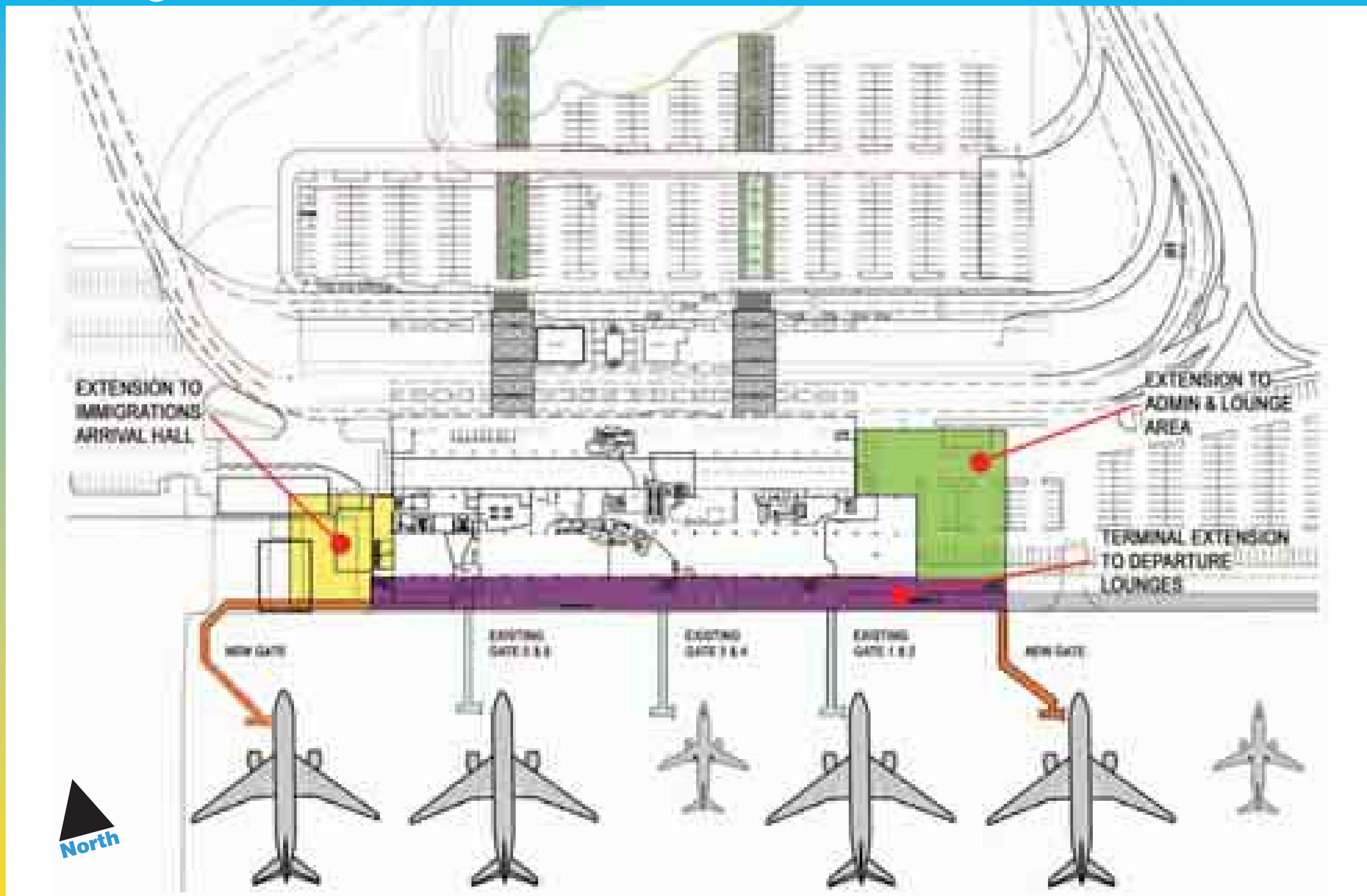


Diagram 8.2 First Staging Plan

# 8. Passenger Terminal Zone



	2004	2007	2010	2015	2020
B767	1	1	1	2	2
B737	5	6	7	7	8
BAe 146	2	3	3	4	4
Smaller	5	4	4	3	3
<b>Total</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>

**Table: Operational and Long Term Layover Peak Parking (International and Domestic combined)**

The total number of parking bays required over the planning period is estimated to rise from the current need for 13 operational bays to in excess of 17. Currently 10 bays are provided but certain of the larger bays can be used to park additional smaller aircraft and aircraft are towed off to tenants' areas to free up parking space.

see **Diagram 8.3** Aircraft Parking Option 1

see **Diagram 8.4** Aircraft Parking Option 2

A combination of both concepts may also be constructed. The diagrams indicate that future expansion can continue eastwards if necessary. Additional aircraft parking bays will be constructed incrementally in accordance with the airlines' agreements on the levels of parking provision required.

## Landside Area

### Short-Term Car Parking

Short term car parking is provided on the landside front of the terminal with a total of 550 public parking spaces, including disabled spaces provided. There are also 110 spaces leased to the car rental companies in the parking zone.

### Darwin Airport Staff Parking

A total of 48 authorised parking spaces are provided for staff around the airport. Specific provision is made on the terminal forecourt and close to the management centre for Northern Territory Airports PL management.

### Tenants Staff Parking

a total of 190 parking positions are provided for airport tenants' staff through the airport.

### Future Short-Term Car Parking

Estimates of increased parking demand related to passenger throughput for particular financial years are shown in the following table.

	2004	2009	2014	2018	2024
Annual Passengers	1,035,000	1,365,000	1,375,000	2,005,000	2,370,000
Public Parking	550	645	738	826	900
Authorised Parking	48	52	56	58	59
Permit Parking	16	18	21	24	26
Staff Parking	190	204	239	265	279
Rental Car Parking	110	127	147	165	180
<b>Total</b>	<b>914</b>	<b>1,047</b>	<b>1,202</b>	<b>1,337</b>	<b>1,444</b>

Note: Annual passengers comprise International Origin and Destination, International Domestic-on-carriage and all Domestic Passengers.

See **Diagram 11.5** Terminal Roads

The Table indicates that demand for car parking will increase from 914 to 1,444 spaces. There is sufficient room for more than the predicted increase of 50% of parking within the overall Terminal Road system envelope. Additional spaces will be constructed incrementally according to demand.

# 8. Passenger Terminal Zone

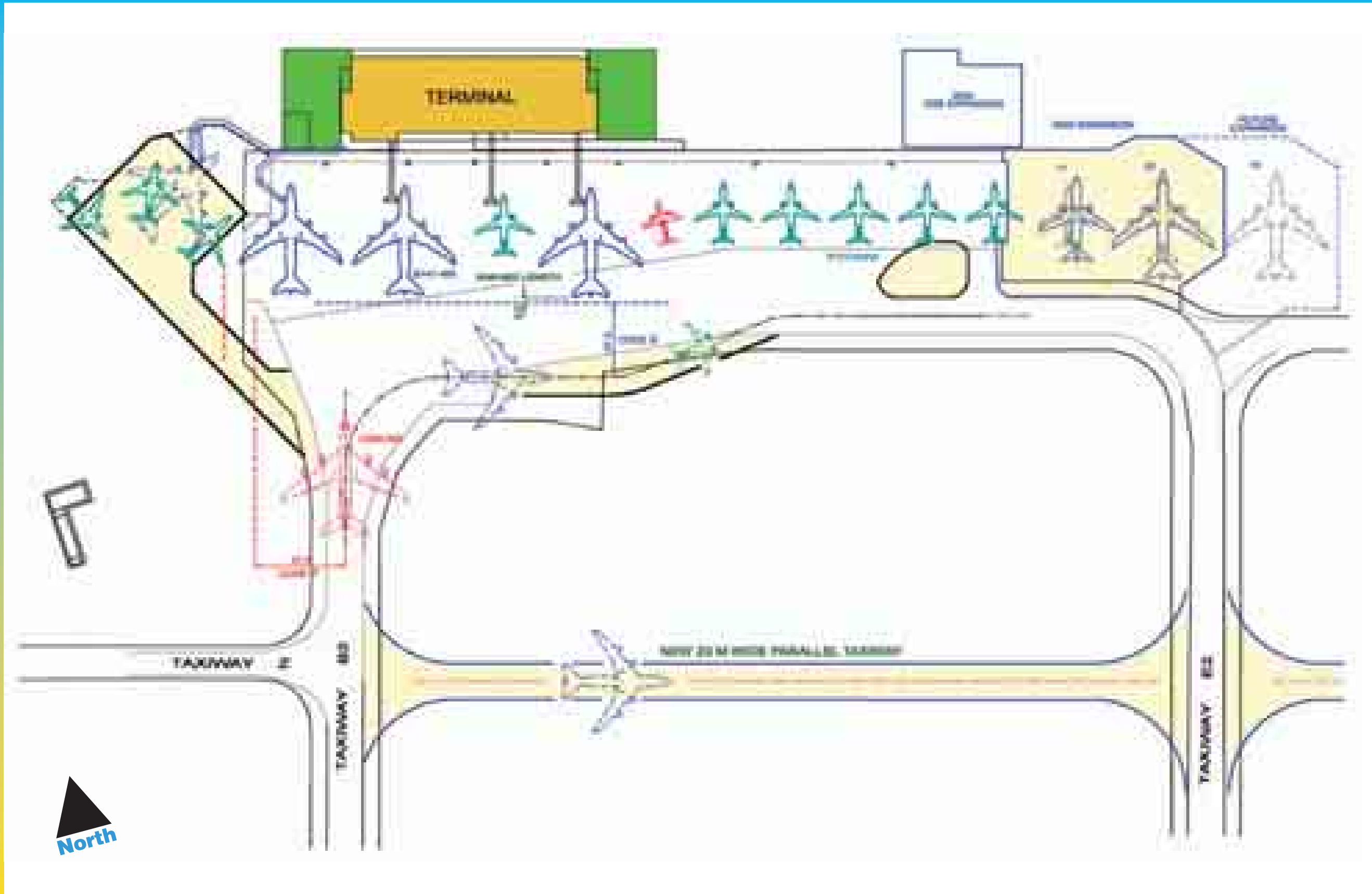


Diagram 8.3 Aircraft Parking Option 1

# 8. Passenger Terminal Zone

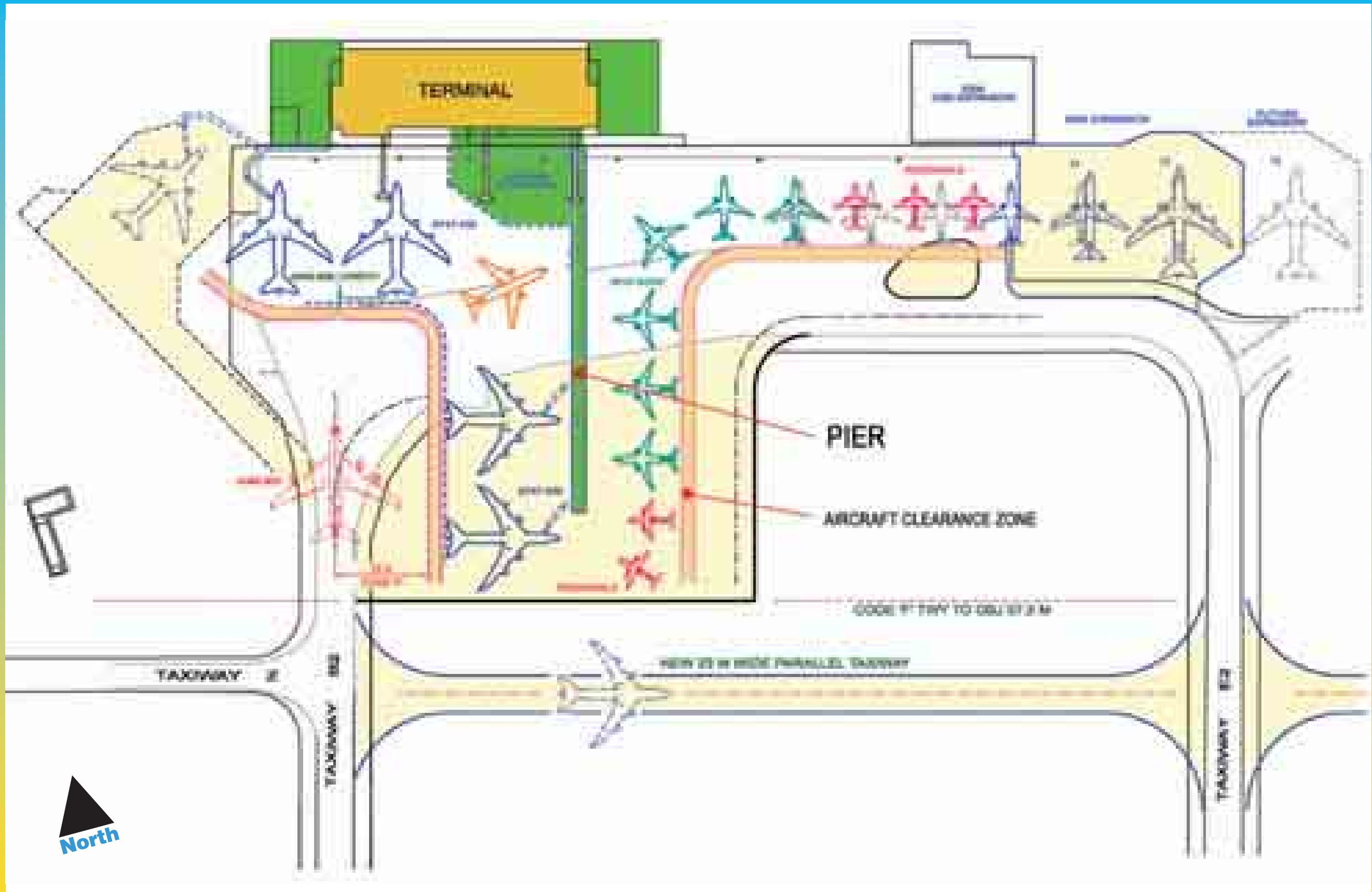


Diagram 8.4 Aircraft Parking Option 2



# 9. Support Facilities

Darwin International Airport is the gateway to the Northern Territory for a wide range of visitors and airport users. It is the sole provider of many essential facilities, which reflect the need to serve aircraft of all sizes.

## **Commuter and General Aviation Zone**

### **Current Operations**

There are two separate aprons adjacent to each other for light general aviation aircraft. These are accessed by taxiways Y1 and V1.

The northern apron provides for approximately 80 aircraft. Additionally licensed zones in front of leased hangar sites provide further aircraft parking for those tenants. Aircraft parked here are restricted to 15 metre wingspan. Tenants include aircraft maintenance operators, charter and RPT operations and aircraft refuelling.

The southern apron provides for approximately 20 Code B aircraft. Subject to a pavement concession, Code C aircraft, e.g. BAe 146 or Fokker 28, could also use this apron. Tenants include charter and freight operators and aircraft maintenance providers.

### **Future Operations**

Expansion land for additional general aviation parking is available near the existing area. However, construction costs would be high due to the need for extensive fill to achieve acceptable gradients. The priority of any expansion



# 9. Support Facilities



would have to be balanced against the need for terminal expansion which may require this area.

## Freight Facilities

### Current Operations

A dedicated freight apron and support hangar zone is located to the east of the passenger terminal. Operators here include:

- Australian Air Express
- Patrick/Toll

Additionally, freight on passenger aircraft is handled directly at the passenger terminal.

### Future Operations

Forecasts of freight indicate only small-scale growth.

It is not envisaged that new dedicated apron facilities would be required for the carriage of freight.

However the future construction of Bay 11 would allow for the relocation of large freighters that presently use Bay 1 on an ad hoc basis. This would substantially enhance the flexibility of the main commuter apron area around Bay 1 and 2.

## Helicopter Zone

### Current Operations

Heavy helicopter facilities are provided to the east of the freight apron along taxiway U1 where the following facilities are provided:

- Flight Approach and Take-Off (FATO) point
- Parking for six eighteen-passenger Super Puma helicopters

Heavy helicopters operating from this area provide links to the Timor and Arafura Seas oil-rigs. Helicopter passengers are served through the passenger terminal and the helicopters taxi to and from the RPT apron.

### Future Operations

No growth is envisaged for additional helicopter facilities.

## Air Traffic Control Facilities

### Current Operations

Air Traffic Control Services at Darwin International Airport are provided by the Royal Australian Air Force for both civil and military operations. The current Air Traffic 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.

### Future Requirements

The RAAF has requested that provision be made for expansion of this area to allow the construction of Area Control, training facilities and additional parking. This land can be made available adjacent to the ATC tower.

## Airservices Australia Facilities

### Aviation Rescue and Fire Fighting Facilities

A new fire station was constructed and commissioned by the Department of Defence in 1999. It is located to the west of the passenger terminal.

Airport categories for rescue and fire-fighting are based on the overall fuselage length of the longest aircraft normally using the airport and its maximum fuselage width as detailed in the following table:

	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5	Cat 6	Cat 7	Cat 8	Cat 9	Cat 10
Length (metres)	<9	9 - 12	12-18	18-24	24-28	28-39	39-49	49-61	61-76	76-90
Width (metres)	<2	<2	2-3	3-4	4	4-5	5	5-7	7	7-8

Each category requires a level of provision of fire-fighting media. The category is not dependent on aircraft throughput.

Under agreement with the Department of Defence, this service is provided by the Airservices Australia Aviation Rescue and Fire Fighting Service to all aircraft, both civil and military. The level of coverage available is up to Category 8 level on a 24 hour notice basis. Category 8 covers regular scheduled operations by aircraft up to B767-300 in size.

## Civil Aviation Safety Authority

The Civil Aviation Safety Authority's (CASA) regional offices are located on-airport.

### Future Requirements

Proposals for additional offices are being developed by CASA and Northern Territory Airports PL.

## Airport Operational Services

### Airfield Lighting and Equipment

Darwin International Airport has the following lighting aids available:

- High-intensity runway lighting on runways 11 and 29
- T-VASIS on runways 11 and 29. The Department of Defence will replace these with PAPI during Financial Year 2004/05

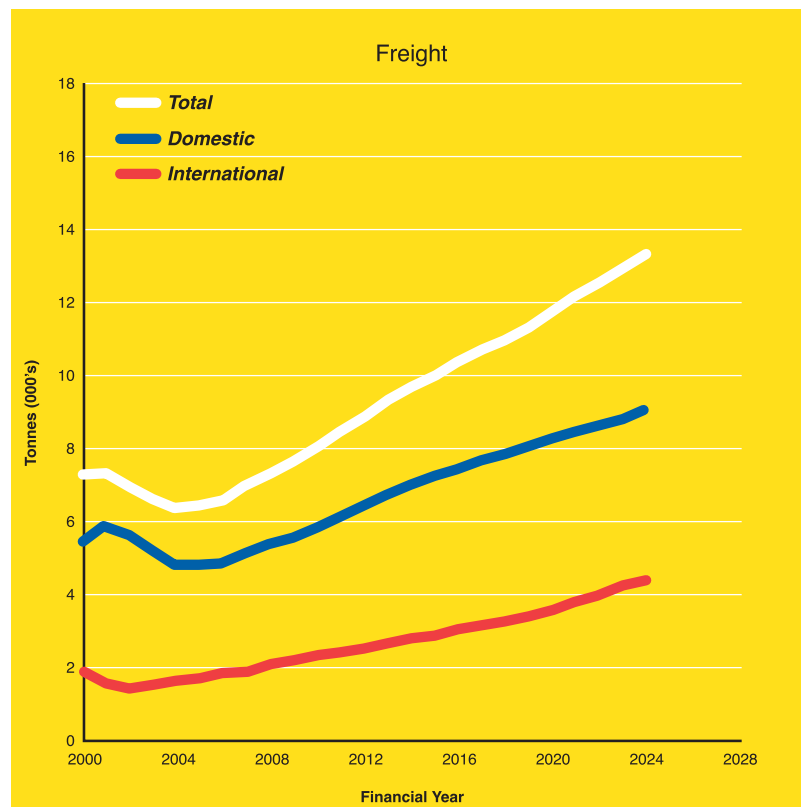
### Instrument and Visual Aids

The following visual aids are provided:

- Very High Frequency Omnidirectional Radio range (VOR) in the south-east sector on the extended centre line of runway 11/29
- Distance Measuring Equipment (DME) co-located with the VOR
- Non-Directional Beacon (NDB) in the western building area
- Instrument Landing System on runway 29, Category 1
- TACAN located north of mid-point runway 11/29
- Radar facility north-west sector
- Locator beacons at Bagot and Howard Springs

### Meteorological Equipment

An Automated Weather Information Service is available.



Graph 9.1

# 9. Support Facilities



## **Airport Engineering Facilities**

Airport works staff currently operate from facilities in the existing Management Centre and from the Terminal.

## **Australian Federal Police Protective Services**

The Australian Federal Police Protective Service provides 24 hour Counter Terrorist First Response coverage.

## **Airline Support Facilities**

### **Aircraft Maintenance**

There are no hangars located on airport for the maintenance of airline jet aircraft. Qantas employs aircraft engineers to manage ground operations who can also effect minor line maintenance to aircraft. It is unlikely that Darwin International Airport will have base airline maintenance facilities available in the future.

Airnorth owns and operates a hanger facility for the maintenance of Brasilia and Metroliner aircraft.

A variety of commuter and general-aviation-sized aircraft maintenance facilities are located on airport.

### **Uplift Catering**

Uplift catering for RPT aircraft is provided from on and off-airport kitchens.

### **Aircraft Refuelling Facilities**

There is no fuel pipe line delivery for Darwin Airport. Fuel is supplied by road tanker to airport storage. Up to twenty road-train deliveries are made per week.

#### **Aircraft Refuelling - Passenger Terminal Area**

Terminal fuel storage is at the Joint Aviation Fuelling Services, managed by Air BP. Fuel storage is in five underground fuel tanks, totalling 800,000 litres. From these tanks, fuel is pumped to hydrants at aircraft parking bays.

#### **Aircraft Refuelling - General Aviation Area**

Air BP and Shell operate a joint facility at the General Aviation zone. Fuel storage is in two underground fuel tanks, totalling 145,000 litres. Delivery of fuel to the aircraft is by mobile tanker.

#### **Aircraft Refuelling - Helicopter Area**

Fuelling to the helicopter area is by mobile tanker from the terminal storage area.

## **Ground Service Equipment**

Large passenger aircraft require the provision of various vehicles and equipment to service it on the apron. This ground service equipment requires areas set aside by the RPT apron. Existing proposals to expand the current RPT apron into this area require a new location to be provided for ground service equipment.



# 10. Services and Utilities

To ensure that Darwin International Airport operates effectively, utility services must be able to meet future demands placed on them. The airport may be limited by the ability of others to provide these services and should be able to ensure the continuity if there is failure in the provision of facility services.

## **Water Supply**

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. To do this a 150 millimetre service main runs along Charles Eaton Drive to Henry Wrigley Drive and along Sir Norman Brearley Drive to the ground level tank (usable capacity 1.65 megalitres) from which the water is pumped to the elevated header tank (usable capacity 80 kilolitres) feeding the reticulation serving the terminal area. This system limits the level of peak demand on the town supply but ensures pressure can be maintained. 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. Although this system is believed to have adequate capacity for future demand, it should be monitored to ensure adequate supply over time. The current daily demand is approximately 400 kilolitres. The existing system has sufficient capacity to meet total demands up to 75 litres per second including 36 litres per second at the fire station.

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



pump station houses two pumps for filling the elevated tank and two for boosting pressure for fire purposes. Actual pump capacity may need to be augmented to improve pump capacity and supply individual tenants in the terminal area.

The main intake also provides direct supply to consumers along Charles Eaton Drive, the general aviation area via Pedersen Road and the Airservices Australia building adjacent to the pump station. Flow rates in the general aviation area are low and improvements may be required to provide adequate supply and upgrade pipework connections.

The existing water supply can be extended to supply the newly developing areas, such as the Business Park, potentially by a looped connection to the public supply to ensure adequate pressure is maintained. Sufficient easements exist to allow new supplies to be constructed.

## **Sewerage**

The building 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 hangar area. The MSPS pumps via a rising main to the PAWA Marrara Trunk Sewer on the north east side of Rapid Creek.

This system is adequate but problems may arise with construction of the Hotel or the Business Park which should be served by a supplementary system. pumping directly to the PAWA main which can take the additional load. PAWA approval will be required.

PAWA has proposed a user payment system. Darwin Airport is installing flow meters to gauge demand. As well as this, alternatives, such as grey water irrigation or holding tanks to reduce flow are under investigation.

## **Drainage**

Surface water drainage utilises open drains which lead into Rapid Creek and Ludmilla Creek. This well-established system has the potential for environmental problems involving inappropriate materials run-off and possible scouring. Northern Territory Airports has already established extensive monitoring and implemented a variety of controls to minimise the impact of the airport.

The storm water system is designed to cater for;

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

## **Communications**

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.

Dedicated land lines have been installed, consisting of:

- Routes between the transmitter station and the Air Traffic Services Centre
- Three separate routes (northern, central and southern) between the Air Traffic Service Centre and the Control Tower
- Cables connecting the Air Traffic Service Tower with the Terminal Area radar and navigational aids

## **Gas**

There is no provision of reticulated gas on-airport, nor is it being proposed to introduce such a system. Bottled gas is provided for the terminal kitchen. This is replenished by road tanker deliveries on demand.

## **Waste Disposal**

On-airport waste disposal by Northern Territory Airports PL and its tenants is by a bin system. The current location of the bin dump is airside which introduces management problems with tenants having to cross the landside airside boundary. There are also problems with unrestrained rubbish creating potential hazards. In association with other plans to expand the terminal apron which will take up the land occupied by this facility, a new dumpster area has been identified on the landside airside boundary, allowing access from both sides.

The on-airport facility is for domestic waste only. International airlines use contractors for quarantine aircraft waste.

A compactor system has been examined and it is considered that this would not be justified on cost grounds, even with an expanded airport.

## **Electricity**

The level of provision of electricity is adequate. There is a single existing feed into a ring main, which enables some redundancy if necessary. The Power and Water Corporation mains feeds 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.

The current 11kV ring main has cable which may not be adequate to meet demand much above the present peak demand. Any airport expansion, eg. the terminal, may require an upgraded or separate feed. Power and Water

Corporation has earlier advised that a second 11kV intake from the Casuarina Substation would be advisable. This option should be safeguarded in conjunction with the development of the Business Park as close as practicable to the existing 66kV mains along McMillans Road. Power easements have been established throughout the airport and are capable of accepting increased provision.



# 11. Land Transport

The location and access of an airport with respect to the community it serves should allow easy access and is important to long-term success. Access should be high quality and effective with adequate capacity to allow easy movement to and from the airport.

## **Existing External Access Road System**

Darwin International Airport is well located for regional and district road access and has good links to the CBD.

The airport is adjacent to the Stuart Highway on the south and close to the new Tiger Brennan Drive. It is bounded by:

- Bagot Road on the west
- McMillans Road on the north
- Amy Johnson Avenue on the east

The main airport entry is through the junction of McMillans Road and Henry Wrigley Drive which is not part of the airport and is a responsibility of the Northern Territory Government. Henry Wrigley Drive crosses the Rapid Creek Bridge and enters the airport. A secondary entry into the airport is via the junction of McMillans Road and Charles Eaton Drive. This junction is also the responsibility of the Northern Territory Government. Charles Eaton Drive allows access into the general aviation area without conflicting with airline passenger traffic.

# 11. Land Transport



## Existing Internal Road System

There is an extensive internal road system, currently based on access to:

- The General Aviation Area
- The Passenger Terminal Zone
- Beyond the terminal to support areas, including ATC, freight and helicopters

see **Diagram 11.1** Existing and Proposed Road Layout

The internal road system is likely to have sufficient capacity well into the foreseeable future.

## Future Development

### External Access Road System

Upon assuming responsibility for Darwin International Airport, Northern Territory Airports PL commissioned a Traffic Impact Assessment Study in 1999. This has been the subject of continuous consultation with Darwin City Council and the Northern Territory Government.

Arising out of these consultations, Northern Territory Airports PL has agreed to ensure that junction improvements are made over time as necessary. The details of two new additional airport access junctions have been developed which have the agreement of all concerned. These are:

- A signalled access at the present junction of Bagot Road and Totem Road

see **Diagram 11.2** Junction Bagot Road / Totem Road

- A new junction from McMillans Road into the proposed commercial development area

see **Diagram 11.3** Junction McMillan Road / Charles Eaton Drive

The latter junction will connect into a new access road between Charles Eaton Drive and the proposed Bagot and Totem Roads junction.

### Internal Road System

The internal road system is expected to have sufficient capacity to serve over the planning period.

Additional roads will be developed as part of non-aeronautical commercial developments as necessary. A four-stage road planning study has been

undertaken incorporating the future development of the internal airport precinct road system. It is proposed that the staging and development of these roads will be dictated by the increase in demand as the airport grows.

Landside roads to which the public has access will be constructed following consultation with the Northern Territory Government and in accordance with accepted national standards.

see **Diagram 11.4** Future Road Layout

### Terminal Road System

The terminal circulation roads are being reconstructed to provide better facilitation for passengers. In particular there will be:

- more parking spaces
- access to the terminal kerbs for public transport vehicles
- dedicated taxi rank
- remote public set-down/pickup kerb
- covered pedestrian access
- pedestrian walkway to the airport hotel

see **Diagram 11.5** Terminal Roads

This layout will enhance airport security by limiting the opportunity to park an unknown vehicle alongside the terminal building.

# 11. Land Transport

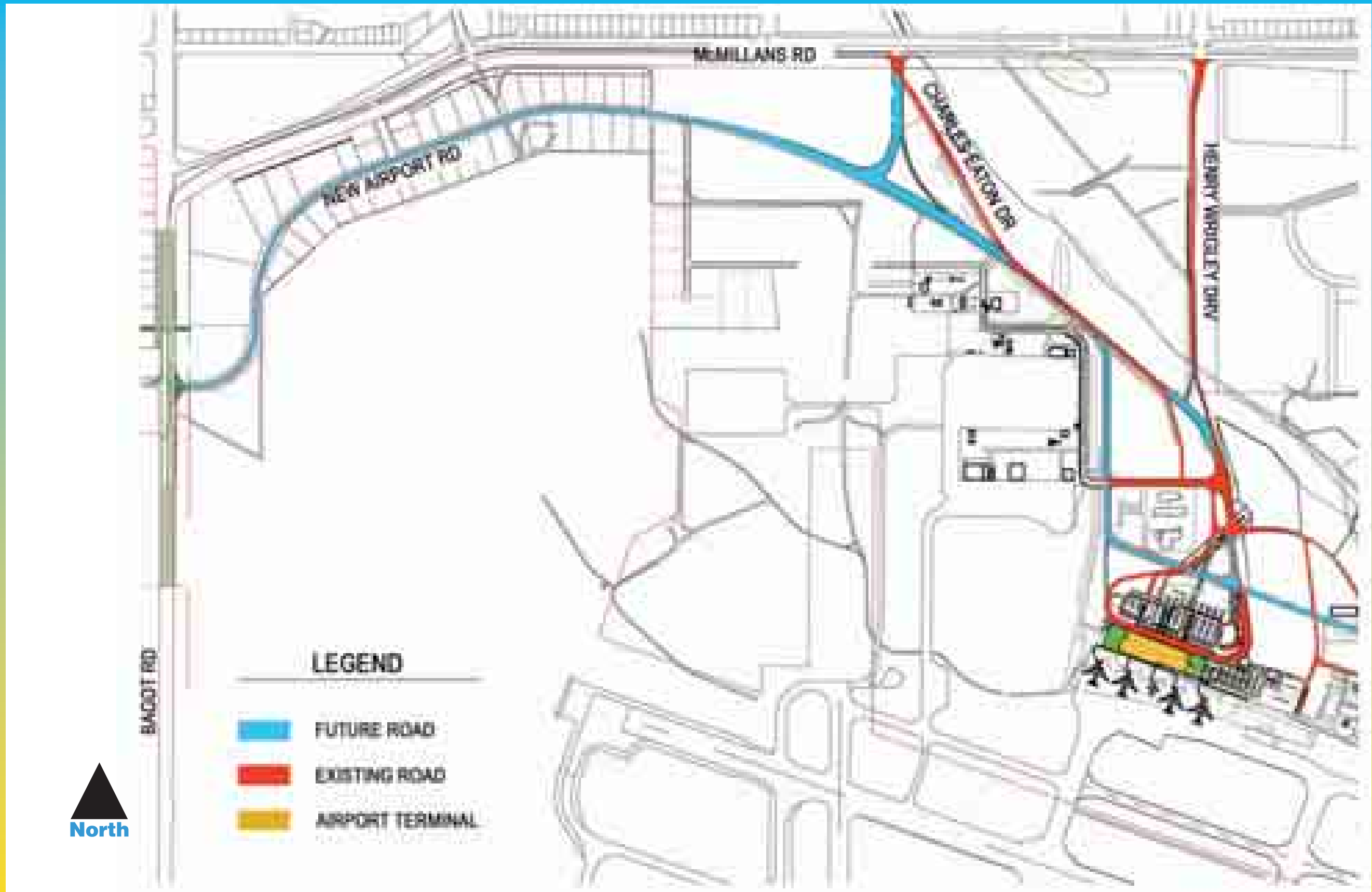


Diagram 11.1 Existing and Proposed Road Layout

# 11. Land Transport



Diagram 11.2 Junction Bagot Road / Totem Road



# 11. Land Transport

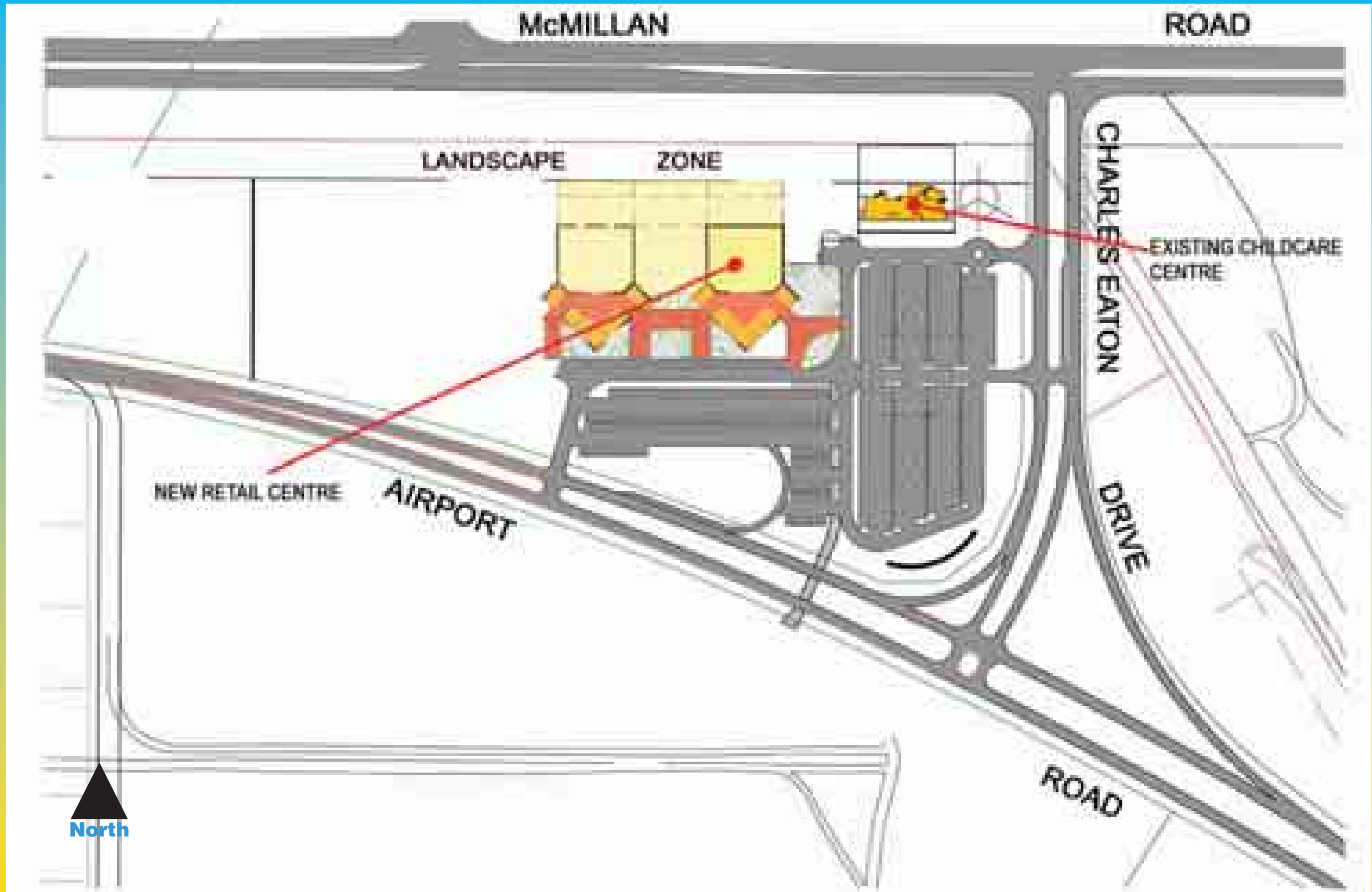


Diagram 11.3 Junction McMillan Road / Charles Eaton Drive

# 11. Land Transport

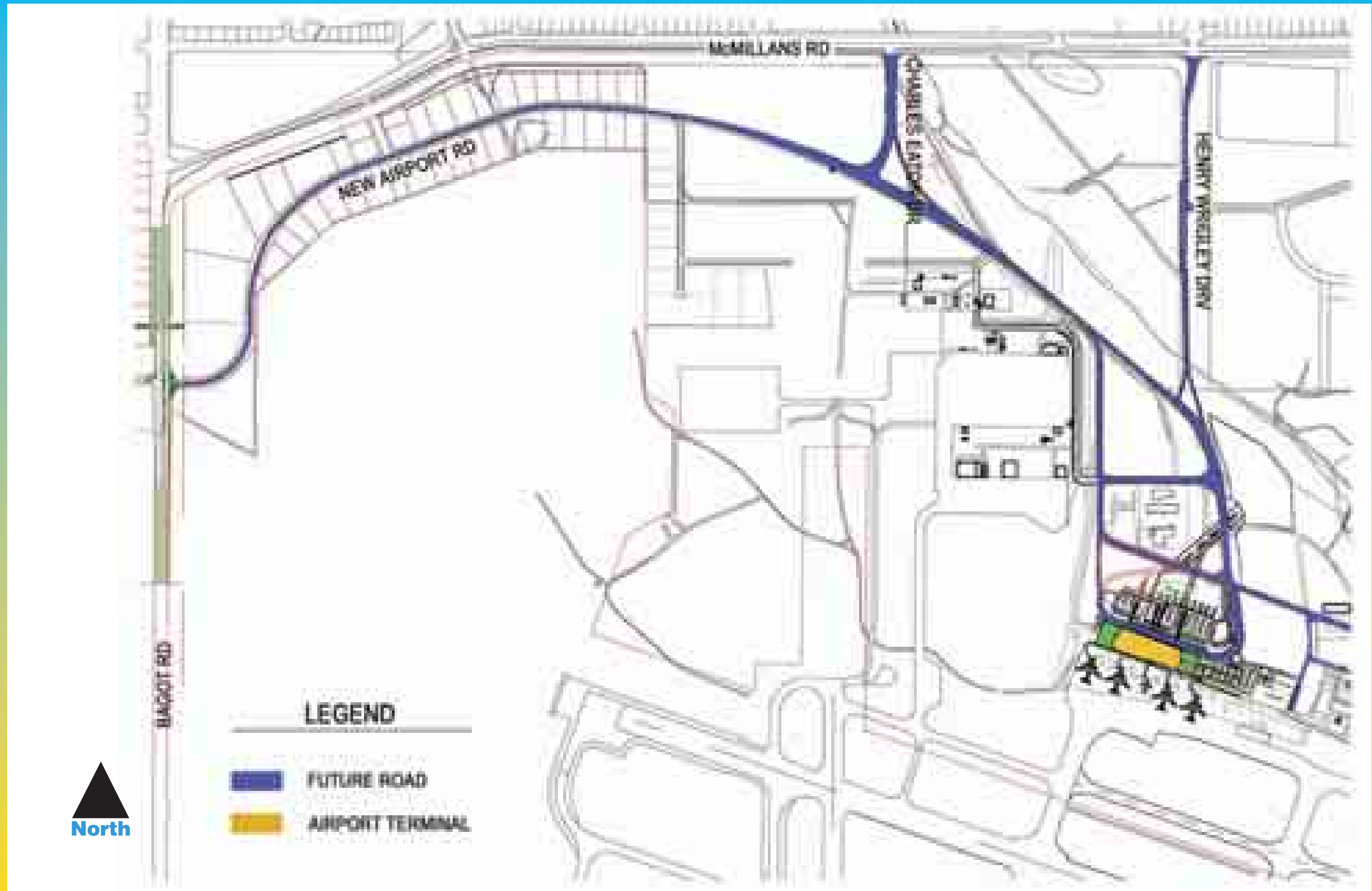


Diagram 11.4 Future Road Layout

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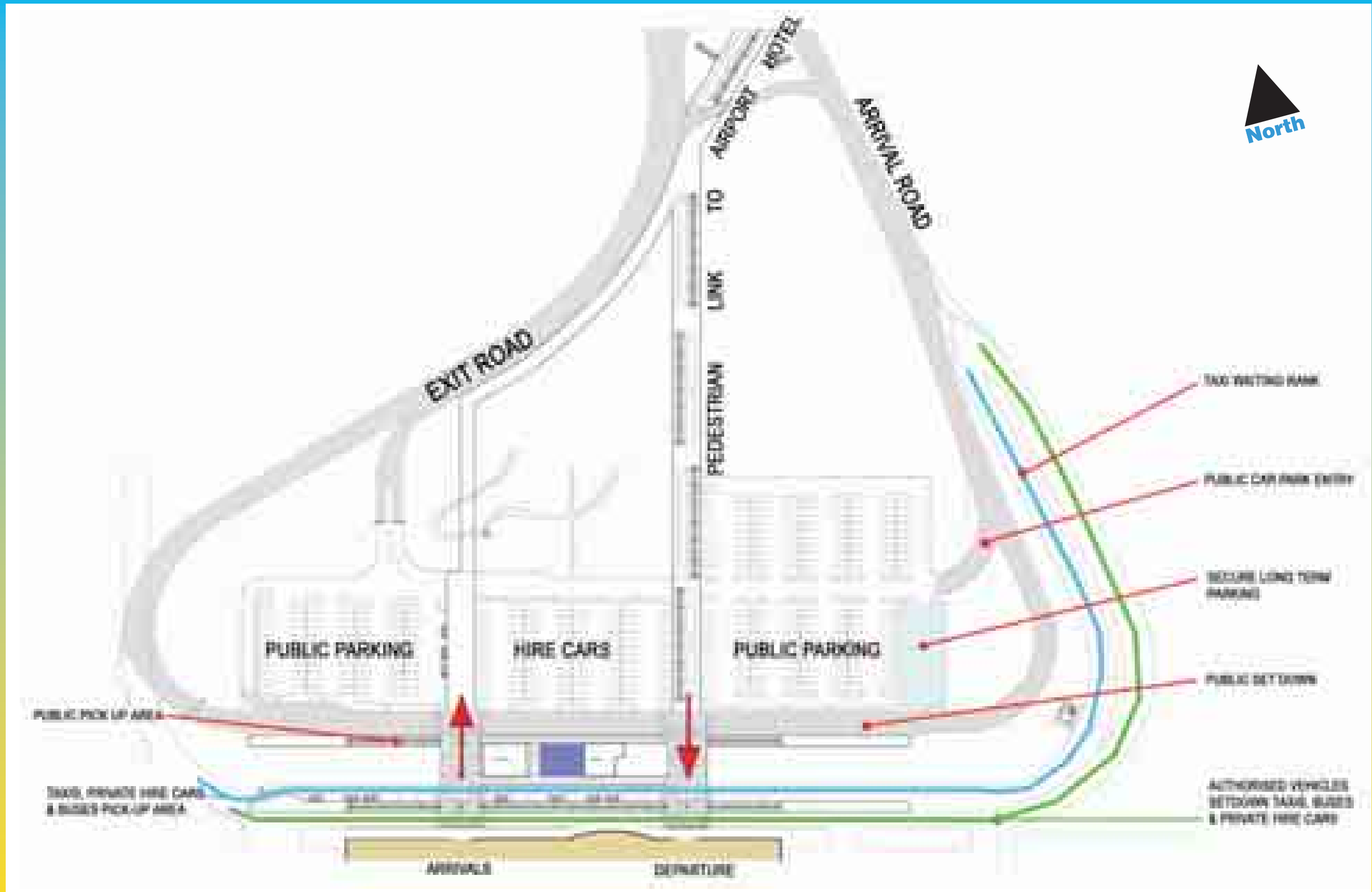


Diagram 11.5 Terminal Roads



# 12. Commercial (Non–Aeronautical) Land Development

Darwin International Airport incorporates approximately 100 hectares of undeveloped airport property, which is high-value land adjacent to that required for aviation related and ancillary support uses.

The airport is well situated as the gateway to both the city of Darwin and the Northern Territory, which in turn is well situated geographically, politically and economically for dynamic opportunities in the Asia Pacific region.

## **Commercial Land Development**

Eighty-seven hectares of undeveloped land available for development has been divided into four broad land uses, which are:

- Business Park
- Service Industry
- Airport Business
- Tourist

## **Business Park**

The function of the Business Park land use area is to facilitate commercial and business development which would benefit from a location close to the airport and central to Darwin's northern suburbs by:

- Providing sites with good vehicular access to the arterial road network and internal airport roads
- Allowing for a range of land uses including retail and trading outlets, convention/function centres, office accommodation, service station, showroom, warehousing, storage, service industries and associated social support facilities
- Strategies integrating commercial development with appropriate landscaping guidelines will be employed
- Providing a range of lot sizes

# 12. Commercial (Non–Aeronautical) Land Development



- Ensure that developments have adequate on-site parking
- Buffer zones which will accommodate existing infrastructure and associated facilities, and allow for signs and lighting to be erected should this be necessary

## Service Industry

The purpose of the service industry land use area is to encourage and facilitate service and light industry which requires a location close to the airport by:

- Providing large sites with services and good vehicular access to the arterial road network and internal airport roads
- Allowing for a range of land uses, including light manufacturing and associated activities which may include the assembly and distribution of goods but will not by the nature of their operations detrimentally affect adjoining or nearby land developments
- Providing a range of lot sizes
- Ensuring that developments have adequate on-site parking
- Providing buffer zones which will accommodate existing infrastructure and associated facilities, and allow for signs and lighting to be erected

## Airport Business

The function of the airport business land use area is to encourage the development of a range of commercial/business enterprise uses which would benefit from a location in close proximity to the airport and its terminal area by:

- Providing sites with good vehicular access to the arterial road network and internal airport roads
- Allowing for a range of land uses including retail and trading outlets, convention/function centres, office accommodation, aviation support facilities, service industries and high technology and research developments
- Ensuring a central and convenient location for gateway commercial development, adjacent to the main access roads to and from the terminal precinct with good access to the arterial road network
- Providing a range of lot sizes
- Ensuring that developments have adequate on-site parking
- Providing buffer zones which will accommodate existing infrastructure and associated facilities, and allow for signs and lighting to be erected

## Tourist

The function of the tourist land use area is to encourage the development of a viable tourist/visitor development which would benefit from a location in close proximity to the airport and its terminal area by:

- Providing a site with good vehicular access to the arterial road network and internal airport roads

- Allowing for land uses including retail and trading, retail food outlets, convention/function facilities, sports and recreation, hotel/resort and office/administration
- Ensuring a central and convenient location for gateway hotel development, adjacent to the main access roads to and from the terminal precinct with good access to the arterial road network
- Ensuring that adequate on-site parking is provided
- Providing buffer zones from Rapid Creek which will accommodate the existing natural bush precinct

## Airport Development Precincts

To assist and encourage progressive and strong growth of the undeveloped land this has been further broken up into three development precincts (see attached precinct plan). These include:

- The **Bagot Road Totem Road Development Precinct** which includes a land area of approximately 35 hectares and borders Bagot and McMillan Roads. This precinct can be developed in isolation and will target commercial business's, warehouse and show-room style accommodation and retail uses.
- The **McMillan's/Charles Eaton Drive Precinct** which includes an area of approximately 21 hectares and will be developed to incorporate restaurants, medical suites and childcare facilities as well as retail and other commercial business uses.
- The **Airport Terminal Precinct** which includes an area of approximately 44 hectares and will be developed to include the hotel/resort development, a high-technology park and terminal and business parking.

These development precincts will all be linked via a single spine road with its main entry and exist at the Bagot and Totem Road intersections. This road will provide direct internal access to the airport's development land and its terminal precinct and will allow airport users direct and convenient access to and from the airport. It is believed this will further enhance the value and development potential of the airport land.

see **Diagram 12.1** Land Use Plan

The airport has a long boundary line alongside both Bagot and McMillan roads. Any road edge landscaping along this boundary will compliment the appropriate landscaping guidelines of the Northern Territory Government.

Currently airport tenants are allowed to erect business-related signs only following approval by Northern Territory Airports PL. Similarly signs proposed by the advertising concessionaire require formal Northern Territory Airports PL approval. All new development areas will have policy guidelines prepared

for them on the visual aspects of the overall development area. These guidelines will ensure a high degree of visual amenity and will cover matters such as advertising, landscaping and acceptable architecture. The Northern Territory Government will be consulted in the preparation of the guidelines.

## Darwin and Northern Territory Strengths

Many of the strengths of Darwin and the Northern Territory are especially relevant to the commercial property development of the airport and include: proximity to South East Asia, strong resources industries, good lifestyle, attractive tourist destination, above average population growth, stable Government, high-quality infrastructure, and educated and skilled work force. Given the aforementioned outstanding opportunities DIA has identified the commercial property opportunities to be as follows:

- Industries that rely on good logistical support eg. Defence, mining and energy
- Multinational companies that need a reputable regional base
- High technology industries that value 'just-in-time' manufacturing and supply
- Industries that process and produce time-sensitive products
- Air, road and other transport-based industries
- Retail companies which would benefit from a central Darwin location with exposure and access
- Activities associated with a location next to the Marrara Sporting complex
- The administration of service industries

## Land Zoning

The various uses within the Land Use Plan are zoned in accordance with the *Northern Territory Planning Scheme* as follows:

### Business Park

*Service Commercial Zone SC*

*To accommodate commercial activities that because of their nature of business or size of the population catchment require good vehicular access and/or large sites.*

*Service stations, showroom sales, vehicle sales and hire and small offices are typical of the uses that may be expected to establish within this zone. Because of the zone's general relationship with major roads, it is particularly important that development provides for safe and convenient access for vehicles to off-street parking areas and that access points onto roads are located and designed so as to minimize traffic hazards and queuing on those roads.*

# 12. Commercial (Non-Aeronautical) Land Development

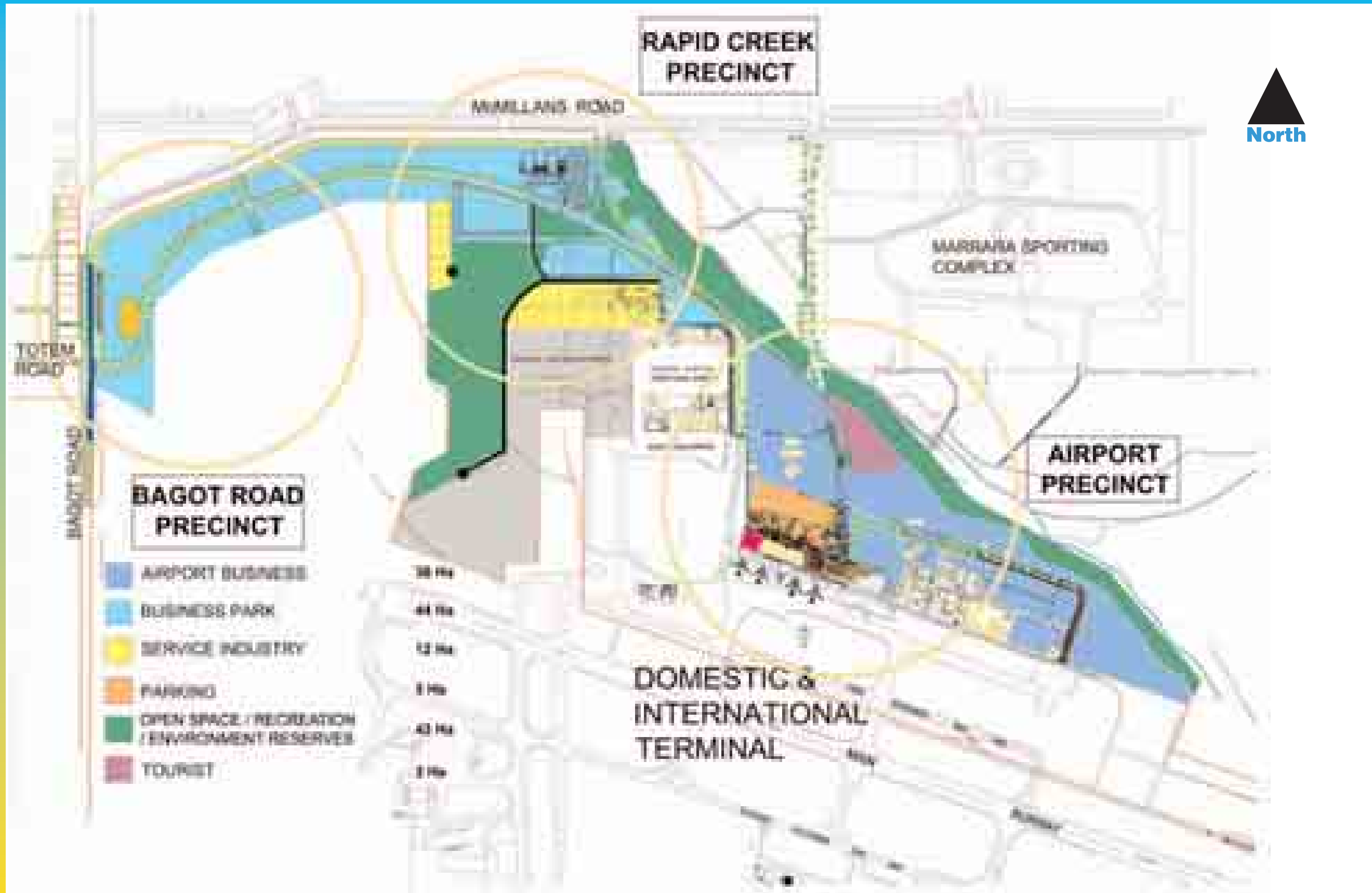


Diagram 12.1 Land Use Plan

# 12. Commercial (Non–Aeronautical) Land Development



## **Service Industry**

### *Light Industry Zone LI*

*To provide for industrial activities that will not, by the nature of their operations, detrimentally affect adjoining or nearby land.*

*Design should incorporate landscaping to improve the visual amenity of industrial areas. Office development should be of a size commensurate with and ancillary to the primary use of the land for industrial purposes. Shops should be limited to those that either cater for the needs of the industrial area or would be inappropriate in a commercial zone.*

## **Airport Business**

### *Central Business Zone CB*

*To provide for a diversity of activities including administrative, judicial, professional, office, entertainment, cultural, residential, retail and other business activities while maintaining a commitment to the separation of incompatible uses.*

*Building form and design is expected to be sensitive to the needs of pedestrian movement and should facilitate the creation of safe and active street frontages and public spaces and a vibrant commercial precinct.*

## **Tourist**

### *Tourist Commercial Zone TC*

*To provide areas accommodating a mixture of activities including commercial and residential development servicing tourism.*

*Development is expected to be of a scale and character compatible with development nearby.*



# 13. Aircraft Noise

Forecasts of noise were prepared by a specialist consultant and included in the previous Master Plan.

See **Diagram 13.1** 2019 ANEF

The same consultant, Sinclair Knight Merz, has been engaged to produce forecasts of noise for Darwin International Airport as part of this Master Plan. Other bodies that contributed to the process were BAA plc which developed forecasts of civil traffic and the Department of Defence which supplied forecasts and developed flight paths for all military traffic.

## **Overview**

*Australian Standard AS 2021* provides a method for determining land use in the vicinity of aerodromes. Using the computer program Integrated Noise Model (INM) a set of aircraft noise exposure contours are established and land use determined in accordance with the particular contour value of a site. The contour set is named the Australian Noise Exposure Forecast (ANEF) and is only valid after endorsement by the Commonwealth Government.

## **Noise Metrics**

There are several ways to describe the impact of noise on the area surrounding an airport. The *Airports Act 1996* requires reference to the Australian Noise Exposure Forecast in the Master Plan.

## **ANEF – Australian Noise Exposure Forecast**

The ANEF is a contour map showing the forecast of aircraft noise levels that are expected to exist in the future. The contours relate to a particular year, in this case set by the *Airports Act 1996* to be 2024. An ANEF is based on a forecast of aircraft movement numbers, aircraft types, destinations and a given set of runway operations at the airport for the particular year. It also takes into account the frequency, intensity, time and duration of each individual aircraft activity. Combining all this information the INM calculates the total sound energy generated at a particular location.



# 13. Aircraft Noise

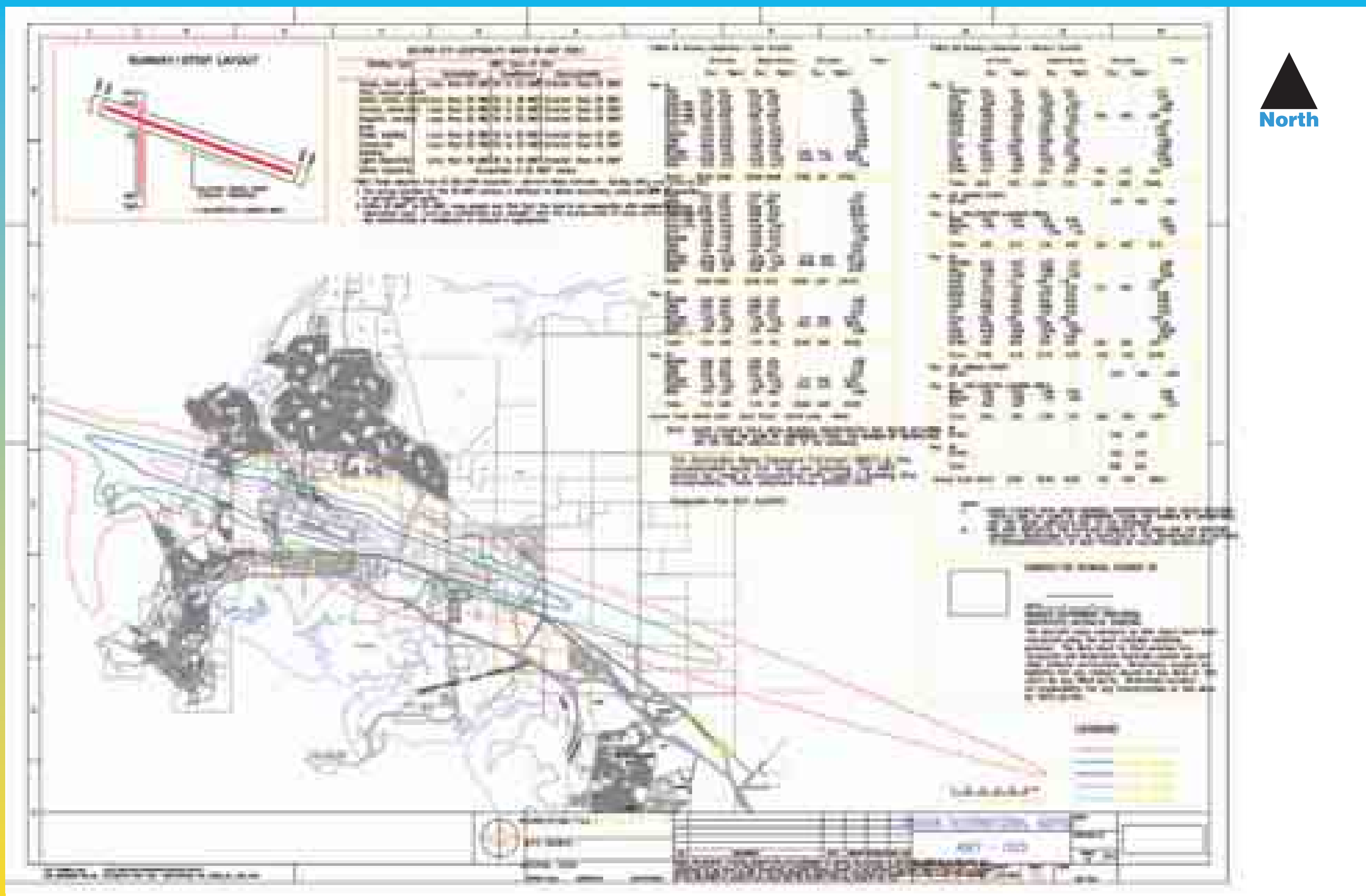


Diagram 13.1 2019 ANEF

# 13. Aircraft Noise



The ANEF contours represent the forecast of aircraft noise levels that are expected to exist in the future. Whilst the lowest contour shown is that of 20 ANEF, this does not mean that there will be no aircraft noise beyond this limit. Generally the accuracy of any ANEF contour map falls off outside this level, due to uncertainties in flight paths some distance from the airport.

The ANEF is intended to have status in land use planning decisions. Only one ANEF can be current at any one time and a more recently endorsed plan supercedes all earlier versions. It is Australian Government policy that ANEF contours and the associated land use compatibility advice be used as the land planning criteria around Australian airports. An ANEF requires review at regular intervals (usually 5 years) to ensure its continuing validity. The onus to initiate the process for the production of aircraft noise contour maps rests with the airport operator but Airservices Australia has been deemed responsible for endorsing ANEF's by the Commonwealth Government.

Following Airservices advice of the successful completion of its checks on the validity of the ANEF contours, the airport operator is required to make the proposed chart available to the relevant authorities in the Territory and local government for sighting and comment. All comments are to be collated and returned to Airservices Australia for review, at which time the contour map may then be endorsed as the official ANEF for the airport.

## ANEF Use

AS 2021 provides guidance on urban and regional planning and building construction on the acceptable location of new buildings in relation to aircraft noise. Zones that are described as 'conditionally acceptable' may be approved if buildings there include appropriate sound proofing measures in their construction. The following table sets out acceptable uses for new construction:

Building Type	Acceptable	Conditional	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	All ANEF zones	All ANEF zones	All ANEF zones

## N70 Contour Chart

In recent years it has become apparent that the information regarding aircraft noise contained on the ANEF chart is not well understood by the general public and thus supplementary methods of describing aircraft noise have been introduced. An N70 contour chart – calculated using the same INM data set as the ANEF has been produced. The N70 contour indicates the number of noise events which exceed 70 dB (A) in the 2024 busy day at any particular location and is a guide to the overall disturbance which may arise from aircraft operations.

## Darwin International Airport Noise Review

Sinclair Knight Merz was commissioned to produce overall noise forecasts. Plans of the ANEF for the year 2024 have been produced, supported by a drawing of the N70 contours.

see **Diagram 13.2** 2024 ANEF

see **Diagram 13.3** 2024 N70

The consultant's detailed report has been endorsed by Airservices Australia for endorsement. This covers the following actions:

- Confirmation that the appropriate selection of aircraft types has been made.
- Confirmation that the runway usage and flight path data used are operationally suitable
- Confirmation that the forecasts numbers of aircraft operations are not greater than the airport capacity.
- Confirmation that the contours have been modelled correctly.

In conforming to these requirements, the following actions have been undertaken:

- The selection of aircraft types was based on the Darwin International Airport billing system which identifies every aircraft using the airport. Subsequently the airlines, Qantas, Virgin Blue and others have confirmed that these aircraft types are appropriate over the expected five year life of the 2024 document. Non-RPT traffic types were reviewed by Darwin International Airport operations staff.
- Military flights were provided by the Department of Defence.
- Details of runway usage and flight paths were developed following discussion with the Royal Australian Air Force Senior Air Traffic Control Officer who subsequently confirmed their use.

- Forecasts of civil air traffic demand for the year 2024 were prepared by the consultant BAA plc, a world leader in these matters.
- Forecasts of military air traffic were provided by Defence.
- The contours were prepared in strict accordance with the instructions of the US Federal Aviation Administration which authored the Integrated Noise Model.

## Department of Defence

The Joint User Deed requires that the Department of Defence should produce noise forecasts for Darwin International Airport. In this Master Plan, as with the 1999 Master Plan, Defence was not inclined to do so.

## Civil Aircraft Impact

The 2024 ANEF the combined noise effect of civil and military aircraft. The civil content, over which Northern Territory Airports PL might have some control, forms a small proportion of the total noise impact. An analysis of civil traffic only indicates the limited effect of civil noise beyond the airport boundary.

see **Diagram 13.4** Civil Traffic 2024 ANEF

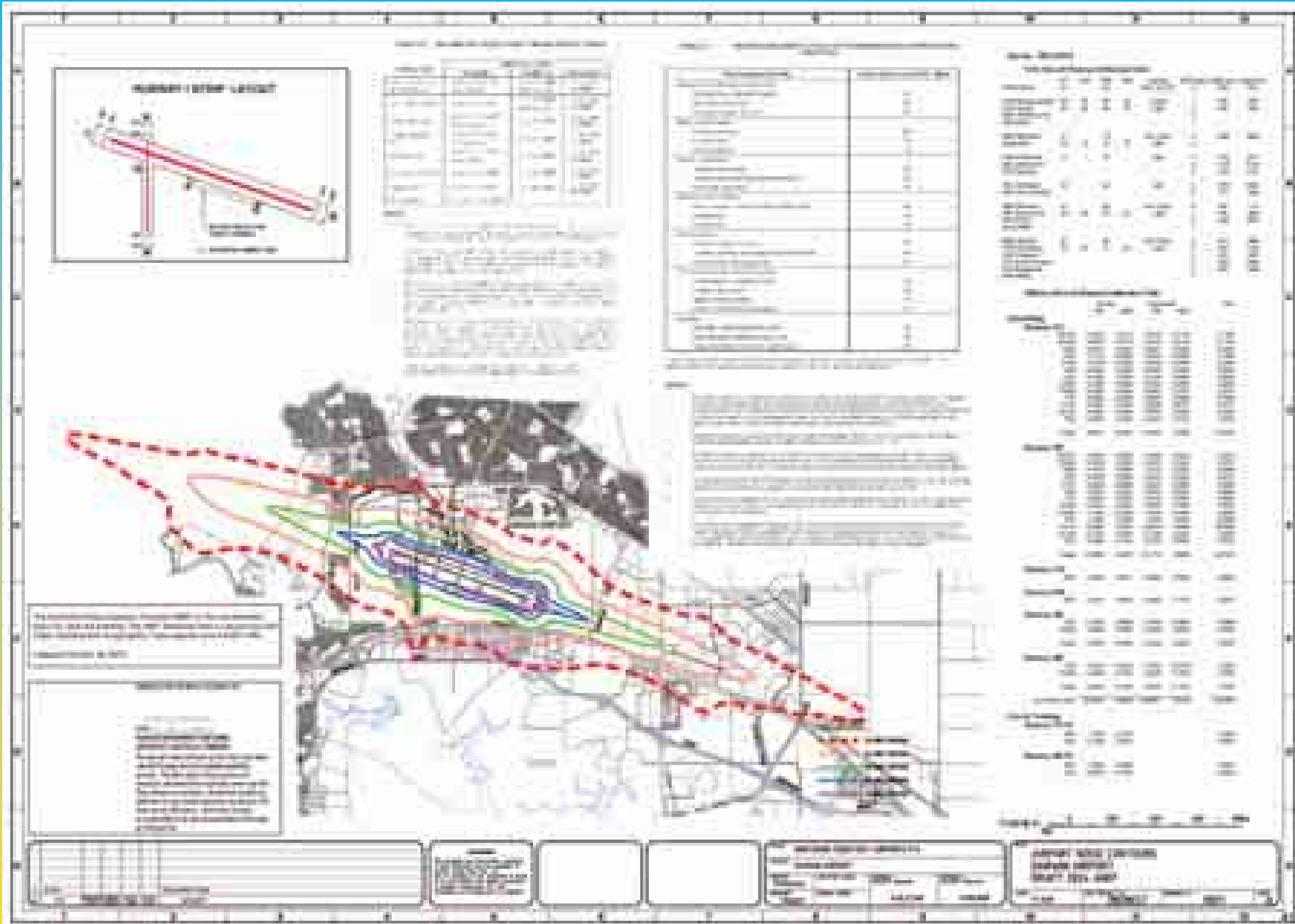
## Aircraft Noise at Darwin International Airport

A comparison of the 2019 ANEF and the 2024 ANEF indicates an apparent reduction in the impact of noise around Darwin International Airport, especially in terms of the extension of noise from the runway ends. The noise consultant has commented in the report to Airservices Australia:

*There has been an identifiable reduction in the size of the ANEF contours that is mainly the result of no longer modelling low level flights by military aircraft. Of lesser effect is the reduction in both the civil and military forecasts of aircraft numbers. Prior to the adoption of the ANEF contours included in this report as the approved ANEF chart for Darwin International Airport consideration needs to be given to the possibility of changing military operational requirements leading to the re-introduction of low-level flights with a consequential significant increase in the size of the noise contours. Until it can be confirmed that low level flights will never be a feature of military operations in the longer term, it may be prudent to retain the ANEF that has been in place for some years.*

The *Airports Act 1996* specifically requires the adoption of the 2024 ANEF by this Master Plan

# 13. Aircraft Noise



# 13. Aircraft Noise

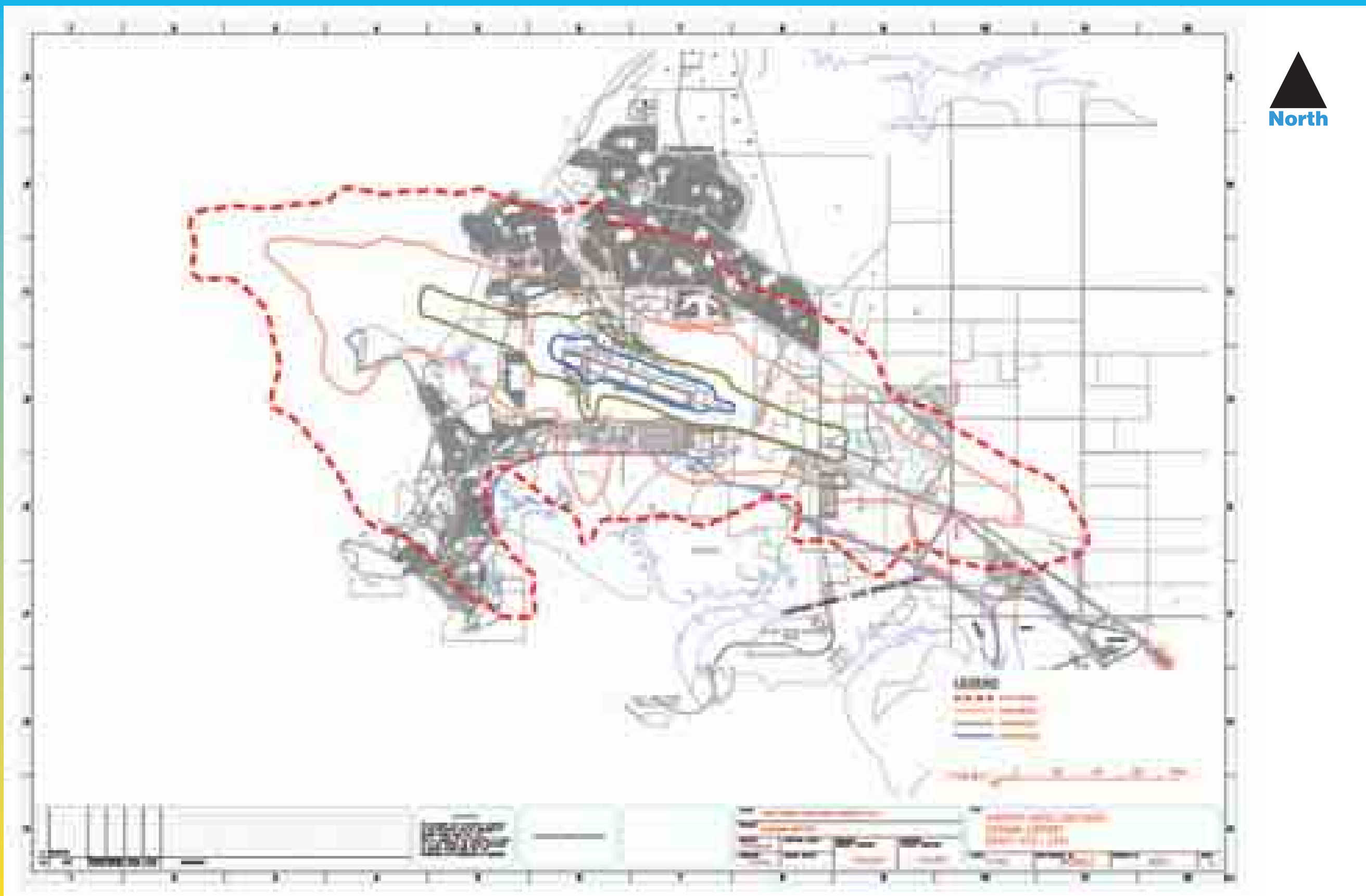


Diagram 13.3 2024 N70

# 13. Aircraft Noise

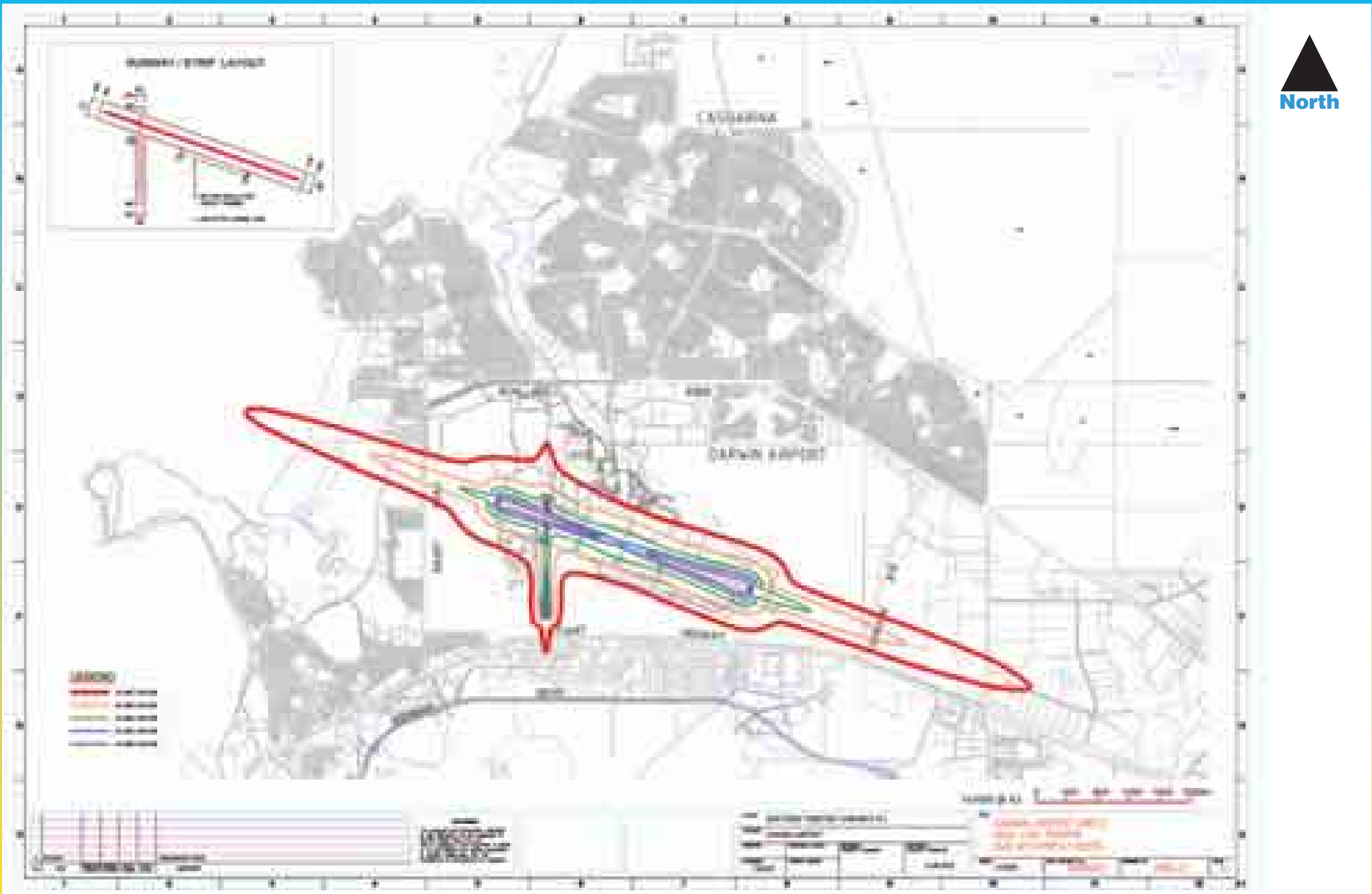


Diagram 13.4 Civil Traffic 2024 ANEF

# 13. Aircraft Noise



## Managing Noise Intrusion

### Defence Control

Darwin International Airport is a Joint User facility with Defence and the significant portion of aircraft noise impact is associated with military operations. Defence has already taken such action as it can to reduce military aircraft noise beyond the airport boundary.

### Aircraft Ground Running

Ground running of aircraft engines is a significant part of aircraft maintenance. Darwin International Airport does not have major airline facilities based on the airport, other than smaller commuter and general aviation facilities. However Northern Territory Airports PL has established stringent operating procedures for ground running of civil aircraft, which limit this activity to specific locations on the airport.

These locations and conditions under which ground running can occur are detailed in the document *Engine Ground Running Management Plan* (Darwin Airport 2000).

### Aircraft Noise Management

Darwin International Airport as the civil airport operator has little direct control over noise produced by aircraft operations other than, as noted above, ground running. Airspace management is controlled by Defence. Land use planning to ensure compatible developments with the aircraft noise affected areas is the responsibility of the Northern Territory government. Building approvals external to the airport are the responsibility of the Department of Infrastructure, Planning and Environment. On-airport development is under the final approval of the Airport Building Controller, a position funded by the airport but responsible to the Commonwealth Government.

## Noise Abatement Procedures

Darwin International Airport takes a proactive interest in all its affairs to ensure that aircraft noise can be minimised. Noise abatement procedures are published in the document *Departures and Approach Procedures West* (Airservices Australia). Procedures have been designed for civil and military operations. These nominate Runway 11/29 as the preferred runway and note that only aircraft that have been noise certificated to ICAO standards can operate from Runway 18/36.

Darwin International Airport promulgates these procedures.

## Airport Planning

Recognising that the noise exposure forecasts have an impact on airport development, the 2024 ANEF contours have been overlain on the airport Land Use Plan to guide internal zoning.

see **Diagram 13.5** Airport Noise Exposure





# 14. Environment

The Act requires that besides the Master Plan, a separate Airport Environment Strategy also be produced. The Airport Environment Strategy (AES) is a plan for managing the operations at Darwin International Airport in a manner that minimises the impact upon the environment and promotes best practice environmental management by all Airport users.

On 15 September 1999 the Minister approved the first Darwin International Airport Master Plan and AES developed by SKM consultants for Northern Territory Airports PL. Under the Airports (Environment Protection) Regulations 1997 the AES is expected to span a 5 year period.

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

## **Required Contents of an Environment Strategy**

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

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



# 14. Environment



## Northern Territory Airports PL Environment Commitment

The Chief Executive Officer and the management team are responsible for the oversight of the implementation of Darwin International Airport's environmental policies and ensuring that appropriate financial resources are allocated for implementation of policies. The Environment Coordinator holds the responsibility as part of the management team for ensuring consistency and improvement in environmental management across NT Airports.

## Northern Territory Airports PL Environment Policy

The current Northern Territory Airports PL Environmental Policy as issued by the Chief Executive Officer is as follows:

*Northern Territory Airports PL recognises the importance of maintaining and enhancing the quality of the environment for the benefit of all Australians, present and future.*

*In developing and managing Northern Territory Airports under our control, NT Airports has established and maintained a system to:*

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

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

## 1999 Darwin International Airport Environment Initiatives

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

- 1 The development and commencement of the staged implementation of an Environmental Management System in line with the ISO 14001 Standard
- 2 A risk management review of environmental issues on Darwin International Airport and from the review implemented and approved a Minor Variation to

the 1999 AES. The Minor Variation provided an improved framework for environmental management at Darwin International Airport

- 3 The establishment of an Environmental Geographic Information System (GIS) which involves the continual updating of data on threaten species, contaminated sites, monitoring sites as well as biophysical data such as drainage information, soils and vegetation communities etc
- 4 The installation of a three part strategy for management of stormwater run off from the RPT apron comprising of scheduled pump outs of flame traps, installation of three Hume hydrocarbon separators and placement of hydrocarbon booms across major drains
- 5 The development and implementation of a Standard Operating Procedure for all spills on Airport including a "report all spills" and "explain all spills" policy
- 6 The installation of state of the art Baldwin hydrocarbon separators on the northern and southern GA Aprons
- 7 The connection of all General Aviation (GA) wash-down areas to sewer via hydrocarbon separators
- 8 The placement of high technology spill clean-up materials available to all operators on the RPT and GA aprons
- 9 The delivery of training sessions to all operators in relation to spill prevention and cleanup
- 10 The review and expansion of the water quality monitoring program to include macro-invertebrate monitoring, habitat assessment, implementation of greater quality control and risk assessment
- 11 The removal of all unused soil stockpiles and building rubble.
- 12 The development of erosion and sediment guidelines for the 'Contractors Site Rules' document
- 13 The implementation of an extensive open drain capital works program to control erosion
- 14 The development and implementation of an erosion monitoring program across Darwin International Airport
- 15 The successful implementation of an extensive weed and fire program.
- 16 The extensive mapping of weeds and the development of a five year Weed and Fire Strategy
- 17 The near eradication of Gamba grass from the Darwin International Airport land adjoining the Rapid Creek corridor
- 18 The establishment of approximately 18 hectares of native vegetation to be used as an environmental reserve
- 19 Conducting extensive fauna surveys in all proposed development areas, the Rapid Creek Corridor, Marrara Swamp and the new Environmental Reserve
- 20 Conducting extensive flora surveys in all proposed development areas, the Rapid Creek Corridor, the new Environmental Reserve and wetland areas
- 21 Implementing a revegetation program on the Rapid Creek Corridor buffer zone using local native species
- 22 The participation in the Commonwealth Greenhouse Challenge

- 23 One of the first companies to apply for a trade waste agreement with the NT Power & Water Authority
- 24 The auditing and establishment of maintenance schedules for grease traps out-falling to sewer
- 25 The installation of a mag-flow meter to monitor trade waste quantities
- 26 The management and remediation of five contaminated sites
- 27 The establishment of a close working relationship with the Larrakia Nation including contracts for litter and vegetation works, employing Larrakia people under contract as ground staff and the establishment of "Karawa Park" on Darwin International Airport land
- 28 The continued active involvement with the Rapid Creek Catchment Advisory Committee (RCCAC)
- 29 The design and establishment of native gardens both landside and airside which were promoted under the "Year of the Built Environment"
- 30 The design and implementation of a Wildlife Hazard Management System (WHMS) to improve control of bird and other fauna hazards on Airport and reduce the impact of airport operations on local bird populations
- 31 The implementation of a feral species eradication program including the successful removal of all feral pigeons from Darwin International Airport

## Key aspects of the Environment Strategy 2004

The Darwin International Airport Environment Strategy 2004 will build on the initiatives of the 1999 Strategy and the Minor Variation 2002 by seeking to further improve the environmental management and performance at the Airport.

The key objectives of the 2004 Strategy are as follows:

- Maintain an EMS that is consistent with the ISO 14001 series (Environmental Management)
- Continue to commit to continual improvement in the environmental consequences of activities at NT Airports
- Continue to define clear environmental objectives and targets for all airport operations; for all environmental aspects and impacts including matters of natural indigenous or heritage value
- Continue to define clear responsibilities and conduct training for staff and contractors in upholding the objectives of the EMS as well as ensuring that appropriate authority and resources are provided to effectively meet environmental targets
- Inform all new and existing staff and contractors working within the Airport environs of their environmental responsibilities
- Maintain systems that will identify legal and other requirements that apply to environmental management and will keep informed on new legislation and regulations



- Continue to establish procedures for the control, reduction or prevention of pollution caused by Airport activities
- Continue to provide programs for monitoring and reporting of pollution within the Airport
- Continue to maintain systems to ensure compliance with all requirements of the Act, Regulations and the EMS
- Clearly define contingency plans for dealing with accidents and emergencies and to ensure adequate training of staff
- Ensure non-conformances are detected, investigated and documented and that corrective and preventative action procedures are adopted
- Continue a system of ongoing auditing of the EMS to ascertain compliance with the objectives
- Ensure periodic review of the EMS to ensure its continuing suitability, adequacy and effectiveness
- Involve the local community and stakeholders in the development of all future AES
- Disseminate Northern Territory Airports PL Environment Policy and AES to all Operators of undertakings, sub lessees, licensees, other stakeholders, NT Government and the local community

### **Environmental Management of Future Development**

In parallel, the Master Plan must identify those aspects of future development that may have an impact on the environment and note actions that need to be taken to ameliorate the effect of development on the environment.

Before development proceeds all developments on Darwin International Airport will need to demonstrate compliance with the Act and the Airports (Environment Protection) Regulations 1997, the Darwin International Airport Environment Strategy (AES), the NT Airports Environmental Management System and any required construction Environment Management Plans as well as any other relevant Commonwealth or Northern Territory legislation. For any major development, a specific environmental management plan may also be required.

The Commonwealth Department of Transport and Regional Services (DoTaRS) has appointed an Airport Environment Officer (AEO) to manage the administration of environmental legislation on DIA and to oversee adherence to the final AES. The Airport Building Controller (ABC) and depending on the return of the project, the AEO must approve any development before it can proceed. The AEO will also review any required construction Environmental Management Plan's submitted to Northern Territory Airports PL before development proceeds.

Proposals for development within the Master Plan Precincts at Darwin International Airport are at an early stage and can only be dealt with in generic terms. However, various comments can be made about the type of development that will be allowed and possible needs to protect the environment.

Where feasible or applicable Northern Territory Airports PL aims for all new developments to:

- Make all employees, contractors and sub tenants aware of the AES and legislative requirements for environmental management
- Make all employees, contractors and sub tenants aware of the requirements for heritage and Sacred Site preservation.
- Comply with Darwin International Airport Site Rules
- Be water and energy use efficient
- Minimize waste production and conduct recycling
- Comply with regulatory standards for fuel and chemical storage and handling
- Minimise the impact on the visual amenity of the area
- Comply with NT Occupational Health and Safety Standards
- Participate in the annual environmental auditing process
- Note any toxic or hazardous substance storage on the Northern Territory Airports PL Hazardous Materials Register
- Ensure minimal impact on other areas

The following sections note potential environmental impacts on development in relation to each precinct described in the Master Plan.

### **Archeological, Indigenous and Heritage Issues**

In reviewing the environmental impact of Darwin International Airport, no aspects of archeological, indigenous or heritage issues were identified that warranted inclusion in this section.

### **Defence Draft Heritage Management Plan**

The Department of Defence has advised of the production of a Draft Heritage Management Plan. If applicable, future developments will take account of this document.

### **Bagot Road Precinct**

The 1999 AES identified an area of vegetation that should be retained as parkland on the corner of Bagot and McMillans Roads. Surveys conducted by ecologists in 2003 and verified by leading scientists in the areas of habitat fragmentation have found that the maintenance of such a small park as habitat is not viable for wildlife conservation. It will be recommended in the AES that a larger and more diverse area should be set aside as environmental

reserve with linkages to Rapid Creek (see Rapid Creek Precinct).

Strategies to retain mature trees where possible and revegetated with native shrubs as screening will need to be employed. A vegetation management strategy and erosion and sediment plan will need to be developed prior to any clearing of vegetation in this area. It is proposed that salvage of plants and timber for nesting boxes will be conducted prior to land clearing and moved to the new environmental reserve.

### **Rapid Creek Precinct**

The Rapid Creek Corridor has been identified as an Environmentally Significant Area in the 2004 Airport Environment Strategy. No major development has been planned within the 75 metre buffer area to the creek. This precinct also includes the new proposed environment reserve which will require significant land management (weeds, fire etc) in its initial stages. A Plan of Management is proposed to be developed for the site by the end of 2004. Other environmental constraints will include the increase in velocity and volume of storm water.



# 15. Implementation

Following the publication of the Preliminary Draft Master Plan a program of public and industry consultation took place. This involved:

- Meetings with airlines to confirm technical details and consult on the proposals
- Meetings with tenants to consult on the proposals
- Meetings with the Department of Defence to ensure compatibility with RAAF planning
- Meetings with Government departments to ensure compatibility with regional and local planning
- Meetings with elected representatives to brief them on the proposals
- Meetings with residents, conservation and interest groups to consult on the proposals

Presentations were mounted in locations such as council offices, libraries and in the offices of DIPE. A stand was also taken at the NT Expo 2004 in Darwin and a display was mounted in the terminal building. A public briefing session was held in the Darwin International Airport Aviation Institute.

## **Ministerial Approval Process**

This Master Plan has been approved by the Minister for Transport and Regional Services, on behalf of the Commonwealth Government. It sets out the long-term strategy for airport development over the planning period. Approval of the Master Plan does not automatically confer approval on subsequent major developments. The *Airports Act 1996* requires that for certain developments under certain trigger conditions, a specific Major Development Plan must also have the Minister's approval before construction can commence.

The developments to which these conditions will apply include the construction or extension of a runway, terminal building, taxiway, road, rail access, or anything else which may have a significant environmental or ecological impact.

The trigger conditions are that the development either significantly increases the capacity of the airport to handle movement of passengers, freight or aircraft, or the cost of the development exceeds \$10 million.

The Ministerial approval process, as set out in the *Airports Act 1996*, required that a process of public consultation and environmental impact review was undertaken prior to the Minister's approval being sought.

# 15. Implementation



## **Internal Approvals Process**

For projects that are not encompassed by the above requirements for the production of a Major Development Plan, Northern Territory Airports PL applies its own internal approval process. This process takes account of Northern Territory Airports Development Philosophy and Objectives and is subject to the oversight of the Department of Transport's own statutory officers: the Airport Building Controller and the Airport Environment Officer.

## **Planning Cycle**

The *Airports Act 1996* requires that a new Master Plan be produced every five years. The next Master Plan will be published in 2009.



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# 17. Aviation Terms

The following Glossary of Terms has been extracted from a Glossary of Terms provided to the Australian aviation industry by the Australian Airports Association. These terms and descriptions have been taken from the definitions provided in the documents of other authorities including:

- *International Civil Aviation Organisation*
- *Air Navigation Act (1920)*
- *Civil Aviation Act (1988)*
- *Civil Aviation Regulations*
- *Air Services Act (1995)*
- *Air Services Regulations*
- *Aeronautical Information Publications*
- *Airports Act (1996)*

Commonly used abbreviations are also noted.

## **Glossary of Terms**

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

**Aerodrome operator:** In relation to a licensed aerodrome, the license holder, and in relation to an unlicensed aerodrome, the occupier of the aerodrome.

**Aeroplane:** A power-driven heavier-than-air aircraft deriving its lift in flight chiefly from aerodynamic reactions on surfaces remaining fixed under given conditions of flight.

**Aircraft:** Any machine or craft that can derive support in the atmosphere from reactions of the air, including an object that was designed or adapted for use as an aircraft but is incapable of being so used because:

- A part has or parts have, been removed from it, or
- It is in a wrecked or damaged condition.

**Airline:** The operator of a regular public transport service.

# 17. Aviation Glossary of Aviation Terms



**Airport:** An area of land or water (including buildings, installations and equipment situated in the area) intended for use either wholly or partly for the arrival, departure or movement of aircraft. See also 'aerodrome'.

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

**Airspace:** That portion of the earth's atmosphere over which a nation exercises jurisdiction over aircraft in flight.

**Air traffic:** All aircraft in flight or operating on the manoeuvring area of an aerodrome.

**Air Traffic Control (ATC):** A service established by Airservices Australia in pursuance of (Civil Aviation) Regulation 97.

**Air traffic control services:** A service provided by Air Traffic Control when performing a function referred to in ASR 3.02 and includes a traffic advisory service, traffic avoidance advice and traffic information.

**Apron:** That part of an aerodrome to be used:

- For the purposes of enabling passengers to board, or disembark from aircraft
- For loading cargo on to, or unloading cargo from aircraft
- For refueling, parking or carrying out maintenance on aircraft

**Australian Noise Exposure Forecast:** A single number index for predicting the cumulative exposure to aircraft noise in communities near aerodromes during a specific time period.

**Balloon:** A non-power-driven lighter-than-air aircraft.

**Clearway:** A defined rectangular area on the ground or water under the control of the appropriate authority, selected and prepared as a suitable area over which an airplane may make a portion of its initial climb to a specified height.

**Commercial air transport operation:** An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

**Commercial operations:** Civil air operations other than private operations.

**Controlled aerodrome:** An aerodrome at which ATC service is provided to aerodrome traffic.

**Critical aircraft:** The most critical aircraft that an aerodrome can accommodate in respect of operational, pavement strength or other relevant limitations. Taxi guideline markings may also determine a critical aircraft if turning characteristics limit its manoeuvring. There may be more than one critical aircraft for a particular aerodrome.

**Cross-wind component:** The surface wind component at right angles to the runway centreline.

**Domestic air service:** An air service provided by means of a flight from a place in Australia to another place within Australia with no intermediate stop outside Australia.

**Emergency operations centre:** In relation to an airport, the facility established at the airport for the purpose of coordinating the response to, or the threat of, an unlawful interference with aircraft.

**Flight (heavier-than-air aircraft):** The operation of the aircraft from the moment at which the aircraft first moves under its own power for the purpose of taking off until the moment at which it comes to rest after being airborne.

**Flight (lighter-than-air aircraft):** The operation of the aircraft from the moment it becomes detached from the surface of the earth or from a fixed object on the surface of the earth until the moment when it becomes again attached to the surface of the earth or a fixed object on the surface of the earth.

**Flight path:** The airspace connecting two locations and in the vicinity of the actual or proposed track of the aircraft.

**Fuelling installation:** A fixed facility for the reception, storage and distribution of liquid fuels for the fuelling of aircraft and ground vehicles.

**Fuel tanker:** A mobile fuel dispenser fitted out in accordance with CAO 20.9.

**General aviation:** All civil operation other than RPT operations.

**Ground (handling) equipment:** Articles of a specified nature for use in the maintenance, repair and servicing of an aircraft on the ground, including testing equipment and cargo and passenger handling equipment.

**Instrument Landing System (ILS):** A system consisting of radio navigation aids adequate for guiding aircraft to a specified position, from which landing and subsequent taxiing is possible using visual aids.

**Instrument runway:** One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

- *Non-precision approach runway (or instrument approach runway)* – an instrument runway served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach.
- *Precision approach runway – category I* – an instrument runway served by ILS and/or MLS and visual aids intended for operations with a decision height not lower than 60 metres (200 feet) and either a visibility not less than 800 metres or an RVR not less than 550 metres.
- *Precision approach runway – category II* – an instrument runway served by ILS and/or MLS and visual aids intended for operations with a decision height lower than 60 metres (200 feet) but not lower than 30 metres (100 feet) and an RVR not less than 350 metres.
- *Precision approach runway – category III* – an instrument runway served by ILS to and along the runway and:
  - Intended for operations with a decision height lower than 30 metres (100 feet) or no decision height and an RVR not less than 200 metres.
  - Intended for operations with a decision height lower than 15 metres (50 feet) or no decision height and an RVR less than 200 metres but not less than 50 metres.
  - Intended for operations with no decision height and no RVR limitations.

**International airline:** An air transport enterprise offering or operating an international air service.

**International airport:** Any airport designated by the contracting state in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to immigration, public health, animal and plant quarantine and similar procedures are carried out.

**Main runway:** The runway determined as such by CASA.

**Mandatory Broadcast Zone (MBZ):** An airspace of defined dimensions within which pilots must make specified broadcasts.

**Manoeuvring area:** That part of an aerodrome to be used for the take-off and landing of aircraft and for the movement of aircraft associated with take-off and landing, but does not include any part of an aerodrome to be used:

- For the purpose of enabling passengers to board aircraft or disembark from aircraft
- For loading cargo on to aircraft or unloading cargo from aircraft
- For fuelling, parking or carrying out maintenance on aircraft

# 17. Aviation Glossary of Aviation Terms



**Microwave landing system (MLS):** A precision approach and landing system using a time-based reference system.

**Movement:** Either a take-off or landing by an aircraft.

**Movement area:** That part of an aerodrome to be used for the surface movement of aircraft, including manoeuvring areas and aprons.

**Nautical mile:** A length of 1,852 metres.

**Non-directional beacon:** A special radio station, the emissions of which are intended to enable a mobile station to determine its radio bearing or direction with reference to that special radio station.

**Obstacle limitation surface:** In relation to an aerodrome, means the obstacle limitation surfaces established in accordance with regulation 89W of the Civil Aviation regulations.

**Passenger:** Any person who is on board an aircraft other than the crew.

**Private operation:** An operation of an aircraft that is not:

- A regular public transport operation
- A charter operation

**Regular Public Transport operation:** An operation of an aircraft for the purposes of an air service that:

- Is provided for a fee payable by persons using the service
- Is conducted in accordance with fixed schedules to or from fixed terminals over specific routes
- Is available to the general public on a regular basis

**Rescue and Firefighting Service:** Airservices Australia in its capacity as the provider of rescue and firefighting services.

**Runway:** A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

**Runway strip:** A defined area including the runway and stopway, if provided, intended:

- To reduce the risk of damage to aircraft running off a runway
- To protect aircraft flying over it during take-off or landing operations

**Stopway:** A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.

**Taxiway:** A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome to another.

**VHF Omni-directional Radio Range (VOR):** A VHF radio navigation aid which provides a continuous indication of bearing from the selected VOR ground station.

## Abbreviations

The following abbreviations have been used in this document.

**A320** Airbus A320 aircraft  
**A330** Airbus A 330 aircraft  
**A340** Airbus A 340 aircraft  
**AA** Airservices Australia  
**ADG** Airport Development Group  
**ADGPL** Airport Development Group Proprietary Limited  
**AES** Airport Environment Strategy  
**AHD** Australian Height Datum  
**ANEC** Australian Noise Exposure Datum  
**ANEF** Australian Noise Exposure Forecast  
**ARFFS** Airport Rescue and Fire Fighting Service  
**ASA** Alice Springs Airport  
**ASAPL** Alice Springs Airport Proprietary Limited  
**ATC** Air Traffic Control  
**B737** Boeing 737 aircraft  
**B747** Boeing 747 aircraft  
**B767** Boeing 767 aircraft  
**CASA** Civil Aviation Safety Authority  
**DIA** Darwin International Airport  
**DIAPL** Darwin international Airport Proprietary Limited  
**DES** Draft Environment Strategy  
**DMP** Draft Master Plan  
**DoTaRS** Department of Transport and Regional Services  
**EMP** Environment Management Plan  
**FAC** Federal Airports Corporation  
**FES** Final Environment Strategy  
**FMP** Final Master Plan

**FOD** Foreign Object Damage  
**GDP** Gross Domestic Product  
**GSE** Ground Service Equipment  
**ICAO** International Civil Aviation Organisation  
**IFR** Instrument Flying Rules  
**JDFPG** Joint Defence Facility Pine Gap  
**LCC** Low Cost Carrier  
**LLZ** Localiser  
**MDP** Major Development Plan  
**MOS 139** Manual of Standards Part 139  
**NDB** Non-Directional Beacon  
**NT** Northern Territory  
**NTAPL** Northern Territory Airports Proprietary Limited  
**OLS** Obstacle Limitation Surface  
**PANS-OPS** Procedures for Air Navigational Services – Operations  
**PAWA** Power and Water Authority  
**PDES** Preliminary Draft Environmental Strategy  
**PDMP** Preliminary Draft Master Plan  
**RAAF** Royal Australian Air Force  
**RFDS** Royal Flying Doctor Service  
**RPA** Rules and Practices for Airports  
**RPT** Regular Passenger Transport  
**RWY** Runway  
**TCA** Tennant Creek Airport  
**TCAPL** Tennant Creek Airport Proprietary Limited  
**TVASIS** T-Visual Approach Slope Indicator System  
**TWY** Taxiway  
**USAF** United States Air Force  
**VFR** Visual Flight Rules  
**VOR** Very High Frequency Omni-Directional Radio Range  
**VHF** Very High Frequency